

Icom G3 Gateway Software Installation Instructions

Addendum to the Icom G3 Installation Procedures

nj6n 2024-05-17

Purpose of this document	1
Icom Support & Documentation	2
Backup your current ICOM gateway database	2
Example Backup	3
Linux Installation	4
Download & Burn AlmaLinux ISO Image to CD/DVD	4
Update AlmaLinux	4
Router Configuration	4
IPtables, FirewallID, SELinux	5
G3 Installation	5
Copy ICOM software from distribution media / zip archive	5
Copy Gateway backup file to new gateway	5
Download the G3 Installer from DSync.dstar.info	6
Installer Command Line Options	6
Run the installation script	6
Registration for NEW installations	7
Support	7
Example Installation	7

Purpose of this document

These instructions and associated scripts will guide you through the process of **upgrading from an existing G2 or G3 3.0/3.1 gateway** system by backing up and installing / configuring a new ICOM G3 gateway, **or Installing G3 Version 3.2 from scratch**, without having to manually edit any configuration files. NOTE: For upgrade or new installations, these instructions are to be used with a clean installation of **AlmaLinux 9**.

Icom ID-RP2010V, ID-RP4010V, and ID-RP1200VD repeaters

The latest version of g3_installer (v 3.2) supports Icom's new ID-RP2010V, ID-RP4010V, ID-RP1200VD repeaters. The repeaters have integrated repeater controllers. You MUST set the repeaters and integrated controller up as explained in the Icom SETTING GUIDE and INSTRUCTION MANUAL.

Note: Version 3.2 implements stronger encryption for storing user passwords. An updated *unsync_user_mng* table schema is used to facilitate this change. The conversion from the old schema and MD5 password storage to the new schema and stronger encryption is automatic.

Icom G3 Gateway Software Installation Instructions

Addendum to the Icom G3 Installation Procedures

nj6n 2024-05-17

Icom Support & Documentation

Please visit the Icom Customer Support Knowledge Base for information and documentation on the installation of G3: <http://icom.custhelp.com/app/home> (Search "G3")

The Official Icom Documentation is here: [RSRP3C Gateway Control Software Setup](#)

Backup your current ICOM gateway database

* Skip to **Linux Installation** if you are installing a new gateway

- It is very important that the gateway administrator creates a backup of the gateway's current user registration database, configuration files, etc. Complete user information (name, password, email address) is not shared with other gateways or the trust server
- Icom recommends doing a full database backup using the "pg_dump" command.
- Use ssh/PuTTY, or otherwise open a terminal window and login to your gateway system

```
cd /tmp
```

```
pg_dump -U dstar dstar_gLobal > dstar.database.YYMMDD
```

- replace **YYMMDD** with the current date
- copy the backup file to a USB drive or use **scp** to copy it to another system for safe keeping.
- The backup can be done by any user and does not require root.
- You should also run the backup script described in the steps below.
- A remote backup server has been set up to simplify the database migration process by saving a temporary backup of your current gateway. A keyword is used to obfuscate the backup file name so that it can't be found by others.
 - Directory listing on the backup site has been disabled as well.
- Note:
 - **The backup will only be saved for 30 days. Make sure you also keep a local copy of your backup.**
 - dplus (dv/dvrec) files over 10 kilobytes will not be included in the backup
- Use ssh/PuTTY, or otherwise open a terminal window and login to your gateway system
- Become root (**su - / sudo -i**)
- Run the following commands:

```
cd /tmp
```

```
curl -O dsync.dstar.info/G3/g2_upgrade_backup
```

```
chmod 755 g2_upgrade_backup
```

```
./g2_upgrade_backup
```

Icom G3 Gateway Software Installation Instructions

Addendum to the Icom G3 Installation Procedures

nj6n 2024-05-17

Example Backup

```
[root@k6vo tmp]# curl -O dsync.dstar.info/G3/g2_upgrade_backup
[root@k6vo tmp]# chmod 755 g2_upgrade_backup
[root@k6vo tmp]# ./g2_upgrade_backup
Creating backup of: K6VO
```

```
Enter a 4-8 character keyword (numbers and letters only) to
identify this backup during the upgrade process: g2
Backing up to: K6VO-g2-backup.tgz
```

```
Okay to send copy of backup to NJ6Ns web server for restoration
during upgrade phase?: [Y/n]:
Sending backup...
```

```
Upload: K6VO-g2-backup.tgz
Type: application/octet-stream
Size: 819.73 Kb
Backup File: K6VO-g2-backup.tgz has been sent to remote server for
G3 upgrade process.
There is a copy of this file in /tmp for you to keep as a backup
copy.
Please note - this is NOT a full system backup - you may wish to
keep the current disk as a backup, or make a backup copy before
erasing.
```

