

## What's New:

- Cent OS 5 has been tested to be a good alternative Operation System of Red Hat 5 for CODE and it is free.
- Before attempting to use or customize these instructions for your installation, the complete installation instructions contained in Volume 1 of the CODE Guide ([v1\\_setup\\_code\\_b16\\_0r1\\_10.pdf](#)) should be reviewed.

Concise examples of successful command checklists for installation of the most recent CODE B16.0r1.8 are provided here for your reference.

A "quick install" checklist can simplify your process, and is helpful when you need to quickly make clones of your initial installation. Checklists ensure uniformity of installations. Use of a command set as similar as possible to the one provided above will make it easier for CODE maintainers to provide fast and efficient assistance, by quickly pinpointing where you are in the installation process.

All commands provided are written in the C shell, as that is the required shell for compilation and execution of the ORPG. Understand that these command sets may or may not work "as is" on your system due to possible differences in directory names on your system. Placement of these commands in a single script is not recommended due to execution requirements of the various commands, including occasional need for root privileges.

## NWS & PUBLIC EDITIONS

## Installation & Configuring Linux for ORPG

### Checking Operating System

```
[dev1@dev1 ~]$ more /etc/redhat-release
Red Hat Enterprise Linux Client release 5.7 (Tikanga)
[dev1@dev1 ~]$ uname -a
Linux dev1 2.6.18-274.3.1.el5 #1 SMP Fri Aug 26
18:45:04 EDT 2011 i686 i686
i386 GNU/Linux
[dev1@dev1 ~]$
```

```
[dev2@dev2 ~]$ more /etc/redhat-release
CentOS release 5.11 (Final)
[dev2@dev2 ~]$ uname -a
Linux dev2 2.6.18-398.el5PAE #1 SMP Tue Sep 16
21:31:44 EDT 2014 i686 i686 i386 GNU/Linux
[dev2@dev2 ~]$
```

### Modifying /etc/hosts

```
# Do not remove the following line, or various
programs
# that require network functionality will fail .
127.0.0.1      localhost.localdomain localhost
192.168.###.### dev2 rpg
```

### Modifying /etc/sysconfig/network

```
NETWORKING=yes
NETWORKING_IPV6=no
HOSTNAME=dev2
```

### Modifying /etc/sysconfig/networking/devices/ifcfg-eth0

```
DEVICE=eth0
ONBOOT=yes
BOOTPROTO=none
NETMASK=255.255.255.0
USERCTL=no
PEERDNS=yes
GATEWAY=192.168.###.##
TYPE=Ethernet
IPADDR=192.168.###.###
```

1. Log into **ANY** account on your LINUX machine.
2. You are expected to have RedHat Enterprise 5 or CentOS 5(32-bit version because ORPG software is 32-bit only) & required Linux packages. Type:  
**more /etc/redhat-release**  
**uname -a**  
(See e.g. on left). “i386 GNU/Linux” implies 32-bit version.
3. If you do not have RedHat Enterprise 5 or CentOS 5, install RedHat Enterprise 5 or CentOS 5 before continuing with this installation. See instructions in **code\_b16\_0r1\_10/pdf\_doc/v1\_setup\_code\_b16\_0r1\_10.pdf** if needed.
4. Make sure below packages are installed. Type:  
**rpm -q giflib-devel ; rpm -q ncompress**  
**rpm -q tcl-devel ; rpm -q tk-devel**  
**rpm -q gsl ; rpm -q gsl-devel**  
If these packages are not installed, you need use yum to install them (“yum -y install package\_name”). As root,  
**yum -y install giflib-devel**  
**yum -y install ncompress**  
**yum -y install tcl-devel**  
**yum -y install tk-devel**  
**yum -y install gsl**  
**yum -y install gsl-devel**  
Install all available updates.  
**yum -y update**
5. The ORPG requires that TCP/IP networking be configured; it is not compatible with DHCP. A common configuration error involves the hosts file. Open **/etc/hosts** with the editor of your choice and modify it to add the name and IP address of your PC. Be sure to alias the hostname to **rpg**. (See e.g. on left).
6. Open **/etc/sysconfig/network** with the editor of your choice and modify it to add the Hostname of your PC. (See e.g. on left).
7. Open **/etc/resolv.conf** with the editor of your choice and modify it to add the Nameserver. If you are not sure what it is ask your local SA. An example is:  
**nameserver 140.90.###.##**
8. Open **/etc/sysconfig/networking/devices/ifcfg-eth0** with the editor of your choice and make sure it has been customized. (See e.g. on left). The eth0 file is the configuration file for the primary or only network interface card. The entries that must be customized for the workstation are: **IPADDR – the IP address;** **GATEWAY – the default router address;** **NETMASK – 255.255.255.0;** **ONBOOT – should be yes;** and **DEVICE – the filename.**
9. Copy all changed Networking files to the default directory. Answer **y** to overwrite. Type:  
**cd /etc/sysconfig/networking/profiles/default**  
**cp /etc/hosts .**  
**cp /etc/resolv.conf .**  
**cp /etc/sysconfig/network .**  
**cp /etc/sysconfig/networking/devices/ifcfg-eth0 .**
10. Logout from root. Type:  
**exit**
11. Reboot your system by typing:  
**reboot**

