

Installing Virtual Coordinator (VC) in Linux Systems

Manual Installations (NO RPM Packages)

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The person installing the VC is knowledgeable of the Linux flavor used on regards to

- a.) Moving around the file system in the GUI Interface and command line
- b.) Be able to install software JAVA and firefox
- c.) Be able to upgrade their current JAVA and browser
- d.) You can use these command to find if your system has java or you need to install it

For Java Info:	-Install the java, but if you have an old one, upgrade it via the software upgrade center
<code>\$java -version</code>	-To installed the “Openjdkjava” follow this link
<code>\$readlink -f `which java`</code>	http://openjdk.java.net/install or Install it from the JAVA website followings their instruction under the link all java downloads http://www.java.com/en/download/manual.jsp
<code>\$readlink -f `which firefox`</code>	

GENERAL INSTALLATION GUIDE

The Virtual Coordinator (VC) requires “JAVA” and the browser requires to recognize the JAVA. Some Linux flavors allows to log as “Root” others, only allows you as a “user” and in order to have access to files system, the “user” must be part of the “sudo” list to execute command. As Linux “administrators” or “users”, you will know how to add yourself and have the proper rights if you can not log as “Root”.

TIP: The latest virtual coordinator is usually at this URL.

<http://www.newportus.com/software/wSeriesFWVC/index.htm>

The VC is installed manually in these Steps

- a.) **Make Backup** of the entire directory “**wifi_vc**” found under `/usr/bin/wifi_vc` if there is already an installation and running. The Data and Configuration files are found in the following directories.
 - 1.) Current Readings and Status data `/usr/bin/wifi_vc/Sys/Data`
 - 2.) Units Configurations data `/usr/bin/wifi_vc/Sys/Config`
 - 3.) Archive data `/usr/bin/wifi_vc/webapps/examples/archive`

After re-installation, you may want to copy back these directories to recover the old data

- b.) Copy the tar file from your media (flash/CD, etc) **wifi_vc_1.03.3.tar.gz** to the “user” home directory, and decompress (do not decompress the tar file it in the flash card and copy its contents)
- c.) Copy the decompress directory “**wifi_vc**” into the system folder `/usr/bin/`
- d.) Create a Symbolic link of the executable Script from the “**wifi_vc**” directory in folder `/etc/init.d/`

```
$cd /etc/init.d/
$sudo ln -s /usr/bin/wifi_vc/virtualcoordinatorApp virtualcoordinatorApp
$sudo ln -s /usr/bin/wifi_vc/virtualcoordinatorWebServer virtualcoordinatorWebServer
$sudo ln -s /usr/bin/wifi_vc/ftpserver/bin/virtualcoordinatorFTP2 virtualcoordinatorFTP2
```

- e.) Find the JAVA path and edit the “virtual symbolic link” created from the `/etc/init.d/`
To add the Java path in **JAVA_HOME** =

```
$readlink -f `which java`
/usr/lib/jvm/java-6-openjdk/jre/bin/java
$cd /etc/init.d/
$sudo vi virtualcoordinatorApp
$sudo vi virtualcoordinatorWebServer
$sudo vi virtualcoordinatorFTP2
```

Remove the **bin/java** part and leave only **/usr/lib/jvm/java-6-openjdk/jre/**

- f.) Creating an executable Link in the Run Level `/rcX.d/` where “X” is the value given by the command `$/sbin/runlevel` to “Auto Start” during boot

```
$cd /etc/rcX.d
$sudo ln -s /etc/init.d/virtualcoordinatorApp S98virtualcoordinatorApp
$sudo ln -s /etc/init.d/virtualcoordinatorWebServer S97virtualcoordinatorWebServer
$sudo ln -s /etc/init.d/virtualcoordinatorFTP2 S96virtualcoordinatorFTP2
```

Note: Ubuntu/Debian/Mandriva the “rcX.d” is under `/etc/` directory, but on other flavors such “Suse” is under `/etc/init.d/`

- g.) Start the Virtual Coordinator services with these commands:

```
$sudo /etc/init.d/virtualcoordinatorApp start
$sudo /etc/init.d/virtualcoordinatorWebServer start
$sudo /etc/init.d/virtualcoordinatorFTP2 start
```

