Icom G3 Gateway Software Installation Instructions

Addendum to the Icom G3 Installation Procedures
nj6n 2022-08-19

Purpose of this document

These instructions and associated scripts will guide you through the process of **upgrading from an existing G2 gateway** system by backing up and installing / configuring a new ICOM G3 gateway, **or Installing G3 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 **minimal** installation of **CentOS 7**.

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

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the repeaters and integrated controller up as explained in the Icom SETTING GUIDE and
INSTRUCTION MANUAL.

Upgrading from G3 version 3.0?

If you are upgrading from a previous version of G3, you will need to remove the old version of
G3 as well as Postgres 9.4 before running this installer with the new version 3.10 RPMs from
Icom.

1. Backup your user database
2. Stop all of the gateway daemons
3. Erase the old versions:
    a. rpm -e dstar_gw
    b. yum -y remove postgres*
    c. yum -y remove pgdg*
    d. rm -rf /var/lib/pgsql
    e. rpm -e tomcat
4. Obtain the version 3.10 software from Icom
5. The g3_installer should now be able to install version 3.10 for you.

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 G2 gateway

* Skip to **CentoS Installation** for new Installation

- 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
- 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`)

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- Run the following commands:

```
cd /tmp
curl -O dsync.dstar.info/G3/g2_upgrade_backup
chmod 755 g2_upgrade_backup
./g2_upgrade_backup
```

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`

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CentOS Installation

- We recommend installing G3 on a new gateway system that meets ICOM's specifications. Refer to the installation instructions that are included with the ICOM Installation files.
- Install CentOS 7, 64 bit using the minimal ISO described below

Download & Burn CentOS ISO Image to CD/DVD

- To install CentOS 7, 64 bit on 64-bit capable hardware
    - Download the "minimal ISO" from the CentOS web site:
      https://www.centos.org/download/
        i. Click on x86_64
        ii. Choose a Mirror site, e.g.
        http://linux.mirrors.es.net/centos/7.9.2009/isos/x86_64/
        iii. Download the ISO Image named "*CentOS-7-x86 64-Minimal-2009.iso*"

Index of /7.9.2009/isos/x86_64

Name	Last modified	Size	Description
Parent Directory		-	
0_README.txt	06-Nov-2020 06:32	2.4K	
CentOS-7-x86_64-DVD-2009.iso	04-Nov-2020 03:37	4.4G	
CentOS-7-x86_64-DVD-2009.torrent	06-Nov-2020 06:44	176K	
CentOS-7-x86_64-Everything-2009.iso	02-Nov-2020 07:18	9.5G	
CentOS-7-x86_64-Everything-2009.torrent	06-Nov-2020 06:44	381K	
CentOS-7-x86_64-Minimal-2009.iso	03-Nov-2020 06:55	1.0G	
CentOS-7-x86_64-Minimal-2009.torrent	06-Nov-2020 06:44	39K	
CentOS-7-x86_64-NetInstall-2009.iso	26-Oct-2020 09:26	575M	
CentOS-7-x86_64-NetInstall-2009.torrent	06-Nov-2020 06:44	23K	
sha256sum.txt	04-Nov-2020 03:38	398	
sha256sum.txt.asc	06-Nov-2020 06:37	1.2K	

