



GATEWAY CONTROL SOFTWARE

RS-RP3C

Set Up Instructions

For Revision 3.2

INTRODUCTION

Thank you for choosing this Icom product.
This product is designed and built with Icom's state of the art technology and craftsmanship. With proper care, this product should provide you with years of trouble-free operation.

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-RP3C.

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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 the RS-RP3C Gateway Control Software that has two Ethernet ports, one connected to an ID-RP2C or ID-RP3 and the other to an Internet connection through a router. A D-STAR repeater system with a GW that is connected to the Internet and is controlled by an ID-RP2C or ID-RP3 will permit a digital transceiver in the DD (Digital Data) mode to access the Internet at data rates of up to 128 kbps.

A D-STAR network consists of a D-STAR Trust Server and one or more GW's interconnected to the Internet.

2. New features

The following features have been added compared with Revision 3.1 of the RS-RP3C Gateway Control Software.

- The supported OS is changed to AlmaLinux 9 (64 bit).
- A user can easily install or uninstall the software because it is packaged in the RPM (Red hat Package Manager) format.
- By using the dnf upgrade, a user can use the latest middleware at all times. However, when the middleware is updated, unexpected problems might occur. To avoid this, it is recommended that you disable the automatic update.

NOTE: The RS-RP3C can coexist with the RS-RP2C in the same D-STAR network system. However, the Trust Server must install the RS-RP3C.

System requirements

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

◇ PC

- OS: Linux®
AlmaLinux 9 (64bit)

<End of support date for AlmaLinux>
AlmaLinux 9: 2032-05-31
- CPU: Supports x86_64 architecture
- Memory: At least 1.5 GB
- LAN card: 2 (NIC from Intel® is recommended)
- Disk space: At least 10 GB of free space
(including the OS installation)
20 GB or more is recommended
- Middleware: ASP.NET Core
NGINX
OpenSSL
PostgreSQL
(The latest middleware are installed at the same time when installing the GW software.)

◇ Internet line

- Line speed: Up to 1 Mbps (approximate effective speed*) for both uplink/downlink
*Measure typical speed (throughput) using with a line speed test site, and so on.

<Maximum through put calculation>

The following effective speed is necessary for each operating mode.

DV mode: 30 kbps/connection

DD mode: 180 kbps/connection

Example: When connecting three digital voice (multicast operation) and one data repeater.

DV mode: multicast (maximum 10 areas)
 $30 \text{ kbps} \times 10 \text{ areas} \times 3 \text{ port}$
 $= 900 \text{ kbps}$

DD mode: one port
180 kbps

Required maximum effective speed:
 $900 \text{ kbps} + 180 \text{ kbps}$
 $= 1080 \text{ kbps}$

◇ Fixed IP address

(for Trust Server only)

Apply to your ISP to acquire a fixed global IP address.

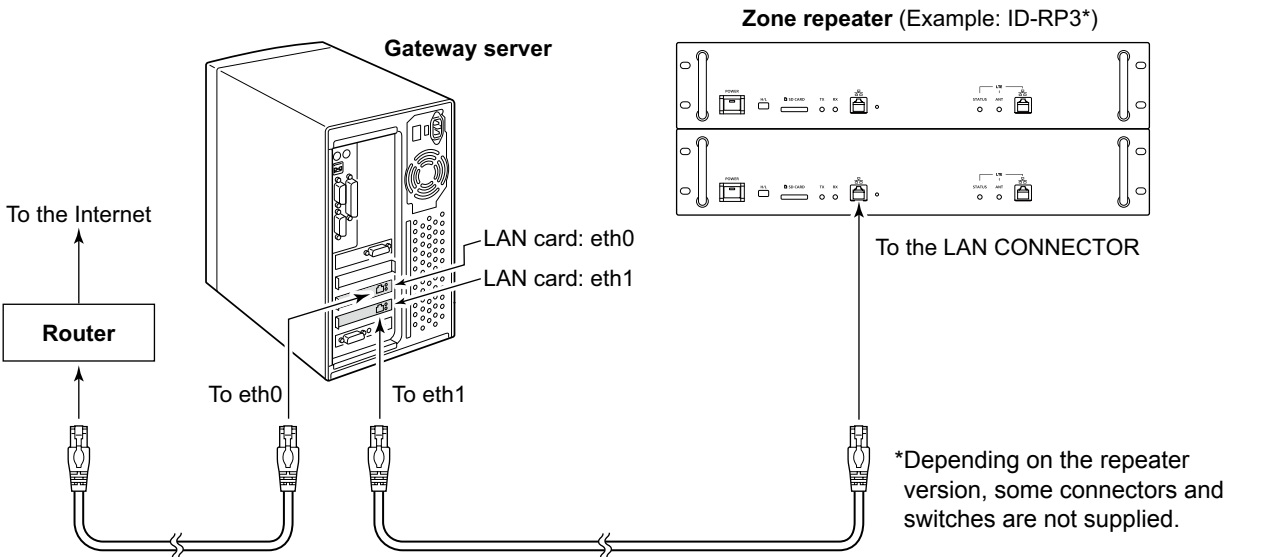
◇ Router

The following function/s is/are additionally required for the common router.

- Class A subnet mask (255.0.0.0) can be set for LAN.

Gateway server connections

◇ Connecting to the ID-RP2/ID-RP3 system



Router settings

◇ IP address setting

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

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 another private IP address.

◇ Port forwarding setting

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

Port No./Protocol	Usage	File location
20005/TCP	IP server synchronization	PORT_SYNC (dsipsvd.conf)*1
40000/UDP	Voice transfer	GW_VCPORT (dsgwd.conf)*2
40001/TCP	Data transfer	GW_DTPORT (dsgwd.conf)*2
443/TCP	https	—

To allow access from the RS-MS3W or RS-MS3A, set the following port numbers with protocol to transfer to the IP address "10.0.0.2."

Port No./Protocol	Usage	File location
12345/UDP	Position request	PORT_SEARCH (dsipsvd.conf)*1
12346/UDP	Position registration	PORT_RENEWAL (dsipsvd.conf)*1

*1 The fully qualified path name is "/opt/products/dstar/dstar_gw/dsipsvd/dsipsvd.conf"

*2 The fully qualified path name is "/opt/products/dstar/dstar_gw/dsgwd/dsgwd.conf"

NOTE: The IP filter must be set to allow Internet remote access to the local IP address "10.0.0.2." Otherwise the D-STAR gateway will not work due to the firewall.

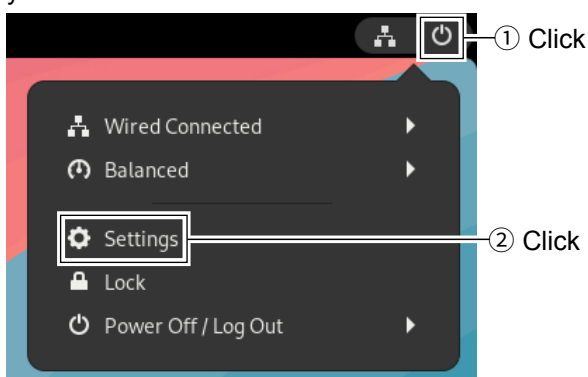
Server settings

◆ LAN card settings

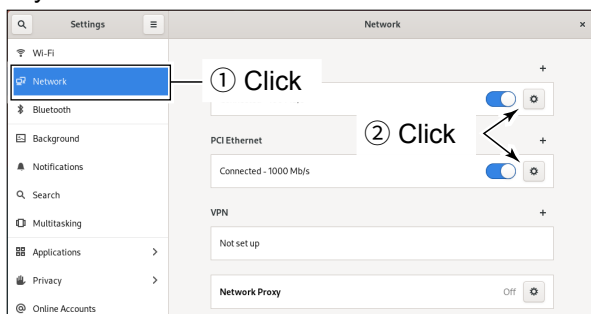
Set up the installed LAN card as follows if it has not been set when you installed AlmaLinux 9 (64bit).

NOTE: The fixed value for both the IP address and the subnet mask must be entered into both eth0 and eth1. Otherwise the gateway server cannot communicate with another D-STAR gateway.

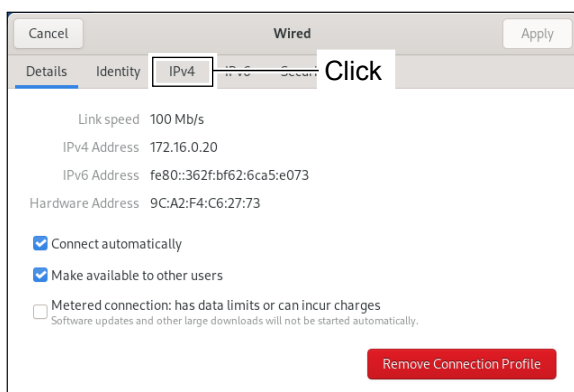
1. Open the “Network Configuration” screen using your PC mouse.