- Verify the backup contains your `unsync_user_mng` table using the following command:

```
tar -Ptzf K6VO-g2-backup.tgz /dstar/backups
/dstar/backups/
/dstar/backups/unsync_multicast_mng.170102_071338.csv
/dstar/backups/unsync_user_mng.170102_071338.csv
```

- Your gateway data is now backed up to a private web server
- You should **also copy this backup file to a thumb drive**, or other offline storage location
- Before booting your new G3 gateway, it is VERY IMPORTANT that you shut down your current G2 gateway: `shutdown -h now`

Icom G3 Gateway Software Installation Instructions

Addendum to the Icom G3 Installation Procedures

nj6n 2024-05-17

Linux Installation

- We recommend installing G3 on a new computer system that meets Icom's specifications. Refer to the installation instructions that are included with the Icom Installation files.

Download & Burn AlmaLinux ISO Image to CD/DVD

- To install AlmaLinux 9, 64 bit on 64-bit capable hardware
 - Download the "AlmaLinux OS 9.3 DVD ISO" from the AlmaLinux web site:
<https://almalinux.org/get-almalinux/>
- An [Installation Guide](#) is available on the AlmaLinux Wiki
- Configure two network interfaces, one that connects the system to the Internet(external) and one that connects to the Icom repeater modules (internal).
 - The Internet-facing network interface is typically assigned a private IPv4 address (e.g. 10.0.0.1) and relies upon a router (aka "gateway") to forward the necessary ports as described in the next section.
 - The repeater module (internal) network should be configured with an IPv4 address of **172.16.0.20/24**
 - The repeater controller IP address will be **172.16.0.1**
- Once the system has finished rebooting, confirm that it works as expected
- Open a terminal window, log in as **root** with the password that was set during installation

Update AlmaLinux

- Install the latest AlmaLinux updates:
 - `sudo -i`
 - `dnf -y update`
 - `reboot`
- Once the system has rebooted, log in as root, or otherwise open a terminal/shell window as the root user (e.g. use `sudo -i`)

Router Configuration

- ICOMs G3 software requires the following ports to be forwarded through your Internet router, to the gateway system. Note: For G3, two additional ports have been added in support of the Terminal and Access point modes in Icom's newer transceivers.

Port Number / Range	Protocol	Usage	Configuration Reference
20001-20005	TCP UDP	Data Sync, dplus	PORT_SYNC (dsipsvd.conf)

Icom G3 Gateway Software Installation Instructions

Addendum to the Icom G3 Installation Procedures

nj6n 2024-05-17

40000	UDP	DV Voice Data Transfer	GW_VCPORT (dsgwd.conf)
40001	TCP	Data Transfer	GW_DTPORT (dsgwd.conf)
443	TCP	Web interface https	
12345	UDP	Position Request	PORT_SEARCH (dsipsvd.conf)
12346	UDP	Position Registration	PORT_RENEWAL (dsipsvd.conf)

- A test will be performed by the g3_installer script to make sure all of the ports mentioned above are forwarding to the gateway server properly.

IPtables, FirewallD, SELinux

- The Icom RPM software installation **disables** the *firewalld* and *selinux* services.
- You may wish to reestablish these protective services, but doing so is outside of the scope of this document, and is recommended for experienced Linux admins.

G3 Installation

- A script has been developed to install and configure the ICOM G3 software.
- The backup made using the instructions above will be used to restore the Gateway's user database (the *unsync_user_mng* database table) and other configuration information.
- For **New Installations**, the script will ask for an Administrator Name and password for controlling access to the web administration pages.

Copy ICOM software from distribution media / zip archive

- If a ZIP archive was supplied with the ICOM G3 RPMs, copy it to the /tmp directory
 - The filename should be **RS-RP3C_Rev3.20.zip**
- Alternatively unzip the archive and copy the following RPMs to /tmp:
 - **dstar_gw_gpg-3.20-3.noarch.rpm**
 - **dstar_gw-3.20-8.el9.x86_64.rpm**
- Note: the versions you receive may be newer (e.g. 3.20-9, etc.):

Copy Gateway backup file to new gateway

- Skip this section for new installations
- If the gateway was not backed up to the private server described above, you will need to copy the backup file created in the first step to **/tmp**.

