

EQS 6.4 for Linux Installation and User's Guide

(2020-04-13)

Download the Install Package

Go to <http://www.mvsoft.com/eqsdownload.htm>, click on [installation file] related to EQS 6.4 for Linux to download (the most current version is EQS 6.4 Build B120). You will see the Download window popup and the file **SetupEQS64Linux.tar** starts to download.

Install EQS 6.4 for Linux

Move the download file to your home folder (i.e. /home/my_account folder. Please note that the “my_account” indicates the real account name usually is your account’s log in ID). Issue the following command

```
$ tar -xvf SetupEQS64Linux.tar .
```

This command will extract EQS 6.4 install files into /home/my_account/eqs64 folder. This is the first step of the setup procedure.

After extracting the setup files, you will have to navigate to /home/my_account/eqs64/pgm folder where the program files and license files stored.

To setup EQS 6.4 license, you have to use the license program **eqs64setup.app** to set it up. Enter the following command

```
$ ./eqs64setup.app
```

You will be prompted for the EQS license number issued by Multivariate Software. The license number is a 18-digit number. Enter the number (with no spaces) and press the ENTER key. The process is shown in next screen.

```
Ubuntu 14.1.4 - VMware Workstation 14 Player (Non-commercial us...
Player
Ubuntu 14.04.5 LTS ubuntu tty2
ubuntu login: uggie226
Password:
Last login: Mon Apr 13 01:28:20 PDT 2020 on tty1
Welcome to Ubuntu 14.04.5 LTS (GNU/Linux 4.4.0-31-generic i686)

* Documentation:  https://help.ubuntu.com/

New release '16.04.6 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

uggie226@ubuntu:~$ cd eqs64
uggie226@ubuntu:~/eqs64$ cd pgm
uggie226@ubuntu:~/eqs64/pgm$ ls -al
total 4344
drwxrwxr-x 2 uggie226 uggie226 4096 Apr 13 01:15 .
drwxrwxr-x 5 uggie226 uggie226 4096 Apr 12 23:48 ..
-rwxr--r-- 1 uggie226 uggie226 903088 Apr 12 23:31 eqs64setup.app
-rw-rw-r-- 1 uggie226 uggie226 235 Apr 13 01:29 EQS64Setup.ini
-rwxr--r-- 1 uggie226 uggie226 3519280 Apr 12 23:30 eqsprog
-rw-rw-r-- 1 uggie226 uggie226 0 Apr 13 01:28 home_dir
-rwxr-xr-x 1 uggie226 uggie226 89 Apr 13 01:29 runeqs
-rw-rw-r-- 1 uggie226 uggie226 649 Apr 13 01:29 runeqs.r
uggie226@ubuntu:~/eqs64/pgm$ ./eqs64setup.app
sh: 1: /home/uggie226: Permission denied

Please enter your EQS64 for Linux license number
XXXXXXXXXX
REMAINING DAYS = 725

EQS64 for Linux has setup successfully
uggie226@ubuntu:~/eqs64/pgm$
```

Run EQS 6.4 for Linux Program

You are ready to run your EQS program from the system. This requires you to open a terminal window by pressing CTRL+ALT+T from your Linux screen. Once you are in the terminal mode (it is a unix command window, for those who does not familiar with unix commands, please ignore the “\$” since it is the unix system prompt and you don’t have to type it), you can start to run EQS.

Option 1: Using Native UNIX commands

Enter the following two commands

```
$ cd /home/my_account/eqs64/examples (or any folder where you store you models and data)
$/home/my_account/eqs64/pgm/eqsprog in=manul1.eqs out=manul1.out len=2000000
ser=xxxxxxx
```

Please note the “xxxxxxx” is your 18-digit license number (without spaces). On finishing the command, you will have to press the ENTER key to launch the program.

If you are not familiar with the Unix system, the first command “cd /home/my_account/eqs64/examples” will take you to “/home/my_account/eqs64/examples” folder. Please note that the “cd” command (stands for Change Directory) and the folder name “/home/my_account/eqs64/examples” has a space character in between them. We do this because all the EQS examples files are installed in the “/home/my_account/eqs64/examples” folder. We just make this folder as the default folder for easier to work with. If your data and model files are stored in a different folder such as “/home/my_account/eqs_project”, you will issue

```
$ cd /home/my_account/eqs_project
```

Note: the dollar sign “\$” is the system prompt and you do not need to enter it in your command.