## Creating a New Account

1. From the RedHat Welcome Screen, enter your **Username and Password** to log into **ANY** account on your LINUX machine.
2. Open a terminal and type:  
**su** (login as root with root password)
3. Determine your new user account name, parent directory, home directory, data directory, group name, etc. then write them down. **Whenever you see a command with <> brackets around it, refer to the table below.** Here are some suggested examples. Add your own names:

COMMANDS	DEFINED	EXAMPLES
<user16_0r1_10>		code16_0r1_10
<parent_dir>		/home
<home_dir>	<parent_dir>/<user16_0r1_10>	/home/code16_0r1_10
<group_name>		rpg
<ip_address>		192.168.##.###

## Summary of Commands

```
[root@dev2 ~]# grep rpg /etc/group
[root@dev2 ~]# groupadd rpg

[root@dev2 ~]# useradd -d
/home/code16_0r1_10 -m -g rpg -s /bin/csh -c
"CODE B16.0r1.10" code16_0r1_10

[root@dev2 ~]# passwd code16_0r1_10
Changing password for user code16_0r1_10.
New password:
Retype new password:
passwd: all authentication tokens updated
successfully.
[root@dev2 ~]# chmod +rx
/home/code16_0r1_10
[root@dev2 ~]# exit
```

4. Check to see if the group already exists. (See e.g. on the left).  
**grep <group\_name> /etc/group**  
If it does not exist, type:  
**groupadd <group\_name>**
5. Create a new account by using the useradd command. In your terminal type:  
**useradd -d <home\_dir> -m -g <group\_name> -s /bin/csh**  
**-c "CODE B##r#.##" <user16\_0r1\_10>**  
(See e.g. on the left).
6. Create a password for the user and write it down somewhere. Type:  
**passwd <user16\_0r1\_10>**  
Enter new password when prompted twice.
7. Change modifications for home directory. Type:  
**chmod +rx <home\_dir>**
8. Logout from root. Type:  
**exit**
9. To logout of the account you are in, select **Main Menu => Log Out**. Then click **OK**.

## Installing RPG & CODE Software

1. Login using your new `<user16_0r1_10>` account and password.
2. Obtain the CODE B16.0r1.8 CD, copy folder `code_b16_0r1_10` (for NWS Edition) or `pub_code_b16_0r1_10` (for Public Edition) to your home directory.
3. Go to the home directory to make sure the folder has been downloaded by typing:  
`cd; ls -al`
4. Copy the RPG source file to your home directory. Type:  
**If you have the NWS Edition:**  
`cd code_b16_0r1_10/files_orpg_sw`  
`cp -p rpg_b16_0r1_10_nws_src.tgz ~`  
**If you have the Public Edition:**  
`cd pub_code_b16_0r1_10/files_orpg_sw`  
`cp -p rpg_b16_0r1_10_pub_src.tgz ~`
5. Copy the CODE configuration file to your home directory. Type  
`cd ../config_files`  
`cp -p code_config_b16_0r1_10.tgz ~`
6. Uncompress the RPG source file by typing:  
`cd; ls`  
**If you have the NWS Edition:**  
`tar xvzf rpg_b16_0r1_10_nws_src.tgz`  
**If you have the Public Edition:**  
`tar xvzf rpg_b16_0r1_10_pub_src.tgz`
7. Uncompress the CODE configuration file by typing:  
`tar xvzf code_config_b16_0r1_10.tgz`
8. Go to the env directory and run the env script. Type:  
`cd code_config_b16_0r1_10/env; ls`  
`./inst_env_config` (answer **y** when prompted)
9. If more than one installed ORPG is going to run at the same time on a single workstation, open `orpg_env_cshrc` from your `$HOME` directory with the editor of your choice and manually change the defined value of `RMTPORT` on each account. It is recommended that the first account have a value of 50000, the second 51000, etc. Create a backup of the file if changed. Type:  
`cd; cp orpg_env_cshrc orpg_env_cshrc.B16`
10. Remove all tar files:  
`cd ; rm *tgz` (answer **y** when prompted)
11. To logout of the account you are in, select **Main Menu => Log Out**. Then click **OK**.