- h.) Copy back the “Data”, “Configuration” and “Archive” data from the directory saved
- i.) The Virtual coordinator (VC) uses other ports than 80, so you should be able to disable, enable and create the require ports in your FIREWALL for your “Linux Flavor Used” either via a GUI interface or Command base, etc. The port numbers are for various operations on the Virtual Coordinator.
- Port 50002/udp, 50006/tcp are used for communication between the transmitter and the VC for data
 - Port 2000/tcp is the command server.
 - Port 21/tcp is for firmware upgrade on transmitters.
 - Port 80/tcp is for the web server.

Enable/disable commands	Opening Ports
<code>\$sudo ufw status</code>	<code>\$sudo ufw allow 50002/udp</code>
<code>\$sudo ufw disable</code>	<code>\$sudo ufw allow 50006/tcp</code>
<code>\$sudo ufw enable</code>	<code>\$sudo ufw allow 2000/tcp</code>
	<code>\$sudo ufw allow 21/tcp</code>
	<code>\$sudo ufw allow 80/tcp</code>

- j.) **To upgrade the “WiFi” Firmware**, we need to deploy the 9 image file (*.img) in the “FTPserver” folder of the “wifi_vc” directory in order to use the (VC) web menu “Setup/TX Configuration/System”. When upgrade the Firmware in the End Units.
Your FTP ports must be enable correctly (Some systems use Port 20 to send the Payload, and Port 21 for connections)

TIP: The latest Firmware Upgrade is usually at this URL.

<http://www.newportus.com/software/wSeriesFWVC/FirmwareUpgrade/index.htm>

```
$ cd ~/Downloads/image101
$ cp -av *.img /usr/bin/wifi_vc/ftpserver/res/home/public/
```

EXAMPLE:
Ubuntu Linux 11.1 Desktop/Server
 Installing Virtual Coordinator (VC)

a.) Set a static IP to the computer.

For Desktop, you can use a mix format using command base and GUI support

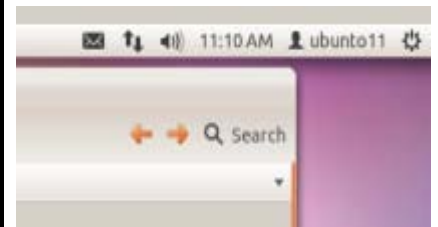
1.) For Desktop Installation

Use the GUI Interface to configure Static IP under “**Networking Connections**”

Press the first symbol (left menu) and then any application to bring the a “Filter” menu to access under customization the Network Connections menu



clicking on “**up/dn arrows**” near the e-Mail symbol to bring the networking menu



Use “**edit Connections**” and edit the “ether card” when changing the IP parameters

2.) For Servers with no GUI

“**sudo**” command will prompt you for the “**root**” password

```
$cd /etc/network/  
$sudo vi interfaces
```

TIP: Refer to “man” pages for the “vi” editor commands used as the default editor for editing files.

look for line with similar information:

```
iface eth0 inet dhcp
```

For Static IP, replace it with

```
iface eth0 inet static  
address x.x.x.x  
netmask x.x.x.x  
gateway x.x.x.x
```

Save the file

- a.) **Remove the dhcp client**, which is running all the time. If you don't remove it, this dhcp client will keep getting a new dynamic IP address and overwrite the existing static IP address.

```
$sudo apt-remove isc-dhcp-client
```

Now restart the networking

```
$sudo /etc/init.d/networking restart
```

TIP: Always use sudo to execute root commands.

FIREWALL SETTINGS

- b.) **Check to see if the firewall is running.**

```
$sudo ufw status
```

If the status is: “Status active” then disable it

```
$sudo ufw disable
```

Note: If the status is: Status: inactive, then there is no need to disable it.

Enable port 50002/udp, 50006/tcp, 2000/tcp, 21/tcp, 80/tcp on the firewall.

The port numbers are useful for various operations on the Virtual Coordinator (VC.)