The second command “/home/my_account/eqs64/pgm/eqsprog in=manul1.eq out=manul1.out len=2000000 ser=xxxxxxxxxxxxxxxxxxxx” is to run the EQS program (eqsprog, and it is stored in “/home/my_account/eqs64/pgm” folder) with the following input arguments

IN=the input model file name. This input file is usually created with .eqs extension.

OUT=the output file name

LEN=internal working space. You start with 2000000 and can be increased if needed

SER=a 18-digit license number without spaces.

You have to enter this command every time you run the EQS program. Of course, you should specify the appropriate input model and output file names.

Option 2: Using UNIX Shell Script

An UNIX command file “runeqs” is created in /home/my_account/eqs64/pgm folder during license setup. The command file has following lines

```
#  
#   Command to run EQS 6.4 for Linux  
#  
/home/my_account/eqs64/pgm/eqsprog in=$1.eq out=$1.out len=2000000 ser=xxxxxxx
```

You need to use an UNIX editor (i.e. vi program which is the standard text editor in Unix) to replace the “xxxxxx” in the ser command with your license number and save it.

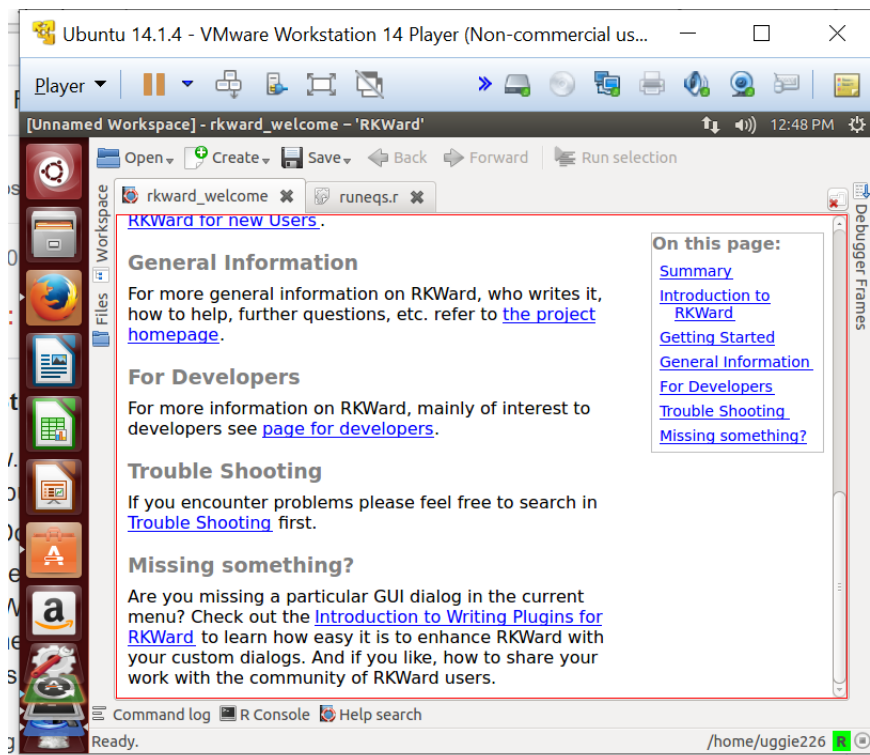
To run EQS, you first go the folder where your EQS model and data file reside and enter the command

```
$ /home/my_account/eqs64/pgm/runeqs manul3
```