## Modifying orpg\_env\_cshrc

```
# in order to simultaneously run multiple
instances of the ORPG on a
# single platform, RMTPORT must differ.
setenv RMTPORT 51000
```

## Compiling & Configuring the RPG

### Modify the .rssd.conf file

```
# RPG Development Workstations
#Client: rpg
Client: 192.168.##.###

# Pathnames
#          [SORPGDIR]
Path: ORPGDIR

# NEW B9
Path: HOME/save_logs

# NEW B12x1.206
Path: HOME/security_logs
```

1. From the RedHat Welcome Screen, enter your **Username and Password** to login using your new **<user16\_0r1\_10>** account and password. Open a terminal console and verify your environment variables. Make sure your \$HOME is set to the correct paths. Type:  
**env | grep -e HOME**
2. To conduct a quick test compile of a portion of the source code, type:  
**cd; ls**  
**test\_make\_cpc100 \$HOME >& test\_make\_cpc100.out**  
After compilation has finished, check for errors. Type:  
**grep -e 'Error [1-9]' test\_make\_cpc100.out**  
If there are errors, check the file:  
**code\_b16\_0r1\_10/pdf\_doc/v1\_setup\_code\_b16\_0r1\_10.pdf**
3. To compile the RPG, type:  
**make\_rpg \$HOME >& make\_rpg.out**  
After compilation has finished, check for errors. Type:  
**grep -e 'Error [1-9]' make\_rpg.out**  
If there are errors, check the file:  
**code\_b16\_0r1\_10/pdf\_doc/v1\_setup\_code\_b16\_0r1\_10.pdf**
4. Install the ORPG configuration files by typing:  
**cd code\_config\_b16\_0r1\_10/orpg; ls**  
**./inst\_orpg\_config** (answer **y** when prompted)  
Note: You need answer '**N**' for NWS Edition or '**P**' for Public Edition when prompted to install the right version of task\_tables.
5. If the hostname has been aliased to **rpg**, skip this step. Otherwise variable **Client** needs to point to the hostname or **<ip\_address>**. Open **.rssd.conf** from your **\$HOME** directory with the editor of your choice. Modify the **Client** variable to be the **<ip\_address>** of your machine. Save the file **.rssd.conf** and exit.
6. To logout, select **Main Menu => Log Out**, then click **OK**.

## Testing the RPG & Installing CODE Software (1 of 2)

### Testing the RPG: Steps 1-9

### Using the HCI & play\_a2 Tools

```
code16_0r1_10:code16_0r1_10/ 43 >hci &
[1] 7278
code16_0r1_10:code16_0r1_10/ 44 > play_a2
Playback...
Playing file:
/home/code16_0r1_10/ar2data/KMLB20121026_120332_V06.gz
Volume date [yyyy-mm-dd] 2012-10-26
Volume time [hh:mm:ss]: 12:03:35
```

1. From the RedHat Welcome Screen, enter your **Username and Password** to login using your new **< user16\_0r1\_10 >** account and password.
2. Open a terminal for testing the RPG. If errors, check the file: **code\_b16\_0r1\_10/pdf\_doc/v1\_setup\_code\_b16\_0r1\_10.pdf**. Type: **mrpg -p -v startup**

**Note:** User should ignore below error message about syslog.lb. At the RPG startup with option -p, syslog.lb is deleted first thus can not be opened. It will be re-created by the RPG.

```
18:40:10 mrpg: ORPGDA: RSS_orpgda_lb_open $(ORPGDIR)/mngprg/syslog.lb
failed (ret = -43)
```

```
18:40:10 mrpg: ORPGDA_write ORPGDAT_SYSLOG failed (ret -43)
```