- Port 50002/50006 is used for communication between the transmitter and the VC for data
- Port 2000 is the command server.
- Port 21 is for firmware upgrade on transmitters.
- Port 80 is for the web server.

```
$sudo ufw allow 50002/udp
$sudo ufw allow 50006/tcp
$sudo ufw allow 2000/tcp
$sudo ufw allow 21/tcp
$sudo ufw allow 80/tcp
$sudo ufw enable
```

TIP: You can verify the rules that are present using the following commands

```
$sudo ufw status
```

There are some Firewall Packages (GUI) that can be installed
from the “Ubuntu Software Center”



NOTE: for Java, or Firefox update, or new installation, it is assumed that the Computer can connect to the INTERNET

c.) Check existing java version. Make sure that the version is at least 1.6.

```
$java -version
$readlink -f `which java`
```

If not installed, the above command will not be recognized. Install Java while the computer is **Connected to the Internet:**

```
$sudo apt-get install openjdk-6-jre
```

d.) Check existing firefox version. Make sure that the version is at least 1.6.

```
$java -version
$readlink -f `which firefox`
```

II. Installing “Wifi” Virtual Coordinator

NOTE: if there is already an installation, saved your files

Make Backup of the entire directory “wifi_vc” found under */usr/bin/wifi_vc* if there is already an installation and running. The Data and Configuration files are found in the following directories.

- Current Readings and Status data */usr/bin/wifi_vc/Sys/Data*
- Units Configurations **data** */usr/bin/wifi_vc/Sys/Config*
- Archive data */usr/bin/wifi_vc/webapps/examples/archive*

After re-installation, you may want to copy back these directories to recover the old data

a.) Copy and Unzip the tarball in a directory. Download the latest VC from Newport Electronics website or else copy it from the CD.

If downloading from the web copy the downloaded tar file to "<USER_HOME>/Downloads" directory.

If copying from the CD, first mount the CDROM. The usual CDROM directory is */media/cdrom*.

Once successfully mounted, change to the CDROM directory and copy the *wifi_vc_1.03.3.tar.gz* to the home user directory “~/Downloads directory.”

```
$sudo mount /media/cdrom
$cd /media/cdrom/Linux/
$cp wifi_vc_1.03.3.tar.gz ~/Downloads
```

TIP: The latest virtual coordinator is usually at this URL.

<http://www.newportus.com/software/wSeriesFWVC/index.htm>

Now untar the files from the User Home.

```
$cd ~/Downloads/
$ls
$tar -zxvf wifi_vc_1.03.3.tar.gz
```

- b.) Copy the unzipped directory “**wifi_vc**” from the user Directory to the root “**/usr/bin**”

```
$cd ~/Downloads/
$ ls
$ sudo cp -av wifi_vc /usr/bin
```

You should see the Copy Directory in the Root (not in the Home)

```
$cd /usr/bin
$ ls
```

- c.) Create a link to the service scripts in the **/etc/init.d** directory.

```
$cd /etc/init.d/
$ sudo ln -s /usr/bin/wifi_vc/virtualcoordinatorApp virtualcoordinatorApp
$ sudo ln -s /usr/bin/wifi_vc/virtualcoordinatorWebServer virtualcoordinatorWebServer
$ sudo ln -s /usr/bin/wifi_vc/ftpserver/bin/virtualcoordinatorFTP2 virtualcoordinatorFTP2
```

TIP: Once the links are created check to see if they are good or not. Doing a “**ls -l**” will list the actual paths for the link and the color should be blue for the links. If it is RED then the links are not created properly.

```
$cd /etc/init.d/
$ ls -l
```

- d.) Get to know the present system “**runlevel**” if we are not at **/etc/init.d/**
Enable the services to run at system reboot

```
$ /sbin/runlevel
```

It should say something like:

```
$ N 2
```

Where 2 is the current system level.

Go the **/etc/rcX.d**, where X is the runlevel we just got and create a symlink to the script.

```
$cd etc/rcX.d
$ sudo ln -s /etc/init.d/virtualcoordinatorApp S98virtualcoordinatorApp
$ sudo ln -s /etc/init.d/virtualcoordinatorWebServer S97virtualcoordinatorWebServer
$ sudo ln -s /etc/init.d/virtualcoordinatorFTP2 S96virtualcoordinatorFTP2
```

Where the numbers 98, 97 and 96 are unused TWO digits numbers of SXX names used in the directory.