Apache/2.2.3 (CentOS) Server at centos.mirror.ndchost.com Port 80

        iv.
    - Burn the ISO image onto a CD/DVD using an ISO to CD/DVD tool

Boot Installer from CD/DVD

○ Boot the DVD/CD - you will see a screen like this:


```
                              CentOS 7


    Install CentOS 7
    Test this media & install CentOS 7

    Troubleshooting                                          >


     Press Tab for full configuration options on menu items.
```
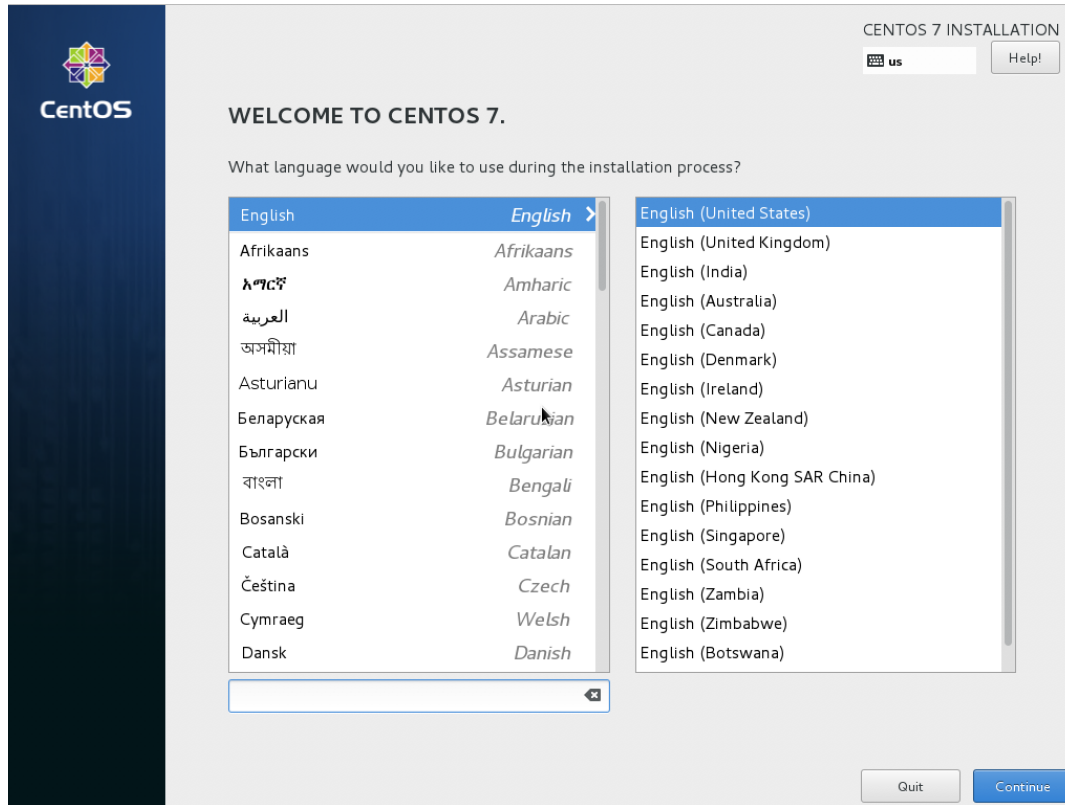
● Selecting either option is fine. Testing the media is a good idea if you have time
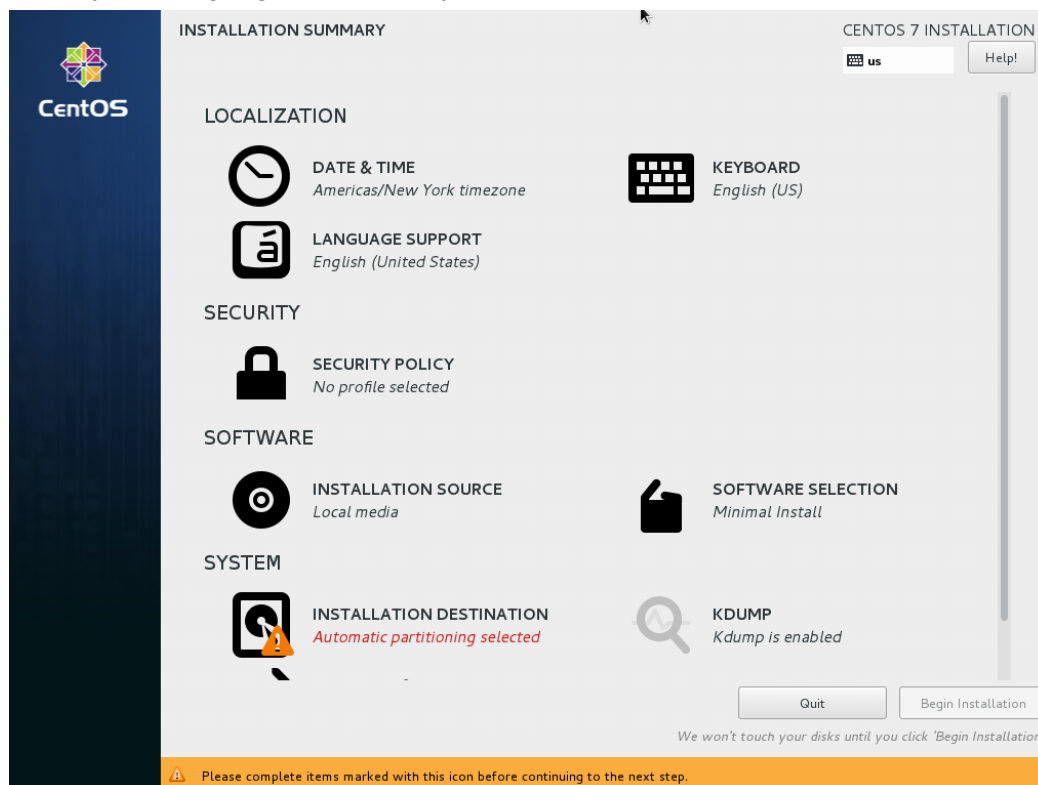● Next, you will be presented with the Welcome screen and configuration menus:

- Select your Language and Country and press Continue

- At this point, you should configure **Date & Time zone (Select the gateway location)**

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- Configure the **Installation Destination** - select the drive to install on, confirm erasing the disks current contents, then Save the settings.
- Click on **Done** to save the selections
- IMPORTANT - scroll down to configure networking (**Network & Host Name**):
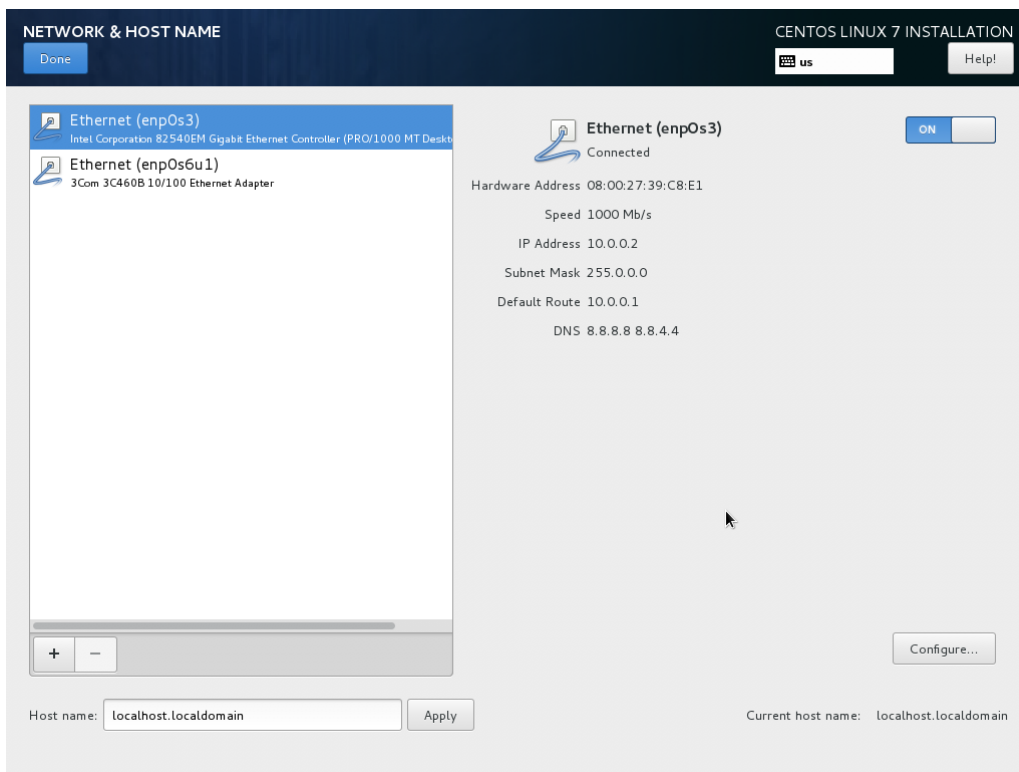

