

Drop 4 R

Version 1.0

Installation Guide

Windows Platform

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Introduction

Drop4R is an application that allows the R user to leverage the free program Dropbox to execute R programs on remote desktops and servers running Windows. By using Drop4R, you can run R programs on more powerful Windows machines to gain computing advantage such as expanded memory addressing, GPU acceleration, and multiple cores that may not be available on portable devices.

Requirements

- Windows OS such as XP, Vista or Windows 7
- .NET 3.5 or better
- An installed copy of R - <http://cran.r-project.org/>
- Dropbox installed - <https://www.dropbox.com/install>
- Drop4R - www.minequest.com/downloads/drop4r.zip

Installation

Installing Drop4R is about a 15 minute process if you have all the prerequisite programs installed. First, begin installation by unzipping Drop4R.zip and making sure that the six files listed below are in the folder Drop4R on your C drive.

- rspawner.exe
- run_r.cmd
- rWatcherParms.xml
- StartSpawn.cmd
- dropboxdemo_lm.r
- R and Dropbox.doc

Brief Overview of each files Purpose

StartSpawn.cmd - starts the rspawner.exe.

rspawner.exe - the program that watches a folder for a new file with the .R file extension.

run_r.cmd - a Windows command file that is executed when rspawner.exe discovers a new .R file in the dropbox folder.

rWatcherParms.xml - is an XML file that contains information on what .CMD file to execute and what file type to watch for as well as the folder to watch.

I'm going to go over each of these files and starting with the most difficult.

rWatcherParms.XML

```
<?xml version="1.0" encoding="utf-8" ?>
<Parms>
  <WatchFor>*.r</WatchFor>
  <CommandExecution>
    <![CDATA[c:\Drop4R\run_r.cmd]]>
  </CommandExecution>
  <WaitTime>250</WaitTime>
  <WatchDirectory includeSubdirectories="true">C:\Users\Phil\Desktop\Documents\My Dropbox
</WatchDirectory>
</Parms>
```

Note that text in ***Bold Italic*** is text that is most likely to have to be modified for your installation.

```
<WatchFor>*.r</WatchFor>
```

The file extension to watch for.

```
<![CDATA[c:\Drop4R\run_r.cmd]]>
```

The .CMD file to execute when a file with the extension of .r is placed in the Dropbox folder.

```
<WaitTime>250</WaitTime>
```

The amount of time in milliseconds to wait before executing the .CMD file. I had to put this parameter in because if you are dropping a LARGE source file, the rspawner.exe will see it being created and try to execute it before it's all there. This is especially true if you are watching an FTP folder.

```
<WatchDirectory
includeSubdirectories="true">C:\Users\XXXX\Desktop\Documents\My
Dropbox </WatchDirectory>
```

The directory/folder to watch for a new file to appear. Note that this entry has word wrapped and should be one long line. If you set the includeSubdirectories="true" then any folder beneath it will also be watched. Set it to false if you only want that specific folder to be watched. The directory I have listed here is the default location in your user directory that Dropbox installs into under Windows. If you modified this during installation, you will need to change this entry to match the Dropbox folder. Make sure to change XXXX so that it points to your User Home directory.

Startspawn.cmd

```
@echo on  
c:  
cd\  
c:\Drop4R\RSpawner.exe "c:\Drop4R\RWatcherParms.xml"  
@echo on
```

This is simply a batch file to start the spawner without having to enter the command line arguments each time. If you unzipped the programs in to the folder c:\Drop4R, then you are good to go. Otherwise, change the fourth line to match the folder name that you installed unzipped the files in to.

run_r.cmd

```
@ECHO ON
CLS
SETLOCAL ENABLEEXTENSIONS

REM ===== Execute the R program with a filename extension of R =====
REM Call as: RUN_r myjobname.r

@echo
REM R_loc is where the Rterm executable is located.
SET R_loc=C:\Program Files\R\R-2.11.1\bin\Rterm.exe
REM
REM Droploc is where the dropbox folder resides
set droploc=C:\Users\XXXX\Desktop\Documents\My Dropbox

"%r_loc%" --no-save --no-restore --quiet < "%droploc%\%~n2.r" > "%droploc%\%~n2.log" 2>&1

Rem pause
```

The run_r.cmd program is what actually executes the R program and writes the files back into the Dropbox folder. You need to modify a couple of lines to point to the Dropbox folder and where your copy of R is installed.