Note: **Ubuntu** has the **rcX.d** under the “**etc/**” directory
While others Linux alike is found under “**/etc/init.d/**”

e.) IMPORTANT: Before starting the services, find out the actual path to the java run time environment. Sometimes Software upgrades change the path.

```
$readlink -f `which java`
```

It should say something like:

```
/usr/lib/jvm/java-6-openjdk/jre/bin/java
```

Remove the "**bin/java**" part and leave only **/usr/lib/jvm/java-6-openjdk/jre/** (this is the actual JAVA_HOME. Edit the file and enter this path where it says **JAVA_HOME in the files** "/etc/init.d/virtualcoordinatorApp", "/etc/init.d/virtualcoordinatorWebServer", "/etc/init.d/virtualcoordinatorFTP2")

```
# Set this to your Java installation
# for example:
# JAVA_HOME=/usr/lib/jvm/java-1.6.0-openjdk-1.6.0.0/jre
JAVA_HOME=
```

Below the three lines command to modify the three files

```
$cd /etc/init.d/
$sudo vi virtualcoordinatorApp
$sudo vi virtualcoordinatorWebServer
$sudo vi virtualcoordinatorFTP2
```

TIP: Refer to “man” pages for the "vi" editor commands used as the default editor for editing files.

The actual content of the file should look like this:

```
# Set this to your Java installation
# for example:
# JAVA_HOME=/usr/lib/jvm/java-1.6.0-openjdk-1.6.0.0/jre
  JAVA_HOME=
```

After making the change the content should look like this:

```
# Set this to your Java installation
# for example:
# JAVA_HOME=/usr/lib/jvm/java-1.6.0-openjdk-1.6.0.0/jre
  JAVA_HOME= /usr/lib/jvm/java-6-openjdk/jre/
```

Start the Application server service with this command.

```
$sudo /etc/init.d/virtualcoordinatorApp start
```

You should see a message:

```
Starting VirtualCoordinatorApp started PID=5721
```

- f.) Start the “Web Server” service with this command after the JAVA_HOME = Path has been modified
 “/etc/init.d/virtualcoordinatorWebServer”

```
$sudo /etc/init.d/virtualcoordinatorWebServer start
```

You should see a message:

```
Starting VirtualCoordinatorWebServer started PID=5765
```

```
Starting VirtualCoordinatorWebServer with PID=xYz
- where xYz is some number that the system
  will assign for the PID (Process ID.)
```

which means the web server is started.

- g.) The FTP server is only used when firmware upgrade is used.
 Start the FTP server service with this command after the JAVA_HOME = Path has been modified in the file
 “/etc/init.d/virtualcoordinatorFTP2”

```
$sudo /etc/init.d/virtualcoordinatorFTP2 start
```

You should see a message:

```
Starting virtualcoordinatorFTP2 started PID=5821
```

```
Starting VirtualCoordinator started PID=xYz
- where xYz is some number that the system will assign for the
  PID (Process ID.) The wifi virtual coordinator is installed
```

which means the web server is started.

- h.) Copy back the “Data”, “Configuration” and “Archive” data from the directory saved

III. To stop the services

- a.) Stop the Application service:

```
$sudo /etc/init.d/virtualcoordinatorApp stop
```

You should see a message:

```
Stopping VirtualCoordinator stopped PID=xyz
```

which means the service is stopped.

- b.) Stop the Web server service:

```
$sudo /etc/init.d/virtualcoordinatorWebServer stop
```

You should see a message:

```
Stopping VirtualCoordinator stopped PID=xyz
```

which means the service is stopped

c.) Stop the ftp server service:

```
$ sudo /etc/init.d/virtualcoordinatorFTP2 stop
```

You should see a message:

```
Stopping VirtualCoordinator stopped PID=xyz
```

which means the service is stopped.

