

Press any key to enter the menu

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Booting CentOS (2.6.18-274.3.1.el5) in 0 seconds... █



This guide is for users wishing to use an embedded system or appliance, such as an Alix board, HP Thin Client (we strongly recommend and have had tremendous success with the HP T5710) with ICOM repeater hardware. **Do not use this guide if you intend to install on a PC with an existing CENTOS installation.**

The image has been configured for a bridge network adapter (br1) with an IP address of 172.16.0.20 to communicate with the ICOM RP2C controller at 172.16.0.1. Thus your hardware (Alix board, HP Thin Client, etc.) does **not** require two network interface cards. The ICOM RP2C can plug into a switch, hub, etc., wherever the physical network adapter is plugged in. By adhering to the default ICOM addressing scheme, there is no need to make any changes to the ICOM RP2C controller. Further, if you configure your appliance for a static address of 10.0.0.2 with a netmask of 255.0.0.0 there is no need to make any changes to your firewall / router for port forwarding, etc., since the required ports will already be forwarded to the 10.0.0.2 address.

Note that although the FREE STAR* solution does not require a Class A IP address, with a netmask of 255.255.255.0 (it can be any private 192.168.x.x address with a netmask of 255.255.255.0), this guide has been written with a retrofit scheme in mind. Sticking with an IP address of 10.0.0.2 will allow for a quick exchange of devices without making any router changes (so long as the router is not enabled for MAC address blocking).

We suggest that you use the ICOM RP2C setting software to confirm / set the RP2C controller settings as shown in Appendix A. The important parameters to note are:

Gateway IP Address – set this to 172.16.0.20

Communication Settings:

IP Address – can be anything, default is 172.16.0.1

Port – can be anything, default seems to be 20319

Subnet Mask: 255.255.255.0

Def. Gateway: Leave this at 0.0.0.0

The FREE STAR* team has put together a disk image that can be downloaded from here: (www.va3uv.com/hp/free-star-icom-4gb.img.gz). In order to maintain image integrity, we recommend downloading this to a Linux box directly – see procedure below. The image can then be copied to a 4GB Microdrive. Note we recommend the use of a Microdrive over a CF card since the Microdrive does not have a limitation in the # of write cycles like a CF card does.

The Microdrive and CF card are electrically compatible – this means that a CF card reader can be used to program a Microdrive.

Procedure to copy the image to a Microdrive. Two methods are described here (there may be more!)...

Method 1 – using a Linux box (or a Windows box booted with a LINUX LIVE CD) with a local CF card reader:

Insert a USB memory stick in the PC. Issue the following command to see how CENTOS has mounted it:

```
df
```

On my system, the card was mounted as '/media/KINGSTON'

Insert the Microdrive into the CF card reader. Again issue the 'df' command to see how CENTOS has mounted it. On my system, it was mounted as '/dev/sdb1'

IMPORTANT – Now that the Microdrive has been mounted by the O/S, it is important to delete any existing partitions. Use the 'fdisk -l' command to view the partition scheme. As an example, if you wanted to remove a partition from /dev/sdb, you would enter:

```
fdisk /dev/sdb
```

Select 'p' to list partitions and then 'd' to delete (specifying the partition to be deleted). Further information on the fdisk utility can be viewed here: <http://www.cyberciti.biz/faq/linux-how-to-delete-a-partition-with-fdisk-command/>

OK, let's download the image file and store this on to our USB stick:

Change directory to the USB stick:

```
cd /media/KINGSTON
```

Now download the FREE STAR* image and store it to the USB memory stick:

```
wget http://www.va3uv.com/hp/free-star-icom-4gb.img.gz
```

Now check the checksum with the following command:

```
md5sum free-star-icom-4gb.img.gz
```

The checksum should be: c863007eb727ec10a3cdb8c4cd376c17

If your checksum does not match, please delete your image and try a fresh download. If you constantly get a different checksum, please contact me for help.

Once the checksum has been verified, you can unpack the image as follows:

```
gunzip free-star-icom-4gb.img.gz
```

Then copy the unpacked img file to the Microdrive:

```
dd if=/media/KINGSTON/free-star-icom-4gb.img of=/dev/sdb1  
bs=1024
```

Method 2 – Using a Windows box – with a local CF card reader:

Important – several users have reported issues with bad checksums when downloading the image in a Windows environment. We strongly advise the use of ‘Method 1’ or as a minimum, to retrieve the image itself in a Linux environment and then transferring it to your Windows machine.

Using Windows Disk Manager, delete any existing partitions on your Microdrive.