- Configure the interface that's connected to the Internet router (this is the "External Interface)":
    - Enable the interface using the "ON/OFF" slider.
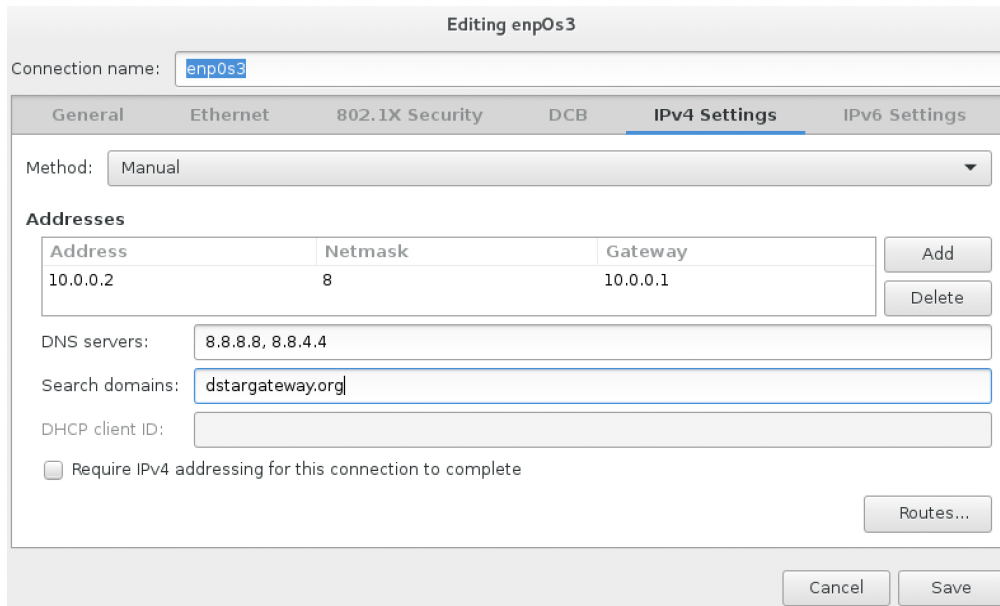   - Click **Configure** in the lower right hand corner

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- ○ Under IPv4 Settings, select "**Manual**" from the **Method:** pull-down list
- ○ Click **Add** to add the IP address, netmask, and gateway settings

- ○ Enter **10.0.0.2** with gateway (default route) of **10.0.0.1** and DNS servers set to: **8.8.8.8** and **8.8.4.4**. Enter both addresses separated by a single space.
- ○ Confirm the Netmask is set to "**8**"
- ○ Under the *General* tab, select "Automatically connect to this network when it is available"

- ○ Click **Save** to save the LAN interface settings

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- Configure the interface that's connected to the ICOM RP2C controller using the same method.
    - Enable this interface using the "ON/OFF" slider
    - Click *Configure*
    - Under IPv4 Settings, select "**Manual**" from the **Method:** pull-down list
    - Click **Add** to add the IP address, and Netmask settings:

- Enter **172.16.0.20**
    - Update the Netmask to "**24**". Leave *Gateway*, *DNS*, *Search domains* blank
    - Under the *General* tab, select "Automatically connect to this network when it is available"

- Click **Save** to save the LAN settings

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- Click **Done** to complete this step and go back to the *Installation Summary* screen
- Click **Begin Installation**
- A menu will be displayed to allow the administrator to set the root password and optionally create a user account, while the installation is in progress:

- Enter a strong root password
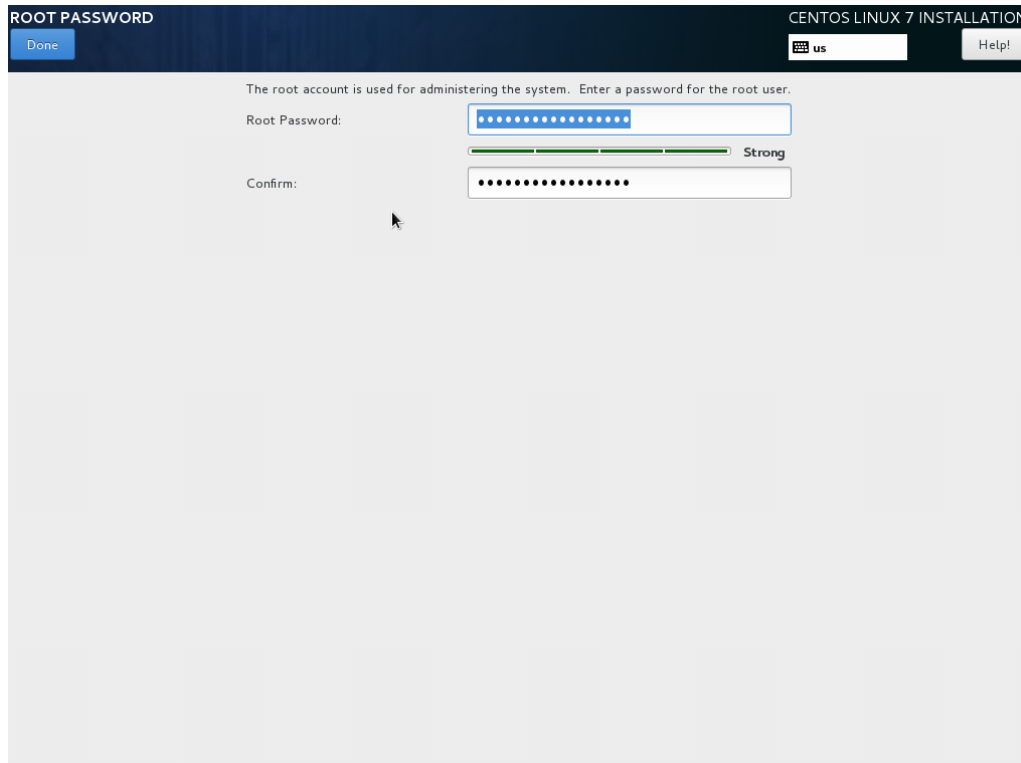
- It's a good idea to also add a user account with administrator privileges:
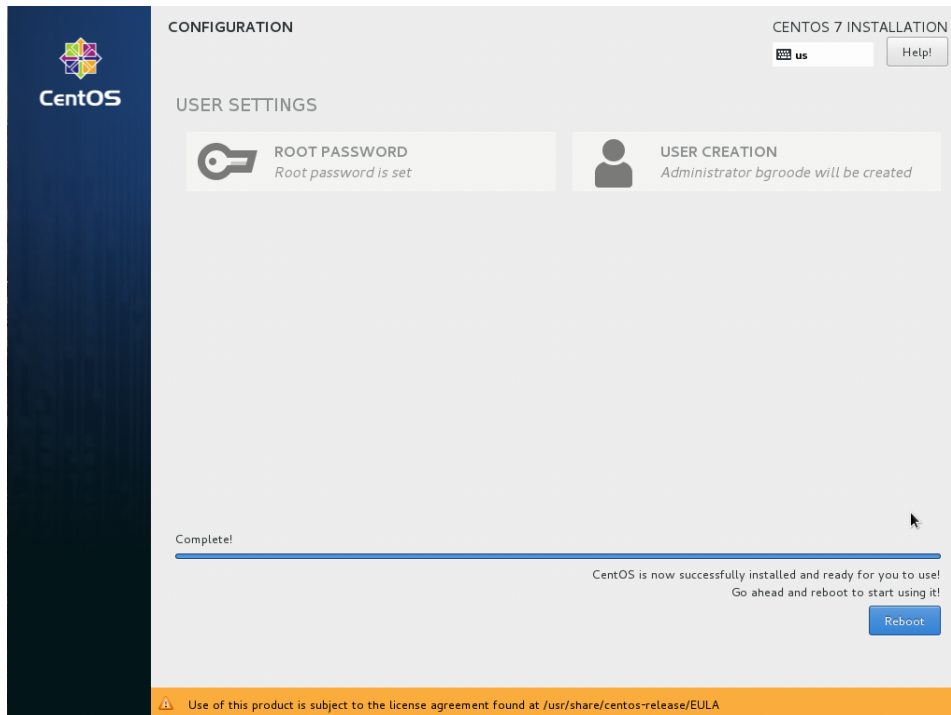
- Once the steps above are complete, , click **Reboot**:

- Once the system has finished rebooting**,** confirm that it works as expected
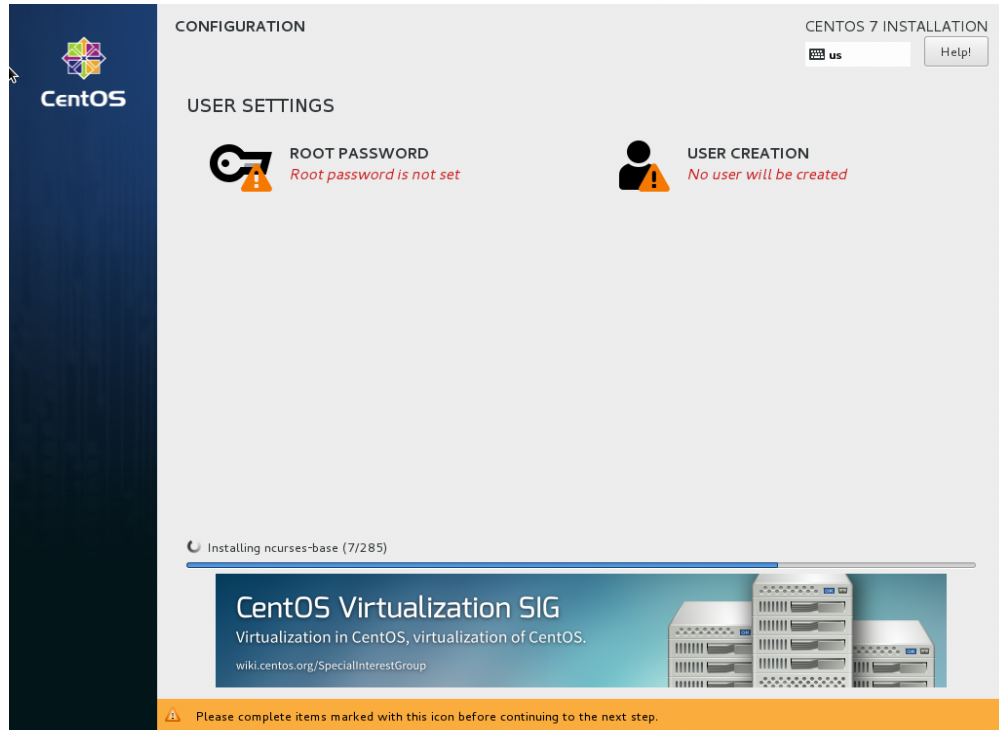- Open a terminal window, log in as **root** with the password that was set during installation

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Update CentOS

- Install the latest CentOS updates:
    - `yum -y update`
    - `/sbin/reboot`
- Once the system has rebooted, log in as root, or otherwise open a terminal/shell window as the root user

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 new features of the ID-51A Plus2 transceiver.

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 re-establish these protective services, but doing so is outside of the scope of this document, and is recommended for experienced Linux admins.

G3 Installation

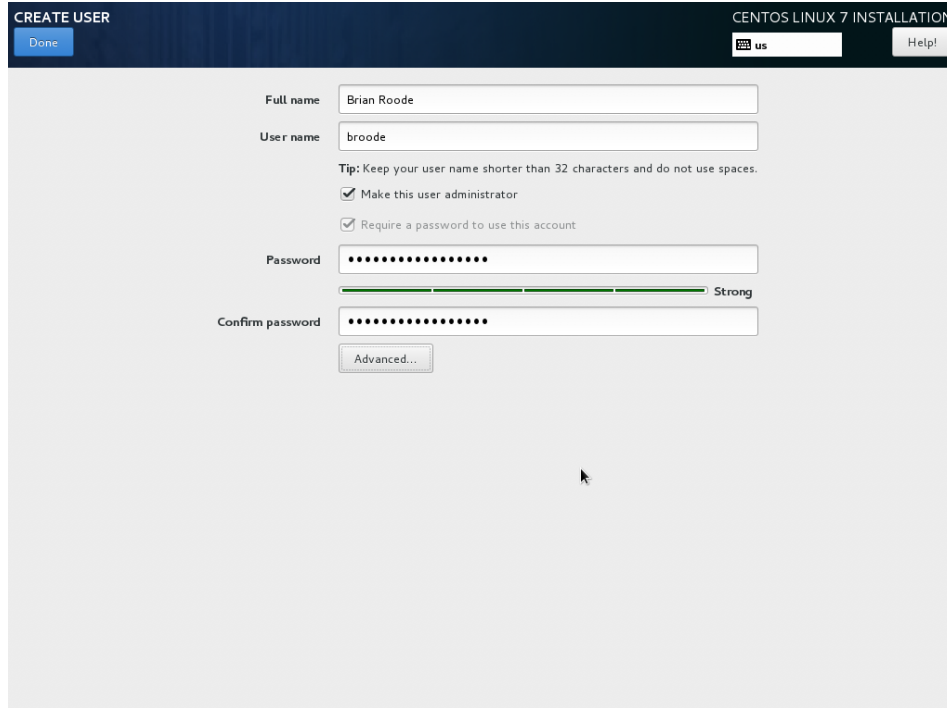- A script has been developed to install and configure the ICOM G3 software.