3. To check for running tasks type: **rpg\_ps**
4. To make sure the human computer interface will run, type: **hci &**
5. Ingest default Archive II data into the HCI by typing: **play\_a2**  
When you are confident that data is being ingested into the HCI properly, press **Ctrl C** to end play\_a2 then close the HCI. (See e.g. on left).
6. Check CVT version, **Version 4.4.3**. Type: **cvt version**
7. Launch CVG by typing: **cvg**
8. The title on the CVG window should show CODEview Graphics **9.2**. Close the CVG window by clicking File → Exit.
9. If everything works as expected, your CODE installation is complete. You can shutdown and cleanup the RPG by typing:

**mrpg shutdown; mrpg cleanup**

Remove all tar files:

**rm ~/src/\*tar**

**If you do not want to install the below options, you are done.**

10. Obtain the CODE software archive files from code\_b16\_0r1\_10/files\_code\_sw  
**cd code\_b16\_0r1\_10/files\_code\_sw**  
**cp -p code\_alg\_1\_22a.tar ~/src**  
**cp -p dp\_test\_prod.tar ~/cfg**
11. To configure the CODE sample algorithms and copy the snippets, type:  
**cd ~/src; ls**  
**tar xvf code\_alg\_1\_22a.tar**  
**cd cpc305**  
**./install\_sample\_alg**
12. To generate dual pol test products 340-344, 600-605 and 700-705, type:  
**cd ~/cfg**  
**tar xvf dp\_test\_prod.tar**  
**cd dp\_test\_prod**  
**./install\_dual\_pol\_test\_prod.sh**  
The dual pol test products are configured in directory extensions  
**cd ../extensions ; ls**
13. Re-start RPG, type:  
**mrpg -p -v startup**  
**rpg\_ps | grep sample**  
**rpg\_ps | grep dualpol8bit\_test**  
**rpg\_ps | grep test\_base\_prods\_8bit**
14. Shutdown and cleanup the RPG by typing:  
**mrpg shutdown; mrpg cleanup**

### Option 1 – Install CODE software:

#### Steps 10-14

- Sample Algorithms
- Dual Pol Test Products  
340-344  
600-605  
700-705

## Testing the RPG & Installing CODE Software (2 of 2)

### Option 3 – Install level II data: Steps 15-23

### Modifying the .cshrc File

```
setenv AR2_DIR /opt/code/data/ar2data
```

15. A suggested location to install all of the desired CODE Archive II data sets is **/opt/code/data/ar2data**. Your local procedures might establish a different location. Check for the ar2data directory by typing:  
**cd /opt/code/data/ar2data**  
**su** (login as root with root password)  
 If the directory has been created already, **go to next step**. (This directory might be different on your machine). If the directory has not been created, create the directories. Type:  
**cd /opt; mkdir code**  
**cd code; mkdir data**  
**cd data; mkdir ar2data**  
**cd ar2data;**
16. To install archive II data sets, obtain the CODE B16.0r1.8 CD, copy the desired data sets in ar2data directory to /opt/code/data/ar2data.  
**exit** (to logout as root)
17. Check the **.cshrc** file to see if AR2\_DIR has been set already. Type:  
**more ~/.cshrc | grep AR2\_DIR**  
 If the \$AR2\_DIR has not been set to /opt/... directory, open **.cshrc** from your **\$HOME** directory with the editor of your choice. Modify the **setenv AR2\_DIR** line to point to **/opt/code/data/ar2data**. (See e.g. on left). Save the file **.cshrc** and exit the editor that you used.
18. Create a backup of the file, by typing:  
**cp .cshrc .cshrc.B16**
19. For each console that is opened, type:  
**source .cshrc**
20. Start the ORPG for testing Archive II data. If errors, check the file:  
**code\_b16\_0r1\_10/pdf\_doc/v1\_setup\_code\_b16\_0r1\_10.pdf**. Type:  
**mrpg -p -v startup**
21. To start the human computer interface, type:  
**hci &**
22. Ingest default Archive II data into the HCI by typing:  
**play\_a2 -d f\_load**  
 (If you downloaded another directory from the CD, replace f\_load with the name of the downloaded directory). When you are confident that data is being ingested into the HCI properly, press **Ctrl C** to end play\_a2 then close the HCI.
23. Shutdown and cleanup the RPG by typing:  
**mrpg shutdown; mrpg cleanup**
24. **Installation is done.**

## The End