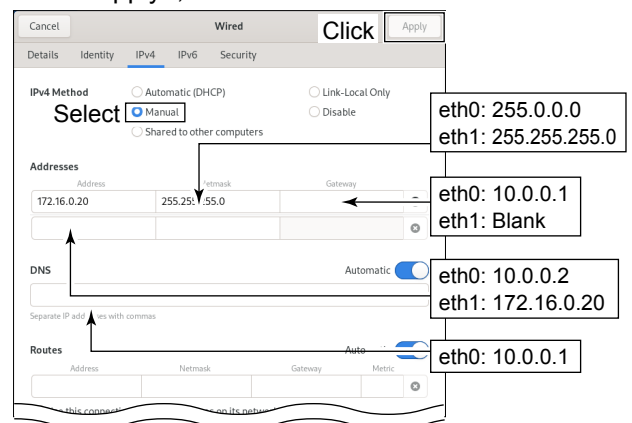
2. Click “Network,” and then click to select the router or the repeater respectively.
① The displayed screen may differ, depending on your network environment.



3. Select “IPv4.”



4. Select “Manual,” then enter the specified IP address, Netmask, Gateway (router side, eth0 setting only), and DNS (router side, eth0 setting only) as shown below.
Click <Apply>, then close the window.



- ① eth0: For the router
eth1: For the repeater

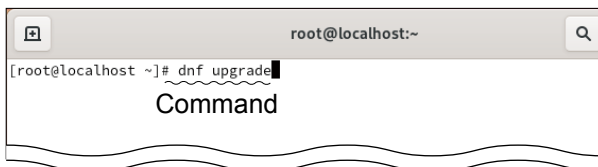
Gateway control software

◇ Preparation

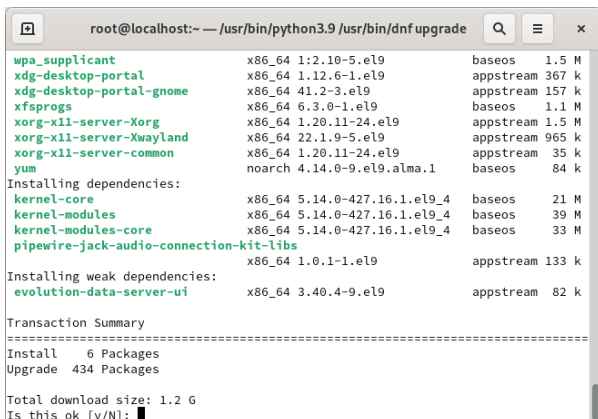
1. Start up the server and log in as root.
2. Start up “Terminal” using your PC mouse.



3. Enter the “# dnf upgrade” command.



4. Press [Enter] on the keyboard to start updating the system.
When “Is this ok” is displayed, enter “y,” and then press [Enter] key to start installation.



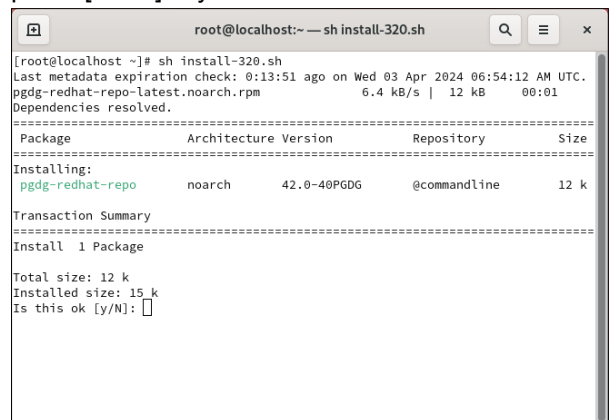
5. Reboot the server.

◇ Installation

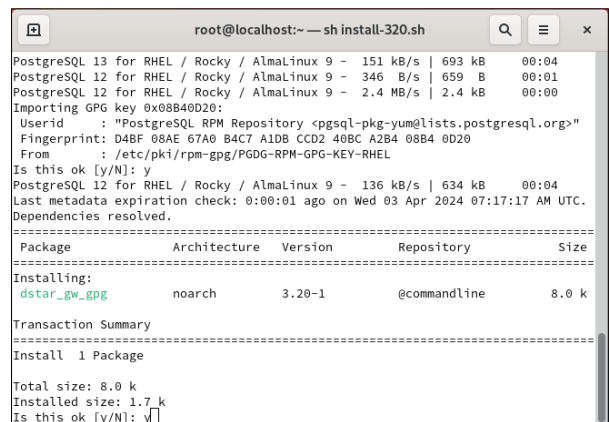
1. Download and unzip the installer.
2. To install the GPG key for the D-STAR Gateway software, the D-STAR Gateway software, and PostgreSQL Yum Repository, enter the “# sh install-xxx.sh” command.
① “xxx” stands for the version number.



3. Press [Enter] on the keyboard to start the PostgreSQL Yum Repository installation.
When “Is this ok” is displayed, enter “y,” and then press [Enter] key to start installation.



4. After finishing the PostgreSQL Yum Repository installation, starts the GPG key installation.
When “Is this ok” is displayed, enter “y,” and then press [Enter] key to start installation.



Gateway control software

◆ Installation

- After finishing the GPG key installation, starts the “dstar gw” software installation.
When “Is this ok” is displayed, enter “y,” and then press [Enter] key to start installation.

```
root@localhost:~ — sh install-320.sh

aspnetcore-runtime-8.0 x86_64 8.0.3-2.el9_3 appstream 7.9 M
dotnet-host x86_64 8.0.3-2.el9_3 appstream 194 k
dotnet-hostfxr-8.0 x86_64 8.0.3-2.el9_3 appstream 145 k
dotnet-runtime-8.0 x86_64 8.0.3-2.el9_3 appstream 23 M
glibc i686 2.34-83.el9_3.12 baseos 1.9 M
libgcc i686 11.4.1-2.1.el9.alma baseos 101 k
lz4 x86_64 1.9.3-5.el9 baseos 58 k
nginx x86_64 1:1.20.1-14.el9_2.1.alma.1 appstream 36 k
nginx-core x86_64 1:1.20.1-14.el9_2.1.alma.1 appstream 565 k
nginxfilesystem noarch 1:1.20.1-14.el9_2.1.alma.1 appstream 8.4 k
postgresql14 x86_64 14.11-1PGDG.rhel9 pgdg14 1.4 M
postgresql14-libx x86_64 14.11-1PGDG.rhel9 pgdg14 283 k
postgresql14-server x86_64 14.11-1PGDG.rhel9 pgdg14 5.8 M
Installing weak dependencies:
glibc-gconv-extra i686 2.34-83.el9_3.12 baseos 1.6 M

Transaction Summary
=====
Install 16 Packages

Total size: 45 M
Total download size: 43 M
Installed size: 152 M
Is this ok [y/N]: y
```

TIP: If the software will be updated in the future, enter the same command.