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- The backup made using the instructions above will be used to restore the Gateway's G2 user database (the unsync_user_mng database table) and other configuration information.
- For *New Installations*, the script will ask for the Administrator information and configure the database accordingly.

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 **G3.zip**
- Alternatively unzip the archive and copy the following RPMs to /tmp:
    - Note: the versions you receive may be newer (e.g. 3.10-9, etc.):
  - **dstar_gw_gpg-3.10-3.noarch.rpm**
  - **ddstar_gw-3.10-8.el7.x86_64.rpm**

Manually Restore 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**.
- The filename is case sensitive and is in the following format:
  - *GWCALL-keyword-backup.tgz (e.g. K6MDD-g2.backup.tgz)*
- If you uploaded your backup, you may continue to the next step

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/g3_installer`
  - `chmod 755 g3_installer`

Installer Command Line Options

- To skip running the *IP Port Test*, run the installer with the **-n** option:
  - `./g3_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:
  - `./g3_installer -z 172.16.0.10`
- If your gateway is *not* configured for 10.0.0.1, you can specify the IP address of your gateway using the **-g** option:
  - `./g3_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:
  - `./g3_installer -r`

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- Command line options can be combined as needed

Run the installation script

- Run the installation script to install and configure the G3 software:
  - `./g3_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.
- Note: No action is required in response to the ICOM RPM installation message:

```
################################################################
# Change directory 'cd /opt/products/dstar/dstar_gw/'         #
# and edit the './dsgwd/dsgwd.conf and ./dsipsvd/dsipsvd.conf' #
# and execute 'sh ./dsipsvd/add_user_mng.sh'.                 #
################################################################
```

  - The dsgwd.conf and dsipsvd.conf configuration files are edited by the *g3_installer* script using your input.
  - The last step is not necessary during an upgrade and should only be done for a new installation when you are not restoring from a backup.
- At this point, the gateway administrator may need to ask the D-STAR Registration folks to reset your gateway synchronization date to the EPOCH. Send an email to:
  - **dstar-registration@googlegroups.com**
- 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, 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/

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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]# ./g3_installer
Mon Jan 2 14:44:18 PST 2017 ICOM G3 Gateway Upgrade Installer, Version = 1.6
Mon Jan 2 14:44:18 PST 2017 Found G3.zip Archive.
Mon Jan 2 14:44:18 PST 2017 Installing "unzip" utility and unzipping...
Mon Jan 2 14:44:18 PST 2017 ./g3_installer Starting, Log file =
/tmp/G3-Installation-170102-144418.log
Mon Jan 2 14:44:21 PST 2017 Installing required packages
Mon Jan 2 14:44:21 PST 2017 Gateway router has passed the port forwarding test
Mon Jan 2 14:44:21 PST 2017 Please confirm your rp2c configuration is correct
+----------General-------------++----------Gateway---------------+
|  Firmware    : Ver2.18       ||  Status      : Used            |
|  Callsign    : "K6VO    "    ||  IP Address  : 172.16.0.20     |
|  Repeater ID : 1             ||  Port No.    : 20000           |
+-----------------------------++-------------------------------+
+----------Local RPT-----------++----RPT Communication Settings---+
| (CONT I/O No.=>1:2:3:4)      ||  IP Address  : 172.16.0.1      |
|  Config      : D:V:V:V       ||  Port No.    : 20319           |
|  CONT I/O 1  : A             ||  Subnet Mask : 255.255.255.0   |
|  CONT I/O 2  : B             ||  Def.Gateway : 10.0.0.1        |
|  CONT I/O 3  : B             |+-------------------------------+
|  CONT I/O 4  : A             |+----------Assist----------------+
+-----------------------------+|  Assist1 Status : NotUsed      |
+----------Local Server--------+|  Assist2 Status : NotUsed      |
|  Status      : Used          ||  Always TX      : OFF          |
+-----------------------------++-------------------------------+
Mon Jan 2 14:44:21 PST 2017 Installing ICOM G3 Gateway Software
Mon Jan 2 14:44:21 PST 2017 Installing ./dstar_gw_gpg-1.0-1.noarch.rpm
Mon Jan 2 14:44:22 PST 2017 Installing ./dstar_gw-3.00-6.el7.x86_64.rpm (this will take
5-10 minutes)