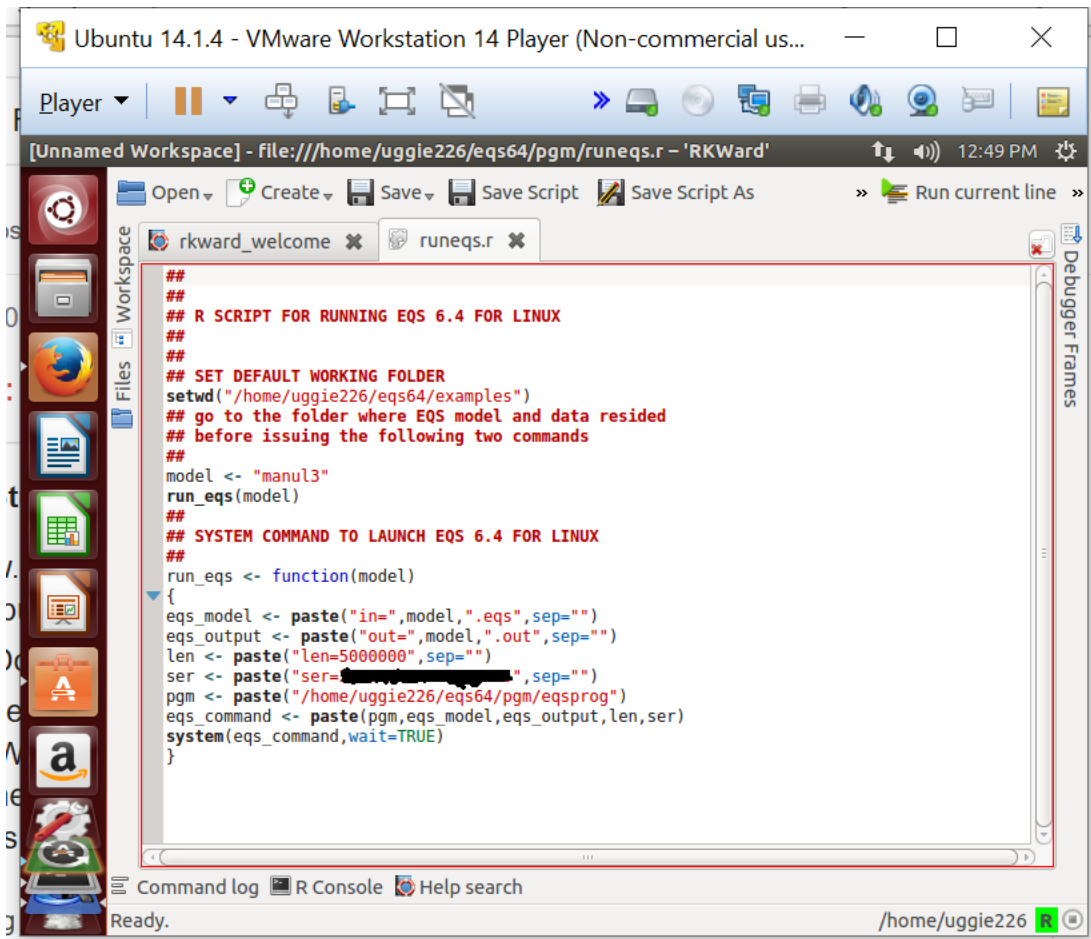
where “manul3.eq” is your EQS input model file. The program will run and the output file is stored in manul3.out.

Option 3: Using R Package

Another way to run EQS for Linux is using R as the program driver. The R is an open source statistical program. It has gained momentums and popularities in recent years and provided many useful statistical procedures. Regardless whether you need to use R for your research, learn what it is and how to use it would be beneficial. We can use its file editing capability and program launching ability to simplify the process of running EQS for Linux. You can access <https://www.r-project.org> to learn its detail and download the R for your Linux. Current version of the R for Linux we are using is R-3.0.2. We will use version 3.0.2 as our illustration since it is the legacy version for the author's Linux LTE 14.1.4. You need to download and install R for Linux and R Studio before we can continue to the following topics. The R Studio is where you execute all the R commands. The version of the Ubuntu Linux 14.1.4 does not support R Studio and we are using Rkward as the replacement.