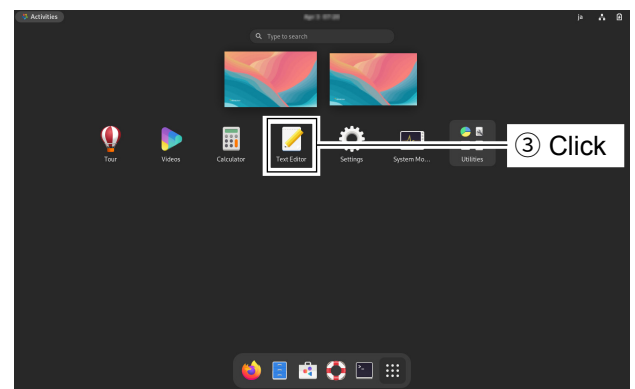
- The message “Complete!” is displayed when the first step of the installation is completed.
Go to step 7 to edit “dsgwd.conf” and “dsipsvd.conf”.

```
root@localhost:~
Verifying      : postgresql14-libx-14.11-1PGDG.rhel9.x86_64 14/16
Verifying      : postgresql14-server-14.11-1PGDG.rhel9.x86_64 15/16
Verifying      : dstar_gw-3.20-1.el9.x86_64 16/16

Installed:
almalinux-logos-httpd-90.5.1-1.1.el9.noarch
aspnetcore-runtime-8.0-8.0.3-2.el9_3.x86_64
dotnet-host-8.0.3-2.el9_3.x86_64
dotnet-hostfxr-8.0-8.0.3-2.el9_3.x86_64
dotnet-runtime-8.0-8.0.3-2.el9_3.x86_64
dstar_gw-3.20-1.el9.x86_64
glibc-2.34-83.el9_3.12.i686
glibc-gconv-extra-2.34-83.el9_3.12.i686
libgcc-11.4.1-2.1.el9.alma.i686
lz4-1.9.3-5.el9.x86_64
nginx-1:1.20.1-14.el9_2.1.alma.1.x86_64
nginx-core-1:1.20.1-14.el9_2.1.alma.1.x86_64
nginxfilesystem-1:1.20.1-14.el9_2.1.alma.1.noarch
postgresql14-14.11-1PGDG.rhel9.x86_64
postgresql14-libx-14.11-1PGDG.rhel9.x86_64
postgresql14-server-14.11-1PGDG.rhel9.x86_64

Complete!
[root@localhost ~]#
```

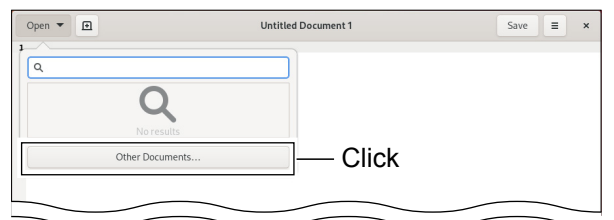
- Open “Text Editor” using your PC mouse.
• “vi editor” can also be used.



- Open the “dsgwd.conf” file and edit it as described in “◆ dsgwd.conf description” on page 2-8.
① Click the <Open> button.



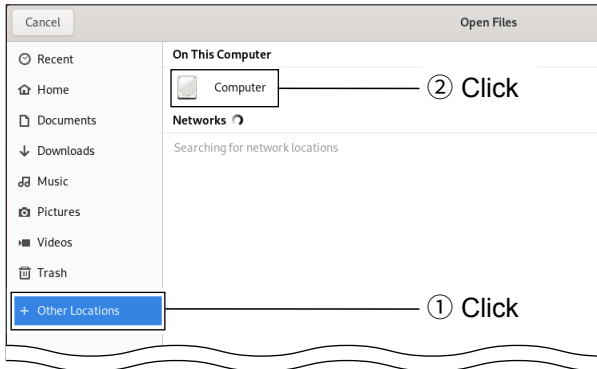
- Click “Other Documents.”



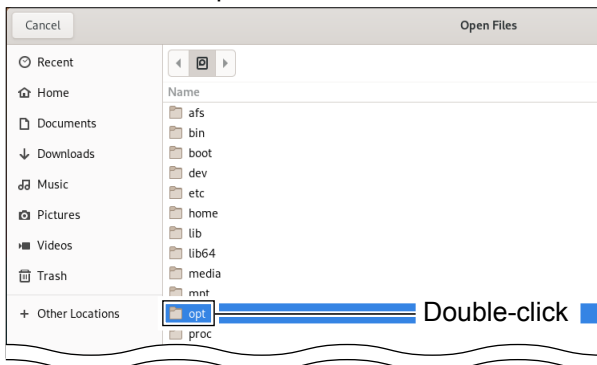
Gateway control software

◆ Installation

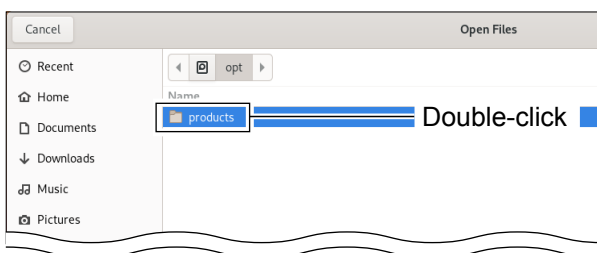
- ③ Click “Other Locations,” then click “Computer.”



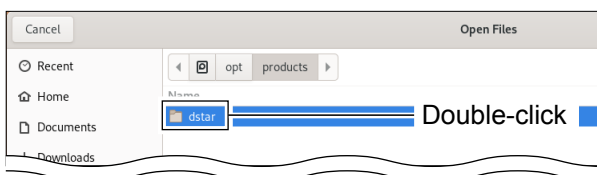
- ④ Double-click “opt.”



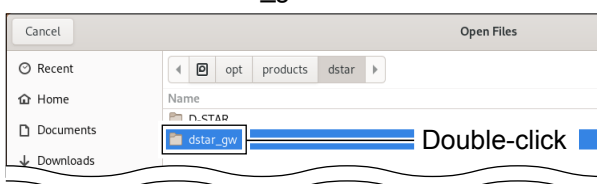
- ⑤ Double-click “Products.”



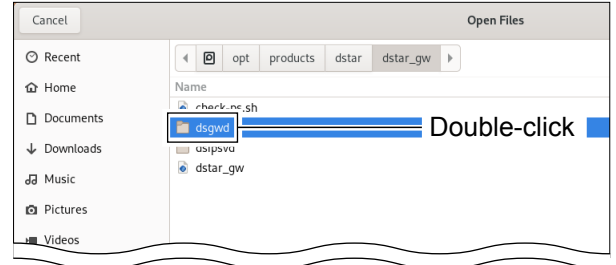
- ⑥ Double-click “dstar.”



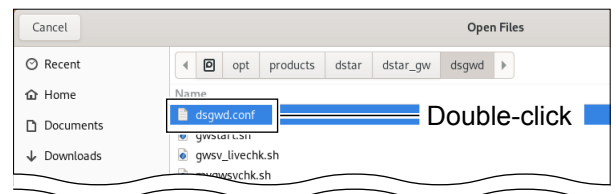
- ⑦ Double-click “dstar_gw.”



- ⑧ Double-click “dsgwd.”



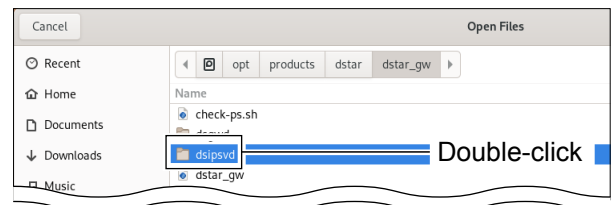
- ⑨ Double-click “dsgwd.conf.”



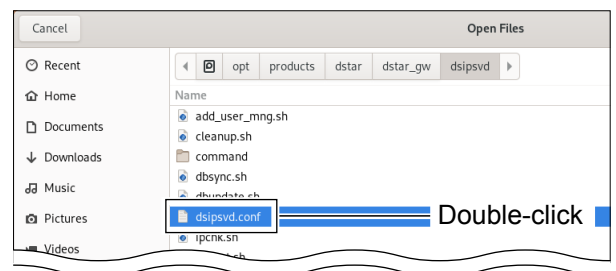
9. Open the “dsipsvd.conf” file and edit the file as described in “◆ dsipsvd.conf description” on page 2-9.

- ① Perform the same operation as described in steps ① to ⑦ in step 8.

- ② Double-click “dsipsvd.”



- ③ Double-click “dsipsvd.conf.”



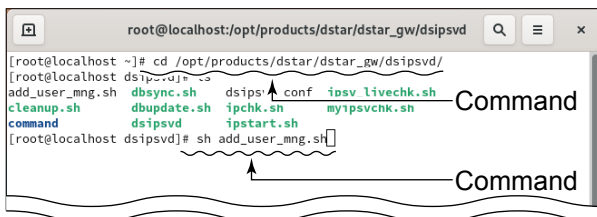
Gateway control software

◇ Installation

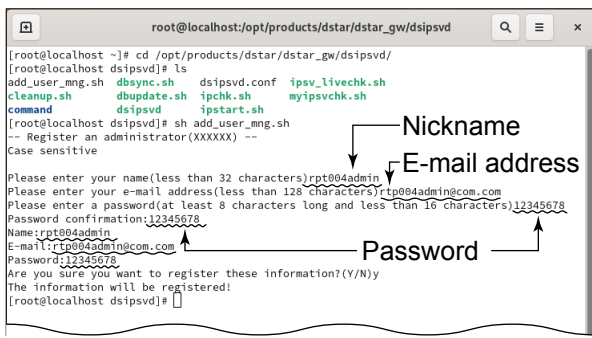
10. Reboot the server.
11. Start up the server and log in as root.
12. Start up “Terminal” using your PC mouse.