Alternatively, you can try this procedure as described on the physdiskwrite webpage (Ref: <http://m0n0.ch/wall/physdiskwrite.php>):

If you are unable to delete all the partitions with the Disk Management utility, try the following procedure:

Open a command window as admin ("cmd")

Type "diskpart" and hit enter.

Type "list disk" and hit enter to find out the number of your drive.

Type "select disk X" (where you replace X with the number of your drive) and hit enter.

Type "clean" and hit enter.

Download physdiskwrite.

(<http://m0n0.ch/wall/downloads/physdiskwrite-0.5.2.zip>) - usage example here (<http://linhost.info/2010/05/write-a-img-to-a-compact-flash-with-physdiskwrite/>)

Open a DOS window and navigate to where you saved physdiskwrite.

Be sure to know exactly which device your CF card is... use physdiskwrite.exe -a to list the devices. On my XP system, the CF card was device 1.

To burn the image:

```
physdiskwrite.exe -u free-star-icom-4gb.img
```

Once you have the image copied to your Microdrive, insert the Microdrive into the CF card

adapter on your target hardware and power it up.

Login locally as 'root' – password is Fr33starAdmin.

Change the root password with the 'passwd' command. Choose a strong password – a combination of letters and numbers do not forget it!

We strongly recommend setting a static IP address (edit the file 'ifcfg-eth0' found in /etc/sysconfig/network-scripts). Note that our solution does not require a Class A address. However, for ease of retrofit and adhering to the default (ICOM) scheme, the example below shows the required configuration for a 10.0.0.2 address.

An example ifcfg-eth0 file is shown below:

```
# Intel Corporation 82573E Gigabit Ethernet Controller (Copper)
DEVICE=eth0
BOOTPROTO=none
BROADCAST=10.0.0.255 ← The 1st 3 octets are the same as the static IP and the 4th is 255
HWADDR=00:10:C6:BB:0E:6C ← MAC address of your NIC Adapter (it will be different!)
IPADDR=10.0.0.2 ← Set your static IP address here (10.0.0.2 in this example)
NETMASK=255.0.0.0
NETWORK=10.0.0.0 ← Note the first 3 octets are the same as your IP, and the 4th is 0
ONBOOT=yes
GATEWAY=10.0.0.1 ← This is your router address
TYPE=Ethernet
```

Next, edit the file /etc/resolv.conf and be sure that a nameserver is specified – example below:

```
nameserver 10.0.0.1 ← This is the address of your router
nameserver 8.8.8.8 ← This is the address of the Google public DNS
```

Save / Quit

Now type in `service network restart` to restart the network service and apply the above changes.

Confirm that your static IP address has been set by typing in:

```
ifconfig eth0
```

Test your connectivity with a ping test:

```
ping www.yahoo.com
```

<Ctrl> C to stop!

Default timezone is 'EST5EDT' – change this to suit

find your timezone file in /usr/share/zoneinfo and copy to /etc/localtime

Example:

```
cp /usr/share/zoneinfo/EST5EDT /etc/localtime
```

stop ntpd with:

```
service ntpd stop  
ntpdate pool.ntp.org
```

Check with the `date` command. Then restart ntpd with `service ntpd start`

Now watch it for a while with: `ntpq -p`

Then set the hardware clock as follows:

```
hwclock --systohc
```

Forward the following ports on your router / firewall (if not already open):

- TCP 222 (default port used for SSH)
- UDP 20001
- UDP 30001
- UDP 40000
- TCP 80 (required for optional dashboard)

Now you are ready to start configuring the FREE STAR* software...

Download the appliance-setup.sh script from the VA3UV website and execute it as follows:

```
cd /tmp  
  
wget www.va3uv.com/hp/icom-appliance-setup.sh  
  
chmod +x icom-appliance-setup.sh  
  
./icom-appliance-setup.sh
```

The appliance-setup script will prompt you for things like your gateway (repeater) callsign, ircddb password, your static IP address (as added in the ifcfg-eth0 file earlier), the RP2C

Communication IP (e.g., 172.16.0.1), the RP2C Communication Port # (e.g., 20319) and your personal callsign. Answer these questions as prompted.

Please refer to the FREE STAR* Repeater Owners' Admin Manual for further information on configuring g2_ircddb for DPRS support and reporting to the ircddb mapping page.

Monitor the log files to ensure that everything is working:

```
tail -f /var/log/g2_ircddb.log (for g2_ircddb)
```

```
tail -f /var/log/g2_link.log (for g2_link)
```

It can take g2_ircddb a few seconds before it connects to the ircddb servers.

That's it – welcome to the FREE STAR* project.

Please drop me a note (Ramesh@va3uv.com) so that I can add you to my mailing list for system updates, notices, etc.

Appendix A

ICOM RP2C Setting Software

Example Configuration