IV. Disabling services run at system reboot**a.) Get to know the present system runlevel**

```
$runlevel
or
$/sbin/runlevel
```

It should say something like: N 2, where 2 is the current system level.

b.) Go the /etc/rcX.d, where X is the runlevel we just got and rename the symlink to the script.

```
$cd /etc/rcX.d
$mv S98virtualcoordinatorApp      K98virtualcoordinatorApp
$mv S97virtualcoordinatorWebServer K97virtualcoordinatorWebServer
$mv S96virtualcoordinatorFTP2     K96virtualcoordinatorFTP2
```

V. To uninstall wifi virtual coordinator**a.) Stop the services:**

```
$sudo /etc/init.d/virtualcoordinatorApp stop
$sudo /etc/init.d/virtualcoordinatorWebserver stop
$sudo /etc/init.d/virtualcoordinatorFTP2 stop
```

b.) Remove the links we created.

```
$sudo rm /etc/rcX.d/S98virtualcoordinatorApp
$sudo rm /etc/rcX.d/S97virtualcoordinatorWebServer
$sudo rm /etc/rcX.d/S96virtualcoordinatorFTP2
$sudo rm /etc/init.d/virtualcoordinatorApp
$sudo rm /etc/init.d/virtualcoordinatorWebServer
$sudo rm /etc/init.d/virtualcoordinatorFTP2
```

c.) IMPORTANT: Make a backup of the settings and recorded data.

```
$sudo cp -av /usr/bin/wifi_vc/Sys /tmp/Sys
$sudo rm -rf /usr/bin/wifi_vc
$sudo mkdir -p /usr/bin/wifi_vc/
$sudo cp -av /tmp/Sys /usr/bin/wifi_vc/Sys
```

VI. To re-install “wifi” virtual coordinator

NOTE: if there is already an installation, saved your files

Make Backup of the entire directory “wifi_vc” found under `/usr/bin/wifi_vc` if there is already an installation and running. The Data and Configuration files are found in the following directories.

-Current Readings and Status data `/usr/bin/wifi_vc/Sys/Data`

-Units Configurations data `/usr/bin/wifi_vc/Sys/Config`

-Archive data `/usr/bin/wifi_vc/webapps/examples/archive`

After re-installation, you may want to copy back these directories to recover the old data

a.) Copied and Save the Path of “JAVA_HOME = /usr/lib/jvm/<version >/jre”

`"/usr/bin/wifi_vc/ virtualcoordinatorApp",`

`"/usr/bin/wifi_vc/ virtualcoordinatorWebServer",`

`"/usr/bin/wifi_vc/ virtualcoordinatorFTP2"`

TIP: The path on those files will required to be copied in the New Files once the new virtual Coordinator folder is copied over in the directory `/usr/bin/wifi_vc`

Change to the “root” `/usr/bin/` folder and “view” and save “Java_home”

```
$cd /usr/bin/wifi_vc
$sudo vi virtualcoordinatorApp
$sudo vi virtualcoordinatorWebServer
$sudo vi virtualcoordinatorFTP2
```

TIP: Refer to “man” pages for the “vi” editor commands used as the default editor for editing files.

b.) Copy and Unzip the tarball in a directory “Download”

If downloading from the web, copy the tar file to “<USER_HOME>/Downloads” directory.

If copying from the CD, first mount the CDROM. The usual CDROM directory is `/media/cdrom`.

Once successfully mounted, change to the CDROM directory and copy the **wifi_vc_1.03.3.tar.gz** to the home user directory “~/Downloads directory.”

```
$sudo mount /media/cdrom
$cd /media/cdrom/Linux/
$cp wifi_vc_1.03.3.tar.gz ~/Downloads
```

TIP: The latest virtual coordinator is usually at this URL.