13. Enter the “# cd /opt/products/dstar/dstar_gw/dsipsvd/” command, then enter the “# sh add_user_mng.sh” command, as shown below to create an administrator.
 - Each gateway server should be set.
 - Use the zone repeater call sign as the administrator call sign.



14. Enter the following administrator information, as desired.
 - Nickname
 - E-mail address
 - Log in password

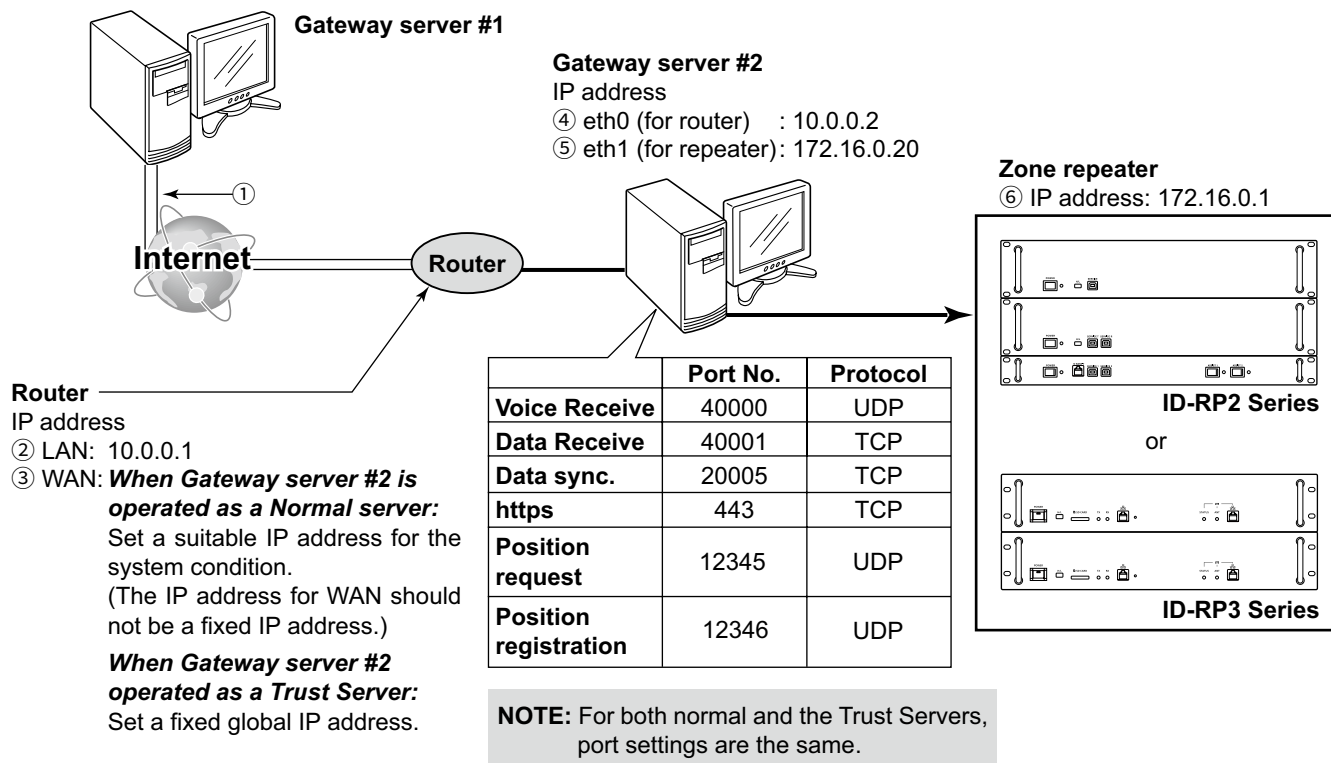


◇ Upgrading the RS-RP2C/RS-RP3C software

1. Backup the database and the configuration file (dsgwd.conf/dsipsvd.conf).
 - ① See “◇ Backup” on page 2-26 for details.
2. Uninstall the RS-RP2C/RS-RP3C software.
 - ① See each of Set up Instructions for details.
3. Uninstall the PostgreSQL9.4, enter the “# yum remove postgresql94*” command.
 - ① When the RS-RP3C software is revision 3.2 or later, enter “# dnf remove postgresql14*” command.
4. Do the steps 1 ~ 5 of “◇ Preparation” on page 2-3.
5. Do the steps 1 ~ 5 of “◇ Installation” on pages 2-3 ~ 2-4.
6. Restore the backup database and the configuration file in step 1.
 - ① See “◇ Restoring” on page 2-26 for details.

System setup

◇ Setup example



Control software settings

◇ dsgwd.conf description

Zone Repeater's Information

- **ZR_ADDR** (Default: 172.16.0.1)
Sets the zone repeater's IP address (the IP address ⑥ in "◇ Setup Example").
The same IP address that is programmed in the "IP Address" field in "Communication Settings" of the utility for ID-RP2C or ID-RP3 should be set.
- **ZR_CALLSIGN** (Default: XXXXXX)
Sets the zone repeater's call sign.
The same call sign that is programmed in the "Callsign" field in "General" of the utility for ID-RP2C or ID-RP3 should be set.
- **ZR_PORT** (Default: 20000)
Sets the zone repeater's transmit/receive port number (the port number ⑥ in "◇ Setup Example").
The same port number that is programmed in the "Port" field in "Communication Settings" of the utility for ID-RP2C or ID-RP3 should be set.

DNS Server's Information

- **DNS_ADDR** (Default: 10.0.0.1)
Sets the zone DNS server's IP address (the IP address ② in "◇ Setup Example").
- **DNS_MAC** (Default: 00-00-00-00-00-00)
Sets the zone DNS server's MAC address (the MAC address ② in "◇ Setup Example").
Set the MAC address of the connected router, separated by hyphens (-).

GW's Information

- **GW_ETHIFNAME** (Default: em1*)
Sets the interface name of the LAN card (the interface name ④ in "◇ Setup Example").
The interface name can be confirmed using the "ip a" command.
* For the AlmaLinux 9, the default value differs, depending on the server.
Set the appropriate interface name for the server.
- **GW_VCPORT** (Default: 40000)
Sets the port number for voice operation (UDP).
Use the default setting.
- **GW_DTPORT** (Default: 40001)
Sets the port number for data operation (TCP).
Use the default setting.
- **GW_ZRPORT** (Default: 20000)
Sets the port number of the gateway server for the communication with the zone repeater (UDP).
Use the default setting.

Management Server's Information

- **MGSV_QRPORT** (Default: 12345)
Sets the port number of the IP address managing server for call sign inquiry (UDP).
Use the default setting.
- **MGSV_UDPORT** (Default: 12346)
Sets the port number of the IP address managing server for updated location information requests (UDP).
Use the default setting.
- **CON_WAIT_INTERVAL** (Default: 2)
Sets the application timer.
The application timer is the waiting timer (unit: seconds) until the connection is successful when making a new connection to another gateway in the data mode.
Use the default setting.
- **CON_REFRESH_INTERVAL** (Default: 300)
Sets the decide timer (unit: seconds) to disable the gateway that fails to connect in the data mode within the set time period.
Use the default setting.
- **CON_MAX_GW** (Default: 50)
Sets the maximum number of simultaneous connections to another gateway in the data mode.
Use the default setting.

IP Server

- **QUERY_POLLING_TIMEOUT** (Default: 1000)
Sets the standby time period (unit: milliseconds) when a position information retrieval inquiry is sent to the IP server.
Use the default setting.

Control software settings

◇ dsipsvd.conf description

Communication Port Number

- **PORT_SEARCH** (Default: 12345)
Sets the port number of the IP address managing server for call sign inquiry (UDP).
Use the default setting.
- **PORT_RENEWAL** (Default: 12346)
Sets the port number of the IP address managing server for updated location information requests (UDP).
Use the default setting.

IP Server comm. Info.