Modify the **Set droploc=** to the correct folder for the drop box. This should match the same folder name that you have entered in the WatchDirectory in the RWatcherparms.XML file.

Modify the **SET r_loc =** to the correct location where you have R installed. Obviously, this will vary depending on the version of R that you are using.

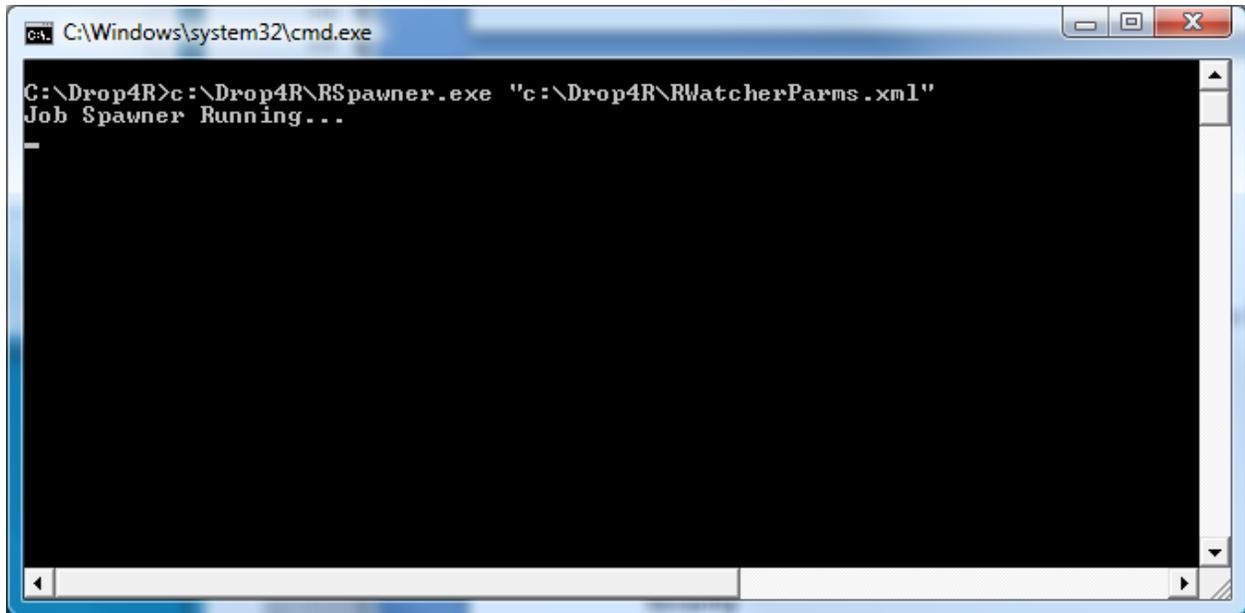
```
"%r_loc%" --no-save --no-restore --quiet < "%droploc%\%~n2.r" > "%droploc%\%~n2.log" 2>&1
```

Note that the above line is the call to execute R on your desktop or server.

If you are having problems getting Drop4R to execute, you might want to remove the REM from that last line to help you debug the run_r.cmd file. The pause statement will allow you to view the DOS commands that are being issued to the DOS command interpreter.

