

Icom G3 Gateway Software Installation Instructions

Addendum to the Icom G3 Installation Procedures

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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 upon restart of the gateway software.

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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.
 - User information (name, password, email address) is not shared with other gateways or the trust server, it only exists on each gateway server.
- A remote backup server has been set up to simplify the database migration process by saving a temporary backup of your gateway data. 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.
 - **The backup will only be saved for 30 days.**
 - **Make sure you also keep a local copy of your backup!**
 - dplus (dv/dvrec) files under 10 kilobytes each will be included in the backup
- Use ssh/PuTTY, or otherwise open a terminal window and log in to your gateway system
- Become root (`su - / sudo -i`)
- Run the following commands:

```
cd /tmp
curl -O dsync.dstar.info/G3/gw_upgrade_backup
chmod 755 gw_upgrade_backup
./gw_upgrade_backup
```

Example Backup

```
[root@k6vo tmp]# curl -O https://dsync.dstarusers.org/G3/gw_upgrade_backup
[root@k6vo tmp]# chmod 755 gw_upgrade_backup
[root@k6vo tmp]# ./gw_upgrade_backup
Creating backup of: K6VO
```

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

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

Sending backup...

Upload: K6VO-abcd-backup.tgz

Type: application/octet-stream

Size: 6454.91 Kb

Backup File: K6VO-abcd-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-abcd-backup.tgz /dstar/backups
[root@k6vo tmp]# tar -Ptzf K6VO-abcd-backup.tgz /dstar/backups
/dstar/backups/
/dstar/backups/unsync_multicast_mng.240602_171632.csv
/dstar/backups/unsync_user_mng.240602_171632.csv
/dstar/backups/K6VO-dump.240602_171632
```

- 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

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 9.4 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. 10.0.0.2/8) and relies upon a router (aka "gateway") to forward the necessary ports as described in the next section.

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- 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 gateway software requires that the following ports are forwarded through your Internet router, to the gateway system:

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

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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 from your backup media/location to the `/tmp` directory on the new server.
- The filename is case sensitive and is in the following format:
 - *GWCALL-keyword-backup.tgz* (e.g. *K6SOA-upgrade.backup.tgz*)
- NOTE: If you uploaded your backup to the backup server, you may continue to the next step, it will be retrieved from the backup server.

Download the G3 version 3.2 Installer from <https://dsync.dstarusers.org>

- Download installer using curl minus capital O, not zero:
 - `cd /tmp`
 - `curl -O https://dsync.dstarusers.org/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`

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- 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.
- If your gateway is already registered, Look in (tail/cat/more) `/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:
 - https://dsync.dstarusers.org/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.dstarusers.org/registerG3/>

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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
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
```

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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 = enol in
/dstar/tools/dplus.conf

Sun May 12 14:56:01 PDT 2024 Setting dplus internal ethernet = enpls0 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 enpls0

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