- **TRUST_SERVER** (Default: 0.0.0.0)
Sets the IP address of the Trust Server.
The Trust Server's IP address can be set in FQDN format. However, the restarting the application is necessary if the IP address in FQDN format is changed, because of the read IP address is effected when starting up an application.
- **PORT_SYNC** (Default: 20005)
Sets the port number for the user information in MNG, GIP and RIP table synchronization. (TCP)
Use the default setting.
- **SEND_RECV_TIMEOUT** (Default: 10)
Sets the time-out period for the user information in MNG, GIP and RIP table synchronization.
Use the default setting.
- **CON_WAIT_INTERVAL** (Default: 2)
Sets the application timer.
The application timer is the waiting timer (unit: seconds) until the connection is successful when making a new connection to another gateway.
Use the default setting.
- **SYNC_MAX_THREAD** (Default: 50)
Sets the maximum number of threads to activate at the same time data synchronization.
Usable only for the Trust Server.
- **SYNC_INTERVAL** (Default: 60)
Sets the application timer.
The application timer is the waiting timer (unit: seconds) to start data synchronization.
If the previous synchronization was not successful, a new synchronization does not start.
Usable only for the Trust Server.

My IP Server Info.

- **ZR_CALLSIGN** (Default: XXXXXX)
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.
- **IS_MY_TRUST_SERVER** (Default: 0)
Sets the Trust Server capability.
0: Setup this server as regular gateway server.
1: Setup this server as the Trust Server.
- **MULTICAST_ENABLE** (Default: 1)
Sets the multicast operation capability.
0: The server operate in unicast mode.
1: The server operate in multicast mode.

DataBase Info.

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

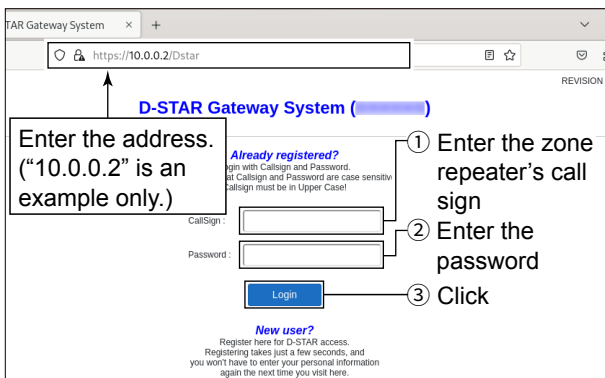
- **DB_IP** (Default: 127.0.0.1)
Sets the IP address that the database file is stored server.
- **DB_PORT** (Default: 5432)
Sets the port number for database connection.
- **DB_NAME** (Default: dstar_global)
Sets the file name of the database.
- **DB_USER** (Default: dstar)
Sets the name for database user.
- **DB_PASSWORD** (Default: dstar123)
Sets the password for database user.
- **DB_COMMAND_PATH**
(Default: /opt/products/dstar/dstar_gw/dsipsvd/command/)
Specifies the directory path that the database file is stored in the server.
- **DB_DRIVER** (Default: org.postgresql.Driver)
Specifies the database driver for accessing.

Server operation for administrator

◇ Log in

1. Start up WEB browser, then enter
“https://xx.xx.xx.xx/Dstar” into the address bar.
 - “xx.xx.xx.xx” is the IP address of the gateway server.
2. Enter the zone repeater’s call sign and password then click [Login].

NOTE: Enter the call sign with capital letters due to the system case sensitive.



Server operation for administrator

◇ User information screen

The following operations can be performed on 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 on the screen. To search for a user, set the desired criteria to refine the list.

Administrator registration

Administrator should be registered the first time they access the gateway server.

1. Click "License" check box to apply a check mark, "✓," then click <Update>.

D-STAR Gateway System (10.0.0.2)

Log in: [] Logout

Search Result: 1 Results

Call sign	Name	E-mail	License	Del
10.0.0.2			☒	

Call sign: [] Filter [] Update []

2. The confirmation dialog is displayed. Click <OK>.

10.0.0.2

Are you sure?

Cancel OK

3. The dialog, "processing was completed." is displayed. Click <OK>.

10.0.0.2

processing was completed.

☐ Don't allow 10.0.0.2 to prompt you again

OK

4. "OK" is displayed in the "License" field instead of a check mark, "✓."

- Users can be registered in the same manner.
- Un-registered users cannot access the gateway server.

D-STAR Gateway System (10.0.0.2)

Log in: [] Logout

Search Result: 1 Results

Call sign	Name	E-mail	License	Del
10.0.0.2			OK	

Call sign: [] Filter [] Update []

2 SYSTEM SETUP

Server operation for administrator

◇ User information screen

User searching

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

Enter the desired call sign, or a part of the call sign, into "Callsign" field, then click <Filter>.

D-STAR Gateway System (10.0.0.2)

REVISION 10.0.0.2

Login: [] Logout

Multicast Information User Information GW Information Terminal Information Personal Information

SEARCH RESULT: 2 Results

Callsign	Name	E-mail	License	Del
10.0.0.2	10.0.0.2	10.0.0.2	☐	☐
10.0.0.2	10.0.0.2	10.0.0.2	☐	☐

1 Enter the desired character
2 Click

Filter Update

User information deletion

1. Click to apply a check mark, "✓", into the desired "Del" check box to be deleted, then click <Update>.

D-STAR Gateway System (10.0.0.2)

REVISION 10.0.0.2

Login: [] Logout

Multicast Information User Information GW Information Terminal Information Personal Information

SEARCH RESULT: 10 Results

Callsign	Name	E-mail	License	Del
10.0.0.2	10.0.0.2	10.0.0.2	☐	☒
10.0.0.2	10.0.0.2	10.0.0.2	☐	☐
10.0.0.2	10.0.0.2	10.0.0.2	☐	☐
10.0.0.2	10.0.0.2	10.0.0.2	☐	☐
10.0.0.2	10.0.0.2	10.0.0.2	☐	☐
10.0.0.2	10.0.0.2	10.0.0.2	☐	☐
10.0.0.2	10.0.0.2	10.0.0.2	☐	☐
10.0.0.2	10.0.0.2	10.0.0.2	☐	☐
10.0.0.2	10.0.0.2	10.0.0.2	☐	☐
10.0.0.2	10.0.0.2	10.0.0.2	☐	☐

1 Apply check mark "✓"

2 Click

Filter Update

2. The confirmation dialog is displayed. Click <OK>.

10.0.0.2

Are you sure?

Cancel OK

Click

3. The dialog "processing was completed." is displayed. Click <OK>.

10.0.0.2

processing was completed.

☐ Don't allow 10.0.0.2 to prompt you again

OK

Click

NOTE: When a user's information is deleted, all information about the user, including terminal information will also be deleted.

Server operation for administrator

◆ Multicast Information

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

- Multicast group list indication
- Multicast group add and delete
- Area repeater call sign setting

TIP: How to make a multicast group call ?

Enter slash, "/", then enter the desired group name into "Your Call sign" ("UR" or "U").

Example: /MULTIA

Adding a multicast group

1. Enter the desired multicast group name up to 7 character, then click <Add>.

- Usable characters: A ~ Z, 0 ~ 9, space and /

NEVER enter "/" as the 1st character, because "/" as the 1st character is used to specify the call sign (group name in this case) is used as an area CQ call for the transceiver side setting.

D-STAR Gateway System ()

Log in: [] Logout

Multicast Information User Information GW Information Terminal Information Personal Information

Please input the Multicast Group name (up to 7 characters and alphanumeric (upper case only) including a space and "/" sign).

Multicast Group: [MULTIA] [Add]

SEARCH RESULT: 0 Results

Multicast Group	AreaRPT CS 1	AreaRPT CS 2	AreaRPT CS 3	AreaRPT CS 4	AreaRPT CS 5	Del
MULTIA						

2. The dialog "processing was completed." is displayed. Click <OK>.

10.0.0.2

processing was completed.

Click OK

Area repeater call sign setting

1. Click to apply a check mark, "✓", into the desired check box, and then enter the desired area repeater's call sign up to 7 character.

- Usable characters: A ~ Z, 0 ~ 9, space and /

NEVER enter "/" as the 1st character, because "/" as the 1st character is used to specify the call sign is used as an 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, only the first entry is used.

2. Click <Update>.

D-STAR Gateway System ()

Log in: [] Logout

Multicast Information User Information GW Information Terminal Information Personal Information

1 Apply check mark "✓" (upper case only) including a space and "/" sign.

Multicast Group: [MULTIA] [Add]

SEARCH RESULT: 1 Results

Multicast Group	AreaRPT CS 1	AreaRPT CS 2	AreaRPT CS 3	AreaRPT CS 4	AreaRPT CS 5	AreaRPT CS 6	AreaRPT CS 7	AreaRPT CS 8	AreaRPT CS 9	Del
MULTIA	✓									

2 Enter the call sign 3 Click Update

3. The confirmation dialog is displayed. Click <OK>.

10.0.0.2

Are you sure?

Cancel OK

4. The dialog "processing was completed." is displayed. Click <OK>.

10.0.0.2

processing was completed.