Icom G3 Gateway Software Installation Instructions

Addendum to the Icom G3 Installation Procedures

nj6n 2024-05-17

- Note: A backup done using the **pg_dump** utility cannot be used to restore the database through the g32_installer script currently.
- The filename is case sensitive and is in the following format:
 - *GWCALL-keyword-backup.tgz* (e.g. *K6MDD-g2.backup.tgz*)
- NOTE: If you uploaded your backup, you may continue to the next step, it will be retrieved from the backup server.

Download the G3 Installer from DSync.dstar.info

- Download installer using curl minus capital O, not zero:
 - `cd /tmp`
 - `curl -O dsync.dstar.info/G3/g32_installer`
 - `chmod 755 g32_installer`

Installer Command Line Options

- To skip running the **IP Port Test**, run the installer with the **-n** option:
 - `./g32_installer -n`
- If your RP2C is configured with an IP address other than the default of 172.16.0.20, you can override the default using the **-z** option:
 - `./g32_installer -z 172.16.0.10`
- If your Internet gateway router is **not** configured as 10.0.0.1, you can specify the IP address of your gateway using the **-g** option:
 - `./g32_installer -g 192.168.10.1`
- If you need to change any configuration settings without reinstalling Icom software at a later date, you may re-run the installer with the **-r** option:
 - `./g32_installer -r`
- Command line options can be combined as needed

Run the installation script

- Run the installation script to install and configure the G3 software:
 - `./g32_installer`
- Follow the prompts to configure your gateway and restore the user database
 - Note: for new installations, you will be prompted to enter the administrative user (the gateway callsign in CAPITAL LETTERS) and administrative password through the ICOM `add_user_mng.sh` script.
- When the installer completes, the gateway needs to be rebooted - press <RETURN> when prompted.
- The `dsgwd.conf` and `dsipsvd.conf` configuration files are edited by the `g32_installer` script using your input.
- The last step is not necessary during an upgrade and **should only be done for a new installation** because you are not restoring from a backup.

Icom G3 Gateway Software Installation Instructions

Addendum to the Icom G3 Installation Procedures

nj6n 2024-05-17

- If your gateway is already registered, Look in `/var/log/dsipsvd.log` for gateway synchronization status - you should see the “**SYNC_DB_SYNC**” message with no subsequent error messages following it.
- After 15-30 minutes, your gateway should have reported its status to the DSync server: http://dsync.dstar.info/gw_status.php?gw=GWCALL
- **Important:** If your gateway has been previous deleted, or was previously registered as a regular user, the trust server database may need to be manually updated by an administrator before your gateway will synchronize properly

Registration for NEW installations

- Before attempting to register a new gateway, make sure that **you have registered with the DStarUsers.org** site:
 - <http://dstarusers.org/dlist/dashboard.php?task=register>
- To request trust server authorization for your new gateway, **you must fill out the registration form here:**
 - <http://dsync.dstar.info/registerG3/>

Support

- If you run into problems with the installation, you can email the gateway administrators group mailing list: ***dstar-admins@groups.io***

Example Installation

```
[root@localhost tmp]# ./g32_installer -g 10.1.1.1 -n
Sun May 12 14:55:08 PDT 2024 ICOM G3 Gateway Upgrade Installer, Version = 4.2
Sun May 12 14:55:08 PDT 2024 ./g32_installer Starting, Log file =
/tmp/G3-Installation-240512-145508.log
Sun May 12 14:55:08 PDT 2024 Found /tmp/RS-RP3C_Rev3.20.zip, continuing...
Sun May 12 14:55:08 PDT 2024 Installing required packages
Sun May 12 14:55:08 PDT 2024 Installing: dos2unix ... DONE
Sun May 12 14:55:08 PDT 2024 Installing: unzip ... DONE
Sun May 12 14:55:09 PDT 2024 Installing: chrony ... DONE
Sun May 12 14:55:09 PDT 2024 Installing: net-tools ... DONE
Sun May 12 14:55:10 PDT 2024 Installing: wget ... DONE
Sun May 12 14:55:11 PDT 2024 Installing: tar ... DONE
Sun May 12 14:55:11 PDT 2024 Installing: javapackages-filesystem ... DONE
Sun May 12 14:55:12 PDT 2024 Installing: java-11-openjdk-headless ... DONE
Sun May 12 14:55:12 PDT 2024 Installing: javapackages-tools ... DONE
Sun May 12 14:55:13 PDT 2024 Installing: nss ... DONE
Sun May 12 14:55:14 PDT 2024 Installing: libpcap ... DONE
Sun May 12 14:55:14 PDT 2024 Downloading IP Port Test Utility ... DONE
```