Please enter repeater call sign, without module, e.g. AB9CDE (enter Q to quit): K6VO
Mon Jan 2 14:45:14 PST 2017 Setting ZR_CALLSIGN = K6VO in
/opt/products/dstar/dstar_gw/dsipsvd/dsipsvd.conf
Mon Jan 2 14:45:14 PST 2017 Setting TRUST_SERVER = rootg3.dstarusers.org in
/opt/products/dstar/dstar_gw/dsipsvd/dsipsvd.conf
Mon Jan 2 14:45:14 PST 2017 Setting GW_ETHIFNAME=enp0s3
```

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```
Mon Jan 2 14:45:14 PST 2017 Setting ZR_ADDR = 172.16.0.1 in
/opt/products/dstar/dstar_gw/dsgwd/dsgwd.conf
Mon Jan 2 14:45:14 PST 2017 Setting DNS_ADDR = 10.0.0.1 in
/opt/products/dstar/dstar_gw/dsgwd/dsgwd.conf
Mon Jan 2 14:45:14 PST 2017 Setting DNS_MAC = f8-d1-11-bc-85-80 in
/opt/products/dstar/dstar_gw/dsgwd/dsgwd.conf
Mon Jan 2 14:45:14 PST 2017 Setting DSGWD ZR_CALLSIGN = K6VO in
/opt/products/dstar/dstar_gw/dsgwd/dsgwd.conf
Mon Jan 2 14:45:14 PST 2017 Installing gw_schedule and updater scripts
Mon Jan 2 14:45:25 PST 2017 Installing DSync crontab
Enter the keyword that you used when creating the backup of G2 (not the gateway call),
<RETURN> for none: g2
Mon Jan 2 14:45:28 PST 2017 Downloading backup (K6VO-g2-backup.tgz) from backup site
Mon Jan 2 14:45:29 PST 2017 Installing dplus
Mon Jan 2 14:45:33 PST 2017 Setting dplus external ethernet = enp0s3 in
/dstar/tools/dplus.conf
Mon Jan 2 14:45:33 PST 2017 Setting dplus internal ethernet = enp0s6u1 in
/dstar/tools/dplus.conf
Mon Jan 2 14:45:34 PST 2017 Installing AA4RC dstar utilities into /dstar/tools ...
Mon Jan 2 14:45:34 PST 2017 Downloading: dstarpasswd
Mon Jan 2 14:45:34 PST 2017 Downloading: dstargipls
Mon Jan 2 14:45:34 PST 2017 Downloading: dstarmngls
Mon Jan 2 14:45:34 PST 2017 Downloading: dstarquerydb
Mon Jan 2 14:45:34 PST 2017 Downloading: dstarripls
Mon Jan 2 14:45:34 PST 2017 Downloading: dstarusersls
Mon Jan 2 14:45:36 PST 2017 Found dstarmonitor.properites in /tmp
Mon Jan 2 14:45:36 PST 2017 Downloading http://www.aprs-is.net/downloads /
dstarmonitor43.tar.gz ...
Mon Jan 2 14:45:37 PST 2017 Updating GWIntf to enp0s3
Mon Jan 2 14:45:37 PST 2017 Updating CtrlrIP to 172.16.0.1
Mon Jan 2 14:45:37 PST 2017 Installing dsm4_init script...
Mon Jan 2 14:45:37 PST 2017 DStarMonitor Installation Complete

Mon Jan 2 14:45:37 PST 2017 **** ICOM G3 Installation Complete ****
Mon Jan 2 14:45:37 PST 2017 Rebooting in 10 seconds ...
10 9 8 7 6 5 4 3 2 1 Rebooting!
```