A R scrip file `runeqs.r` is created in the `"/home/my_account/eqs64/pgm"` folder when the EQS license is initiated. You can use the R Studio (or Rkward in this example) to open this `runeqs.r` file. The content of the `runeqs.r` is shown in the R editor. The R Studio (or Rkward) has two windows. The upper window is a R editor shows the R script file (or R program). The lower window is executable area (or R console) where all the R commands are submitted and being executed. The R editor window is shown as follows:



We must run (or called source) the run_eqs program at the lower window so its procedures can be activated and preserved in the memory and ready to be called. To activate run_eqs, we need to copy from “run_eqs <- function(model)” down to the end of the file and paste the contents to the R console (at the lower window).

After the run_eqs program is sourced (or activated) we can run the EQS program now. It is a two-step process

Step 1, define the EQS model

Step 2, launch the EQS program

Above picture shows that a EQS model file manul3.eq is used to be analyzed. The commands are 1) setwd(“/home/my_account/eqs64/examples”) to set the default working folder. 2) model <- “manul3” to pass the manul3.eq as the model file to the keyword “model”. And 3) run_eqs(model) to run the R program “run_eqs” and using “model” as the input EQS model file.

When we run any model, we need to know where the model and data files reside. Then we make that folder as the default working folder. The R command “setwd” is the way to set the default working directory. The command setwd(“/home/my_account/eqs64/examples”) makes the “/home/my_account/eqs64/examples” folder as the default working folder. This folder is created

when the EQS for Linux was installed. Next step is to define the EQS model. EQS model files consist two sections; first is the file name and the second is the extension. The manul3.eqs is the typical way to specify an EQS command file. The keyword “model” is used to define the EQS model file. We only need to use its file name part. The eqs extension is automatically attached when the model file is defined. The command [model <- “manul3”] defines the model file as manul3.eqs. After all the modeling information are prepared, we are ready to run the EQS model. The command run_eqs(model) would run the EQS model and create the output file as manul3.out.

```
## SET DEFAULT WORKING FOLDER
setwd("/home/uggie226/eqs64/examples")
## go to the folder where EQS model and data resided
## before issuing the following two commands
##
model <- "manul3"
run_eqs(model)
##
## SYSTEM COMMAND TO LAUNCH EQS 6.4 FOR LINUX
##
run_eqs <- function(model)
{
  eqs_model <- paste("in=",model,".eqs",sep="")
  eqs_output <- paste("out=",model,".out",sep="")
  len <- paste("len=5000000",sep="")
  ser <- paste("ser=",model,".ser",sep="")
  pgm <- paste("/home/uggie226/eqs64/pgm/eqsprog")
  eqs_command <- paste(pgm,eqs_model,eqs_output,len,ser)
  system(eqs_command,wait=TRUE)
}
```

You can use the R program to open the output file manul3.out. Please note that you have to find your output file from the “/home/my_account/eqs64/examples” folder since you have made this is your default folder.

After you source the “run_eqs” function in the R console. The commands to run EQS are

- setwd(“/home/my_account/eqs64/examples”)
- model <-“manul3”
- run_eqs(model)
-

If you need to change the model file to run, just change the “model” command definition. Using the a new model file “mymodel.eqs” as an example, you need to enter [model <- “mymodel”] at R console and then run_eqs(model) You can repeat this process again and again to run your EQS models. Due to the lack of a good user interface program, the R solution has made running EQS for Linux a relatively easy task. The complete R command to launch EQS is as follows:

```
system("./eqsprog in=/home/my_account/eqs64/examples/manul3.eqs
out=/home/my_account/eqs64/examples/manul3.out len=3000000 ser=xxxxxx").
```

You don’t need to specify this command. The “run_eqs” function will do it for you. When you run a model, you can see the progress of the model run as shown in the lower window of the figure below.