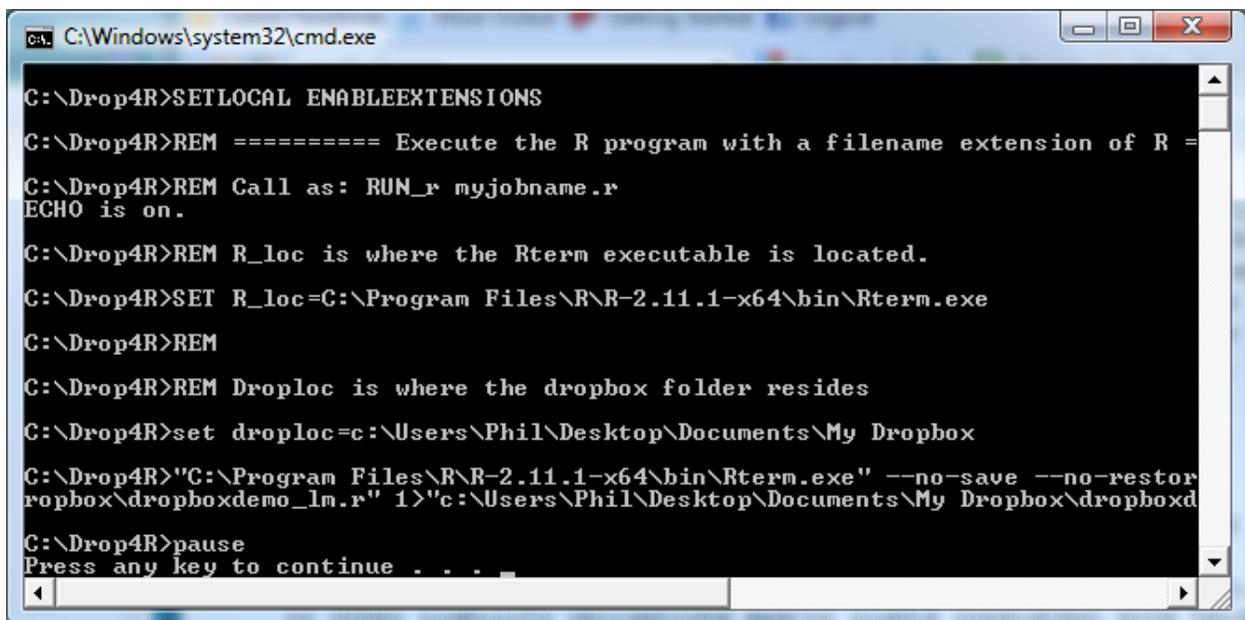
Starting Drop4R

After making the appropriate modifications to the files listed above, you start Drop4R by clicking on the Startspawner.cmd file. This will start a DOS window that runs the Job Spawner.



```
C:\Windows\system32\cmd.exe
C:\Drop4R>c:\Drop4R\RSpawner.exe "c:\Drop4R\RWatcherParms.xml"
Job Spawner Running...
```

Copy and paste (or drag) an R program with a file extension of .R into the Dropbox folder. If you have edited the XML and run_r.cmd files correctly, you will see a second DOS box appear running your R program.



```
C:\Windows\system32\cmd.exe
C:\Drop4R>SETLOCAL ENABLEEXTENSIONS
C:\Drop4R>REM ===== Execute the R program with a filename extension of R =
C:\Drop4R>REM Call as: RUN_r myjobname.r
ECHO is on.
C:\Drop4R>REM R_loc is where the Rterm executable is located.
C:\Drop4R>SET R_loc=C:\Program Files\R\R-2.11.1-x64\bin\Rterm.exe
C:\Drop4R>REM
C:\Drop4R>REM Droploc is where the dropbox folder resides
C:\Drop4R>set droploc=c:\Users\Phil\Desktop\Documents\My Dropbox
C:\Drop4R>"C:\Program Files\R\R-2.11.1-x64\bin\Rterm.exe" --no-save --no-restore
ropbox\dropboxdemo_lm.r" 1>"c:\Users\Phil\Desktop\Documents\My Dropbox\dropboxd
C:\Drop4R>pause
Press any key to continue . . .
```

Drop4R will place the log and lst files from your R program back into the Dropbox folder. If you need to place other files that were created in your R session in the Dropbox folder, you will need to code that manually.

Take a look at the dropboxdemo_lm.r program for an example of routing graphs and a dataframe back to the Dropbox folder.

Security

It's important to take into consideration security when using Drop4R. Essentially, as long as you are the only user dropping files into the folder for execution, you should be fine. The problems arise when you offer to create and open a shared folder for others to drop R files into. ***Once you open your shared folder to others, there is no security model.***

You need to be careful who you let upload an R program into a shared folder. It's incredibly easy to upload a malicious batch file and execute it using R. For instance, anyone can upload a .cmd or .bat file and execute it using the R system command.

It's worth repeating, only share a folder that is being watched by Drop4R with others you totally trust.

Tips

- Install Dropbox so that the default folder is not in your User Home directory. The length of the folder name that you will have to reference will be incredibly long. Install or reinstall DropBox in a folder on your C: drive in say a folder called db. That way, you will be able to reference the folder in your R code as:

```
c:\db\My DropBox
```

- You can change the Dropbox Folder Location by going into the DropBox Preferences screen and **moving** the folder to a new location.
- Setup a folder in your Dropbox folder for only running R programs. This helps keep down the amount of clutter you have to search through when Drop4R returns your files into the folder. Say you create a sub-folder called R, you will have to change the RwatcherParams.XML and run_r.cmd programs to watch for the .R extension in that specific folder.

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