☐ Don't allow 10.0.0.2 to prompt you again

Click OK

Server operation for administrator

◆ Multicast Information

Area repeater call sign deletion

1. Click to apply a check mark, “✓,” into the desired check box, and then erase the desired area repeater’s call sign.
2. Click <Update>.

3. The confirmation dialog is displayed. Click <OK>.

4. The dialog “processing was completed.” is displayed. Click <OK>.

Deleting a multicast group

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

2. The confirmation dialog is displayed. Click <OK>.

3. The dialog “processing was completed.” is displayed. Click <OK>.

Server operation for administrator

◇ GW Information

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

- Gateway list indication
- Gateway searching
- Connection refuse setting
- Call sign indication
(Only when the RS-MS3W or RS-MS3A is registered on the Personal Information screen.)

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

TIP:**For the Trust Server administrator:**

When a new GW is registered, a check mark, “✓,” is applied in the “connection refuse” check box as the default. (The GW or transceiver is not included in the D-STAR network yet.) To enable access, remove the check mark, “✓,” from the “connection refuse” check box.

For the Server administrator:

When the RS-MS3W or RS-MS3A is registered, a check mark, “✓,” is not applied in the “connection refuse” check box as the default. To refuse the access, apply a check mark, “✓,” into the “connection refuse” check box.

Connection refuse

1. Click to apply a check mark, “✓,” into the desired “connection refuse” check box to be refuse 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 and permit the communication.

D-STAR Gateway System ()

Login : Logout

Multicast Information User Information **GW Information** Terminal Information Personal Information

SEARCH

ZoneRPT CS	IP Address	connection refuse
10.0.0.2	10.0.0.2	☒
10.0.0.3	10.0.0.3	☐
10.0.0.4	10.0.0.4	☐
10.0.0.5	10.0.0.5	☐
10.0.0.6	10.0.0.6	☐
10.0.0.7	10.0.0.7	☐
10.0.0.8	10.0.0.8	☐
10.0.0.9	10.0.0.9	☐
10.0.0.10	10.0.0.10	☐
10.0.0.11	10.0.0.11	☐
10.0.0.12	10.0.0.12	☐
10.0.0.13	10.0.0.13	☐
10.0.0.14	10.0.0.14	☐
10.0.0.15	10.0.0.15	☐

ZoneRPT CS Filter Update

AND Connection refuse sort ON ☒ OFF ☐

① Apply check mark “✓”

② Click

2. The confirmation dialog is displayed. Click <OK>.

10.0.0.2

Are you sure?

Cancel OK

Click

3. The dialog “processing was completed.” is displayed. Click <OK>.

10.0.0.2

processing was completed.

☐ Don't allow 10.0.0.2 to prompt you again

OK

Click

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.

Server operation for administrator

◇ Terminal Information

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

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

Terminal searching

Enter the desired call sign, or a part of the call sign, into the “Target CS,” “AreaRPT CS” and/or “ZoneRPT CS” text boxes, then click <Filter>.

- When no call sign or a part of the call sign 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.

① Enter the desired call sign or a part of the call sign

Target CS	AreaRPT CS	ZoneRPT CS	Receive Time (UTC)	Name	Black List	Del
10000000	10000000	10000000	2010-01-01 00:00:00		☐	☐
10000000	10000000	10000000	2010-01-01 00:00:00		☐	☐
10000000	10000000	10000000	2010-01-01 00:00:00		☐	☐
10000000	10000000	10000000	2010-01-01 00:00:00		☐	☐
10000000	10000000	10000000	2010-01-01 00:00:00		☐	☐
10000000	10000000	10000000	2010-01-01 00:00:00		☐	☐
10000000	10000000	10000000	2010-01-01 00:00:00		☐	☐
10000000	10000000	10000000	2010-01-01 00:00:00		☐	☐
10000000	10000000	10000000	2010-01-01 00:00:00		☐	☐

Update

Black list setting

1. Click to apply a 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.

① Apply a check mark “✓”

② Click

2. The confirmation dialog is displayed. Click <OK>.

10.0.0.2

Are you sure?

Cancel OK

3. The dialog “processing was completed.” is displayed. Click <OK>.

10.0.0.2

processing was completed.

☐ Don't allow 10.0.0.2 to prompt you again

OK

Server operation for administrator

◇ Terminal Information

Deleting terminal information

1. Click to apply a 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 deleted from the Trust Server.

① Apply a check mark “✓”

D-STAR Gateway System ()

REVISION

Login : Logout

Multicast Information User Information GW Information Terminal Information

Target CS ID AreaRPT CS ZoneRPT CS Filter

SEARCH RESULT: 9 Results

Target CS	AreaRPT CS	ZoneRPT CS	Receive Time (UTC)	Name	Block	List	Del
10.0.0.2	10.0.0.2	10.0.0.2	2023-10-27 10:00:00	10.0.0.2	☐	☐	☐
10.0.0.3	10.0.0.3	10.0.0.3	2023-10-27 10:00:00	10.0.0.3	☐	☐	☐
10.0.0.4	10.0.0.4	10.0.0.4	2023-10-27 10:00:00	10.0.0.4	☐	☐	☒
10.0.0.5	10.0.0.5	10.0.0.5	2023-10-27 10:00:00	10.0.0.5	☐	☐	☐
10.0.0.6	10.0.0.6	10.0.0.6	2023-10-27 10:00:00	10.0.0.6	☐	☐	☐
10.0.0.7	10.0.0.7	10.0.0.7	2023-10-27 10:00:00	10.0.0.7	☐	☐	☐
10.0.0.8	10.0.0.8	10.0.0.8	2023-10-27 10:00:00	10.0.0.8	☐	☐	☐
10.0.0.9	10.0.0.9	10.0.0.9	2023-10-27 10:00:00	10.0.0.9	☐	☐	☐
10.0.0.10	10.0.0.10	10.0.0.10	2023-10-27 10:00:00	10.0.0.10	☐	☐	☐

Update

② Click

2. The confirmation dialog is displayed. Click <OK>.

10.0.0.2

Are you sure?

Cancel OK

3. The dialog “processing was completed.” is displayed. Click <OK>.

10.0.0.2

processing was completed.

☐ Don't allow 10.0.0.2 to prompt you again

OK

Server operation for administrator

◆ Personal Information

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

- Personal information edit
- Terminal registration/deletion

Terminal registration

Up to 8 terminals can be registered.

1. Click to apply a check mark, “✓,” into the terminal’s check box to be registered.
2. Enter the initial.
 - Usable characters: A ~ F, H ~ Z, space

TIP: If you logged in as the Server administrator user, you cannot apply a check mark into the “AccessPoint” check box.

3. Click <Update>.

1 Apply a check mark “✓”

2 Enter the initial

3 Click

4. The confirmation dialog is displayed. Click <OK>.

Click

5. “processing was completed.” is displayed. Click <OK>.

Click

Terminal deletion

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

1 Apply a check mark “✓”

2 Click

2. The confirmation dialog is displayed. Click <OK>.

Click

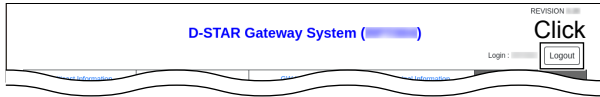
3. The dialog “processing was completed.” is displayed. Click <OK>.

Click

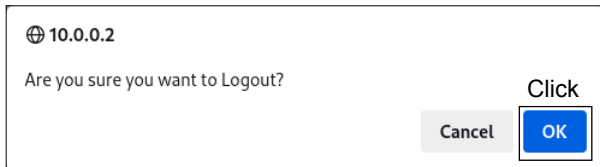
Server operation for administrator

◇ Log out

1. Click <Logout>.



2. The confirmation dialog is displayed. Click <OK>.



◇ Editing the user registration agreement

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

`/opt/products/dstar/D-STAR/agreement.txt`

If the agreement contents on the screen do not change, clear the cache.

◇ Starts/Stops gateway operation

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

1. Start up the server and log in as root.
2. Start up "Terminal" using your PC mouse.



3. Enter the desired command, as shown below.
 - To start: `>systemctl start dstar_gw.service`
 - To stop: `>systemctl stop dstar_gw.service`
 - To restart: `>systemctl restart dstar_gw.service`



4. Press [Enter] on the keyboard to start the entered command operation.



Server operation for administrator

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

The encryption key file directory

/opt/products/dstar/dstar_gw/dsipsvd/.dskey
① "." (dot) is necessary before "dskey."