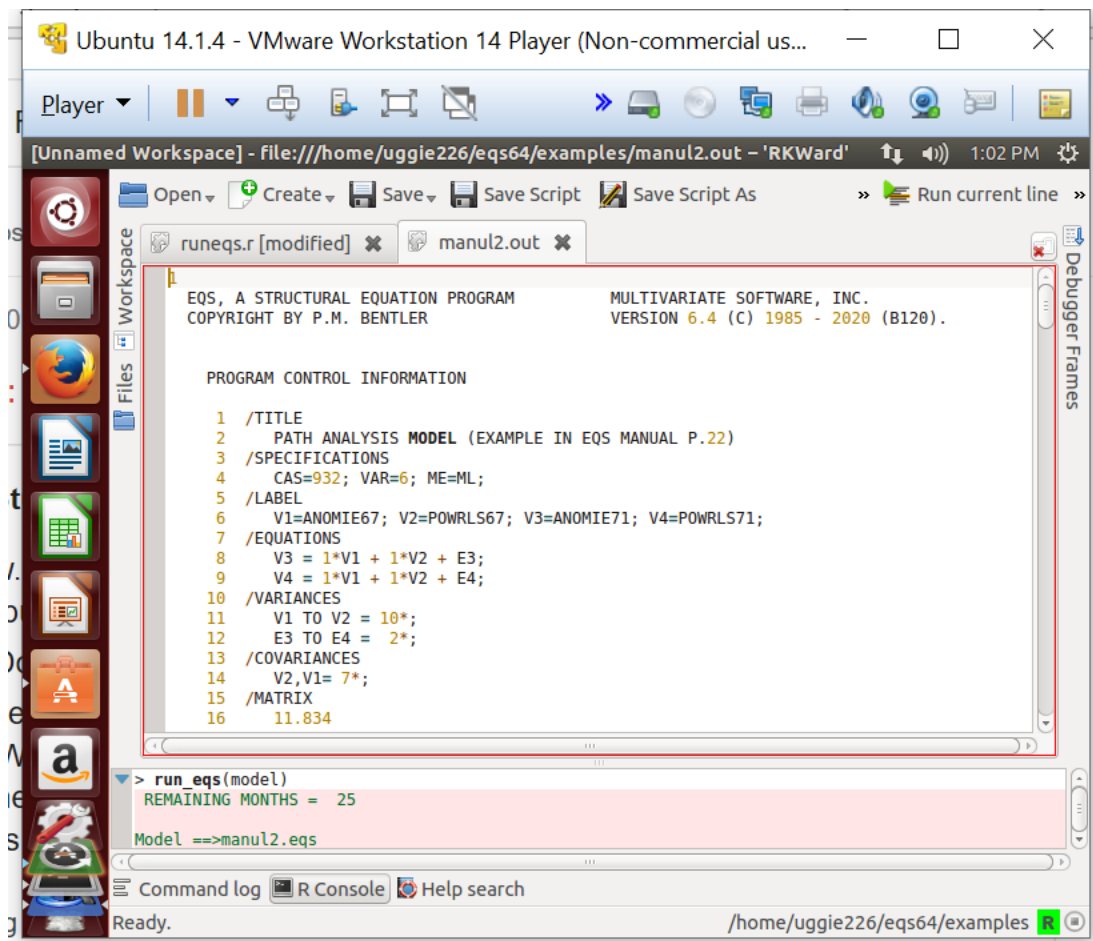
```
## SET DEFAULT WORKING FOLDER
setwd("/home/uggie226/eqs64/examples")
## go to the folder where EQS model and data resided
## before issuing the following two commands
##
model <- "manul3"
run_eqs(model)
##
## SYSTEM COMMAND TO LAUNCH EQS 6.4 FOR LINUX
##
run_eqs <- function(model)
{
  system("./eqsprog in=/home/uggie226/eqs64/examples/manul3.eqs
out=/home/uggie226/eqs64/examples/manul3.out len=3000000 ser=xxxxxx")
}

> setwd("/home/uggie226/eqs64/examples")
> model <- "manul2"
> run_eqs(model)
REMAINING MONTHS = 25

Model ==>manul2.eqs
Output==>manul2.out

Length==>5000000
Iteration : 1 Function : 1.67985
Iteration : 1 Function : 1.36994
Iteration : 2 Function : .37469
Iteration : 3 Function : .36720
... EQS is done ...
```

After you see the ... EQS is done ..., you model is complete. You can open the output file using the R editor. The output file will look like the window shown below.



This illustration shows you running EQS models in R using R Studio is a fairly easy task. You don't need to mess around with UNIX commands. That will make your modeling more efficient.