Icom G3 Gateway Software Installation Instructions

Addendum to the Icom G3 Installation Procedures

nj6n 2024-05-17

```
Sun May 12 14:55:17 PDT 2024 Skipping IP Port Test
Sun May 12 14:55:17 PDT 2024 Please confirm your rp2c configuration is correct
Sun May 12 14:55:22 PDT 2024 Installing ICOM G3 Gateway Software
Sun May 12 14:55:22 PDT 2024 Installing dstar_gw_gpg-3.20-1.noarch.rpm
Sun May 12 14:55:23 PDT 2024 Installing Postgres
Sun May 12 14:55:24 PDT 2024 Installing ./dstar_gw-3.20-1.el9.x86_64.rpm ...
```

Please enter gateway callsign, e.g. AB9CDE (enter Q to quit): [K6VO]

```
Sun May 12 14:55:52 PDT 2024 Setting ZR_CALLSIGN = K6VO in
/opt/products/dstar/dstar_gw/dsipsvd/dsipsvd.conf
Sun May 12 14:55:52 PDT 2024 Valid TRUST_SERVER: rootg3.dstarusers.org
Sun May 12 14:55:53 PDT 2024 Valid GW_ETHINFNAME: eno1
Sun May 12 14:55:53 PDT 2024 Valid ZR_ADDR: 172.16.0.1
Sun May 12 14:55:53 PDT 2024 Valid DNS_ADDR: 10.1.1.1
Sun May 12 14:55:53 PDT 2024 Valid DNS_MAC: 64-d1-54-69-e0-73 = 64-d1-54-69-e0-73
Sun May 12 14:55:53 PDT 2024 Setting DSGWD ZR_CALLSIGN = K6VO in
/opt/products/dstar/dstar_gw/dsgwd/dsgwd.conf
Sun May 12 14:55:53 PDT 2024 Installing gw_schedule and updater scripts
Sun May 12 14:55:55 PDT 2024 Installing DSync crontab
```

Enter the keyword that you used when creating Gateway backup (not the gateway call),
<RETURN> for none: zz

```
Sun May 12 14:55:57 PDT 2024 Using backup file: K6VO-zz-backup.tgz
Sun May 12 14:55:57 PDT 2024      4 records found in MNG table
Sun May 12 14:55:57 PDT 2024 Installing dplus
Sun May 12 14:56:01 PDT 2024 Setting dplus external ethernet = eno1 in
/dstar/tools/dplus.conf
Sun May 12 14:56:01 PDT 2024 Setting dplus internal ethernet = enp1s0 in
/dstar/tools/dplus.conf
Sun May 12 14:56:04 PDT 2024 Installing dstargateway.org Certificate ...
Sun May 12 14:56:04 PDT 2024 nginx configuration backed up to
/etc/nginx/nginx.conf.240512-145604 ...
Sun May 12 14:56:04 PDT 2024 Moving /opt/dstarmon to /opt/dstarmon-20240512-145508 ...
Sun May 12 14:56:05 PDT 2024 Copying dstarmonitor.properties from backup to
/opt/dstarmon/dstarmonitor.properties
Sun May 12 14:56:05 PDT 2024 Downloading DstarMonitor distribution ...
Sun May 12 14:56:06 PDT 2024 Updating GWIntf to enp1s0
Sun May 12 14:56:06 PDT 2024 Updating CtrlrIP to 172.16.0.1
Sun May 12 14:56:06 PDT 2024 Updating Callsign to K6VO
Sun May 12 14:56:06 PDT 2024 Installing dsm systemd unit file
Sun May 12 14:56:06 PDT 2024 DStarMonitor Installation Complete

Sun May 12 14:56:06 PDT 2024 **** ICOM G3 Installation Complete ****
```

Gateway server must be rebooted now, press <RETURN> to reboot

Icom G3 Gateway Software Installation Instructions

Addendum to the Icom G3 Installation Procedures

nj6n 2024-05-17