When no encryption key file is stored in the designated folder, the synchronization frame should be transmitted and received in plain 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: abcdefghijklm0123456789ABCDEFGHJ

Example

A Trust Server administrator creates a different encryption key file every month and distributes it to each GW administrator by e-mail.
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.

Server operation for user

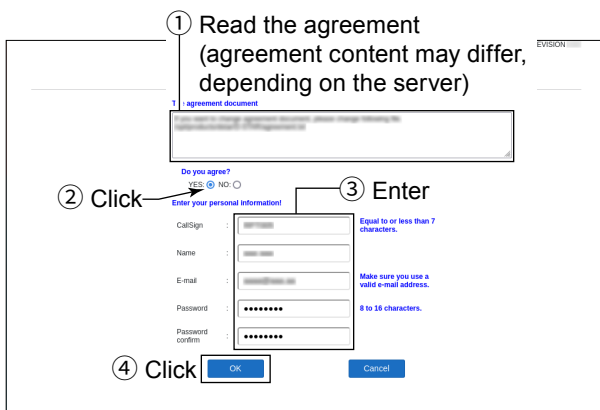
◇ Registration

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 is displayed as shown below. Carefully read the agreement.
5. If you agreed the agreement, click to apply a check mark "✓," in the radio button "Yes."
6. Enter your call sign, name, E-mail address and password, 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: Between 8 ~ 16 characters

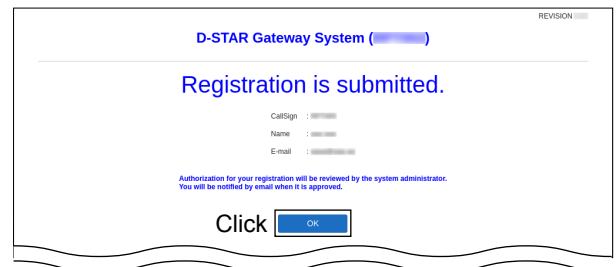
IMPORTANT!: Keep the record of the registered information as above to access the server next time for your personal information maintenance.



7. The confirmation dialog is displayed. Click <OK>.



8. The "Registration is submitted." screen is displayed. Click <OK>.



9. Wait until the gateway server administrator approves the registration.
10. Access the server again to edit your personal information.
 - ① See "◇ Log in" on page 2-22 and "◇ Personal information" on page 2-24 for details.

Server operation for user

◇ Log in

To log into the server, your registration should be approved by the server administrator.
After the registration, wait a while, then log into the gateway server again.

1. Start up the WEB browser, then enter the IP address of the server.
2. Enter the registered your call sign and password into the appropriate text boxes, then click <Login>.

◇ User Information screen

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

- User information list indication
- User information searching

User Information list

Up to 1,000 users can be displayed on the screen.
When the desired call sign cannot be found on the screen, search for the user.

User searching

You can search users with the desired criteria on this screen.

Enter the desired call sign, or a part of the call sign, into the text box, then click <Filter>.

Server operation for user

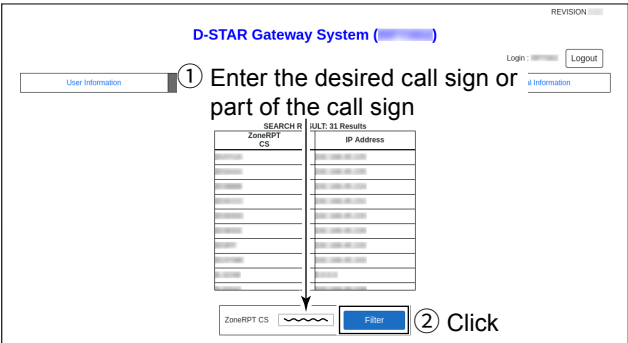
◇ **GW Information**

The following operations can be performed on 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 call sign or a part of the call sign into the text box, then click <Filter>.



◇ **Terminal Information**

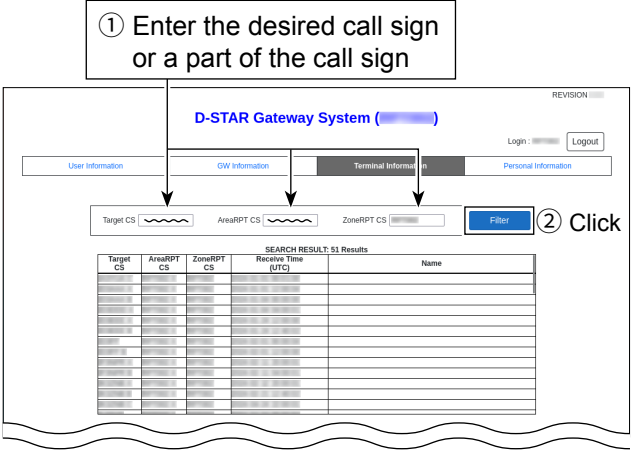
The following operations can be performed on the Terminal Information screen.

- Terminal information list indication
- Terminal information searching

Terminal information searching

Enter the desired station (user's), area and/or zone repeater's call sign or a part of the call sign into Target CS, AreaRPT CS and/or ZoneRPT CS text boxes, respectively, then click <Filter>.

- When no call sign or a part of the call sign 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.



Server operation for user

◆ Personal Information

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

- Personal information edit
- Terminal registration/deletion

Terminal registration

Up to 8 terminals can be registered.

1. Click to apply a check mark, “✓,” into the terminal’s check box to be registered.
2. Enter the initial.
 - Usable characters: A ~ F, H ~ Z, space
3. Click to apply a check mark, “✓,” into the “AccessPoint” check box to be used with the RS-MS3W or RS-MS3A.
4. Click <Update>.

D-STAR Gateway System (10.0.0.2)

Log in: [] Logout

Check the box on the left and enter or edit the desired field.

☐ Name
☐ E-mail
☐ Password
 Password Confirm: []

If the station has multiple ratios, the target call signs are distinguished by the "Initial", a space or a capital English letter, as the last character. Special reserved "Initial" letters are "G" for a gateway and "S" for a local server.

	Initial	AccessPoint	Del
1:	A	☒	☒
2:		☐	☐
3:		☐	☐
4:		☐	☐
5:		☐	☐
6:		☐	☐
7:		☐	☐
8:		☐	☐

Check the item and enter or edit the fields, then click the Update button. [Update]

5. The confirmation dialog is displayed. Click <OK>.

10.0.0.2

Are you sure?

Cancel [OK]

6. “processing was completed.” is displayed. Click <OK>.

10.0.0.2

processing was completed.

☐ Don't allow 10.0.0.2 to prompt you again

Click [OK]

Terminal deletion

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

D-STAR Gateway System (10.0.0.2)

Log in: [] Logout

Check the box on the left and enter or edit the desired field.

☐ Name
☐ E-mail
☐ Password
 Password Confirm: []

If the station has multiple ratios, the target call signs are distinguished by the "Initial", a space or a capital English letter, as the last character. Special reserved "Initial" letters are "G" for a gateway and "S" for a local server.

	Initial	AccessPoint	Del
1:	A	☒	☒
2:		☐	☐
3:		☐	☐
4:		☐	☐
5:		☐	☐
6:		☐	☐
7:		☐	☐
8:		☐	☐

Check the item and enter or edit the fields, then click the Update button. [Update]

2. The confirmation dialog is displayed. Click <OK>.

10.0.0.2

Are you sure?

Cancel [OK]

3. The dialog “processing was completed.” is displayed. Click <OK>.

10.0.0.2

processing was completed.

☐ Don't allow 10.0.0.2 to prompt you again

Click [OK]

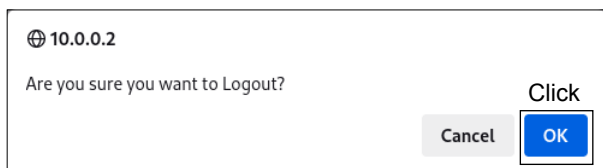
Server operation for user

◇ Log out

1. Click <Logout>.



2. The confirmation dialog is displayed.
Click <OK>.



Database maintenance (Backup and Restore)

◇ Backup

1. Start up the server and log in as root.
2. Start up “Terminal” using your PC mouse.

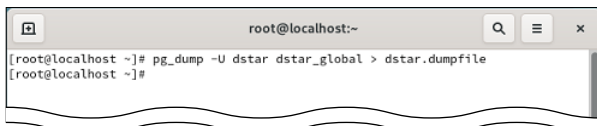


3. Enter the “# `pg_dump -U dstar dstar_global > dstar.dumpfile`” command.



TIP: “*dstar.dumpfile*” is the file name for output. It is recommended that you put the date and time in the file name.