<http://www.newportus.com/software/wSeriesFWVC/index.htm>

Now Unzip the tarball file in the user “Download” home directory

```
$cd ~/Downloads/
$tar -zxvf wifi_vc_1.03.3.tar.gz
```

c.) Copy the unzipped directory “wifi_vc” from the user Directory to the root “/usr/bin/”

```
$ ls
$sudo cp -av wifi_vc /usr/bin
```

- d.) Re-create a link to the service scripts in the `/etc/init.d` directory if you removed them

```
$cd /etc/init.d/
$sudo ln -s /usr/bin/wifi_vc/virtualcoordinatorApp virtualcoordinatorApp
$sudo ln -s /usr/bin/wifi_vc/virtualcoordinatorWebServer virtualcoordinatorWebServer
$sudo ln -s /usr/bin/wifi_vc/ftpserver/bin/virtualcoordinatorFTP2 virtualcoordinatorFTP2
```

- e.) Re-create the links on the "`etc/rcX.d`" if you removed them where "`X`" is the run level, we just got and create a symbolink to the script.

```
$cd etc/rcX.d
$sudo ln -s /etc/init.d/virtualcoordinatorApp S98virtualcoordinatorApp
$sudo ln -s /etc/init.d/virtualcoordinatorWebServer S97virtualcoordinatorWebServer
$sudo ln -s /etc/init.d/virtualcoordinatorFTP2 S96virtualcoordinatorFTP2
```

Where the numbers 98, 97 and 96 are unused two digits numbers of SXX names used in the directory.

Note: **Ubuntu** has the **rcX.d** under the "`etc/`" directory

While others Linux alike is found under `/etc/init.d/`

- f.) Re-edit the home patch of **JAVA_HOME** in these files, reboot or restart services

Note: Use the "path saved" on the first step of this section "re-installation", or you can use `$readlink -f `which java`` to find your path

It should say something like:

```
/usr/lib/jvm/java-6-openjdk/jre/bin/java
```

Remove the "`bin/java`" part and leave only `/usr/lib/jvm/java-6-openjdk/jre/` (this is the actual **JAVA_HOME**. Edit the file and enter this path where it says **JAVA_HOME in the files** "`/etc/init.d/virtualcoordinatorApp`", "`/etc/init.d/virtualcoordinatorWebServer`", "`/etc/init.d/virtualcoordinatorFTP2`"

```
# Set this to your Java installation
# for example:
# JAVA_HOME=/usr/lib/jvm/java-1.6.0-openjdk-1.6.0.0/jre
JAVA_HOME=
```

Below the three lines command to modify the three files

```
$cd /etc/init.d/
$sudo vi virtualcoordinatorApp
$sudo vi virtualcoordinatorWebServer
$sudo vi virtualcoordinatorFTP2
```

TIP: Refer to "man" pages for the "vi" editor commands used as the default editor for editing files. The actual content of the file should look like this:

```
# Set this to your Java installation
# for example:
# JAVA_HOME=/usr/lib/jvm/java-1.6.0-openjdk-1.6.0.0/jre
JAVA_HOME=
```

After making the change, the content should look like this:

```
# Set this to your Java installation
# for example:
# JAVA_HOME=/usr/lib/jvm/java-1.6.0-openjdk-1.6.0.0/jre
JAVA_HOME= /usr/lib/jvm/java-6-openjdk/jre/
```

g.) Re-Start the Virtual Coordinator “**Application**”, “**WebServer**”, and **FTP2**” services with these commands:

```
$sudo /etc/init.d/virtualcoordinatorApp      start
$sudo /etc/init.d/virtualcoordinatorWebServer start
$sudo /etc/init.d/virtualcoordinatorFTP2      start
```

h.) **Copy back the “Data”, “Configuration” and “Archive” data from the directory saved**

i.) **Upgrade the “WiFi” Firmware**

We need to deploy the 9 image file (*.img) in the “*FTPserver*” folder of the “*wifi_vc*” directory in order to use the (VC) web menu “*Setup/TX Configuration/System*”.

When upgrade the Firmware in the “wifi” units. Your FTP ports must be enable correctly (Some systems use Port 20 to send the Payload, and Port 21 for connections)

TIP: The latest Firmware Upgrade is usually at this URL.

<http://www.newportus.com/software/wSeriesFWVC/FirmwareUpgrade/index.htm>

Copy the images into a “download” directory of your home user directory,

Example: “image101” from your source files, then copy them to your FTP server

The Directory for the Firmware images is found in the FTP server public directory

```
$ cd ~/Downloads/image101
$ cp -av *.img /usr/bin/wifi_vc/ftpserver/res/home/public
```