4. Press [Enter] on the keyboard to start the entered command operation.

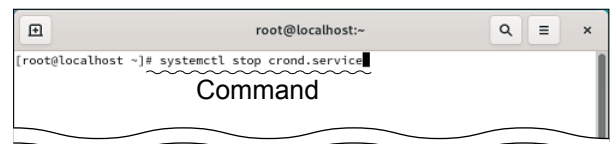


◇ Restoring

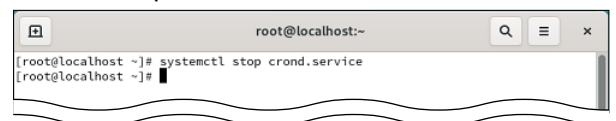
1. Start up the server and log in as root.
2. Start up “Terminal” using your PC mouse.



3. Enter the “# `systemctl stop crond.service`” command.



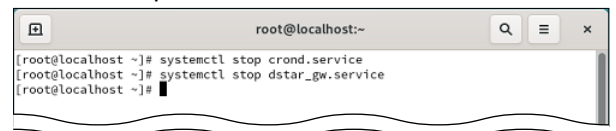
4. Press [Enter] on the keyboard to start the entered command operation.



5. Enter the “# `systemctl stop dstar_gw.service`” command.



6. Press [Enter] on the keyboard to start the entered command operation.



Database maintenance (Backup and Restore)

◇ Restoring

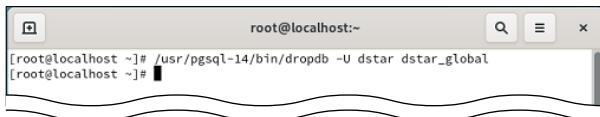
7. Enter the “# /usr/pgsql-14/bin/dropdb -U dstar dstar_global” command.



```
root@localhost:~  
[root@localhost ~]# /usr/pgsql-14/bin/dropdb -U dstar dstar_global
```

Command

8. Press [Enter] on the keyboard to start the entered command operation.



```
root@localhost:~  
[root@localhost ~]# /usr/pgsql-14/bin/dropdb -U dstar dstar_global  
[root@localhost ~]#
```

9. Enter the “# /usr/pgsql-14/bin/createdb -U dstar dstar_global” command.



```
root@localhost:~  
[root@localhost ~]# /usr/pgsql-14/bin/dropdb -U dstar dstar_global  
[root@localhost ~]# /usr/pgsql-14/bin/createdb -U dstar dstar_global
```

Command

10. Press [Enter] on the keyboard to start the entered command operation.



```
root@localhost:~  
[root@localhost ~]# /usr/pgsql-14/bin/dropdb -U dstar dstar_global  
[root@localhost ~]# /usr/pgsql-14/bin/createdb -U dstar dstar_global  
[root@localhost ~]#
```

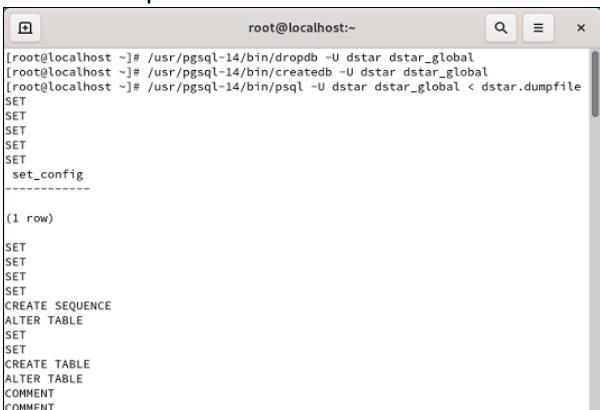
11. Enter the “# /usr/pgsql-14/bin/psql -U dstar dstar_global < dstar.dumpfile” command.



```
root@localhost:~  
[root@localhost ~]# /usr/pgsql-14/bin/dropdb -U dstar dstar_global  
[root@localhost ~]# /usr/pgsql-14/bin/createdb -U dstar dstar_global  
[root@localhost ~]# /usr/pgsql-14/bin/psql -U dstar dstar_global < dstar.dumpfile
```

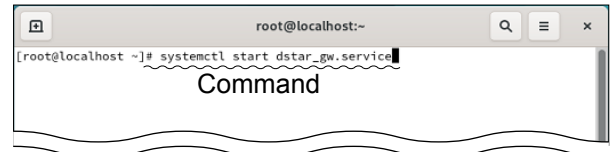
Command

12. Press [Enter] on the keyboard to start the entered command operation.



```
root@localhost:~  
[root@localhost ~]# /usr/pgsql-14/bin/dropdb -U dstar dstar_global  
[root@localhost ~]# /usr/pgsql-14/bin/createdb -U dstar dstar_global  
[root@localhost ~]# /usr/pgsql-14/bin/psql -U dstar dstar_global < dstar.dumpfile  
SET  
SET  
SET  
SET  
set_config  
-----  
(1 row)  
  
SET  
SET  
SET  
SET  
CREATE SEQUENCE  
ALTER TABLE  
SET  
SET  
CREATE TABLE  
ALTER TABLE  
COMMENT  
COMMENT
```

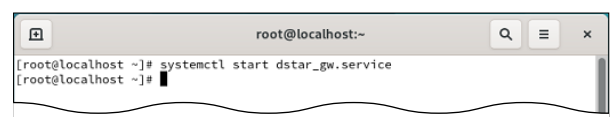
13. Enter the “# systemctl start dstar_gw.service” command.



```
root@localhost:~  
[root@localhost ~]# systemctl start dstar_gw.service
```

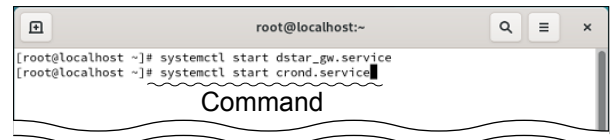
Command

14. Press [Enter] on the keyboard to start the entered command operation.



```
root@localhost:~  
[root@localhost ~]# systemctl start dstar_gw.service  
[root@localhost ~]#
```

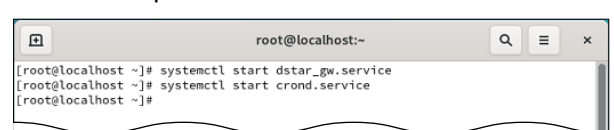
15. Enter the “# systemctl start crond.service” command.



```
root@localhost:~  
[root@localhost ~]# systemctl start dstar_gw.service  
[root@localhost ~]# systemctl start crond.service
```

Command

16. Press [Enter] on the keyboard to start the entered command operation.



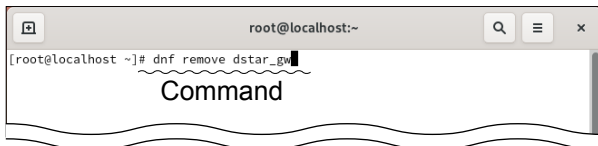
```
root@localhost:~  
[root@localhost ~]# systemctl start dstar_gw.service  
[root@localhost ~]# systemctl start crond.service  
[root@localhost ~]#
```

Uninstallation

1. Start up the server and log in as root.
2. Start up "Terminal" using your PC mouse.



3. Enter the "`# dnf remove dstar_gw`" command, as shown below.

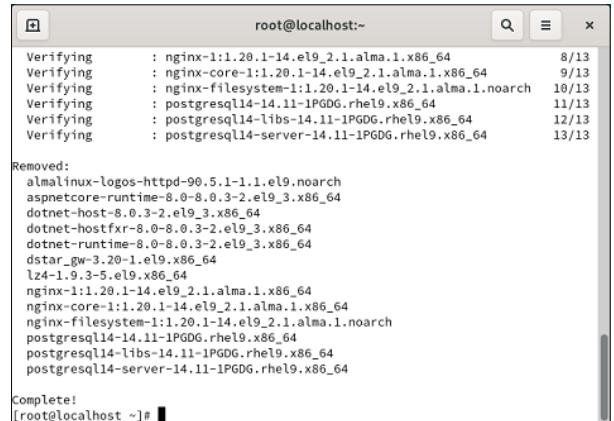


4. Press [Enter] key on the keyboard.



5. To start uninstalling the software, enter "y," and then press [Enter] key to start uninstallation.
 ① To cancel uninstalling, enter "n," then press [Enter] key.

6. The message "Complete!" is displayed when the uninstall is completed.



- ① If dstar_gw or dstar_gw_gpg is not uninstalled, uninstall respectively.

