

Making a truly portable Cygwin install, working around drive letter and file permission issues.

· rally25rs 5 years ago

[Cygwin](#) in itself is actually fairly portable. There are several other blogs and write-ups out there about installing it to a USB key. However, what they don't tell you is that while your Cygwin might be runnable from your USB key, or other portable drive, *you will run into user permission issues* as you use it on different systems.

I ran into this issue pretty quickly using Cygwin installed on an external USB hard drive between my home and work computers. I would create a file on one machine, then try to edit it on another, but Cygwin would say I didn't have permissions, and would list the file owner as "????????". After a little digging, it turns out that just because you can run Cygwin from multiple machines, it is actually trying to coordinate who you are with Windows itself. So since I am 2 different users on 2 different machines (and on an ActiveDirectory domain at work, but not at home), Cygwin treats me as 2 different users, so I can't access my own files that I created on one machine from another machine. In addition, since I have separate Windows user names on each machine, Cygwin tries to put me in separate home directories for each.

It isn't very pretty, but I eventually came up with a solution to this problem, so when I run Cygwin, whatever user I am currently logged in as in Windows will automatically be added to the same group in Cygwin. Then I can use group level permissions in Cygwin to make sure I can always access my own files.

This all centers around running Cygwin from a .bat file, which includes some extras to set up your user permissions. So start by making a file named "Run Cygwin.bat" (or whatever you want to call it). Place this file on your portable / USB drive. Initially, add this to the file:

```
@echo off

REM Get current drive letter into WD.
for /F %%A in ('cd') do set WD=%%~dA
```

This will get the current drive letter for your USB drive, so whatever machine you plug into, you don't have to worry what letter Windows maps it to.

Next add:

```
REM Store any existing mounts, unmount them, and replace with mounts to current drive letter.
cygwin\bin\mount -m | cygwin\bin\sed s/mount/"%WD%\cygwin\bin\mount"/ > cygwin\tmp\mount.log
cygwin\bin\umount -U
cygwin\bin\mount -f %WD%\cygwin/ /
cygwin\bin\mount -f %WD%\cygwin\bin /usr/bin
cygwin\bin\mount -f %WD%\cygwin\lib /usr/lib
```

```
REM Set some general environment variables
```

```
set path=%path%;%WD%\cygwin\bin;%WD%\cygwin\usr\X11R6\bin
```

```
set ALLUSERSPROFILE=%WD%\ProgramData
```

```
set ProgramData=%WD%\ProgramData
```

```
set CYGWIN=nodosfilewarning
```

Admittedly, the first part of this was copy/pasted from someone else's guide on making Cygwin portable. I don't know that it actually does much useful. The second chunk changes some of the environment variables to point to our portable Cygwin drive.

I should point out that my portable drive has Cygwin installed in the \cygwin folder, and I also created a \ProgramData off the root of the drive. Sometimes Cygwin likes to write stuff to your system's ProgramData folder, so it is nice to point that to the Cygwin portable drive, instead of saving info to just the machine you are on.

Next, add this to your .bat file:

```
REM This specifies the login to use.
```

```
set USERNAME=YOUR_USER_NAME
```

```
set HOME=/home/%USERNAME%
```

```
set GROUP=None
```

```
set GRP=
```

Replace "YOUR_USER_NAME" with the user name that you want Cygwin to use. Cygwin will show the file owner as this user name, and that will also be the name of your home directory.

Now, the idea here is that when you run this bat file, it is going to get your current Windows login, no matter what machine you are on, and it is going to map that Windows user to the Cygwin user and group that you indicated in that section.

Now add this to your .bat file, which is what does the hard part:

```
REM If this is the current user's first time running Cygwin, add them to /etc/passwd
```

```
for /F %A in ('cygwin\bin\mkpasswd.exe -c ^ cygwin\bin\gawk.exe -F":" '{ print $5 }') do set SID=%A
```

```
findstr /m %SID% cygwin\etc\passwd
```

```
if %errorlevel%==1 (
```

```
echo Adding a user for SID: %SID%
```

```
for /F %A in ('cygwin\bin\gawk.exe -F":" '/^%GROUP%/ { print $3 }' cygwin/etc/group') do set GRP=%A
```

```
)
```

```
if "%GRP%" neq "" (
```

```
echo Adding to Group number: %GRP%
```

```
cygwin\bin\printf.exe "%n%USERNAME%:unused:1001:%GRP%:%SID%:%HOME%:/bin/bash" >> cygwin\etc\passwd
```

```
)
```

```
set GRP=
```

```
set SID=
```

```
set GROUP=
```

These commands use the Cygwin “mkpasswd.exe” program to get your SID for your current Windows user, and adds it into Cygwin’s \etc\passwd file, mapping the SID to your specified username and group.

Again, not that I have Cygwin installed in the \cygwin folder off the root of my portable drive. If you choose a different path, then you will have to edit the paths in this bit of script.

This next pair of commands is something that I like to add, just because we can be on a different drive letter on any given system.

```
REM Make a symlink from /curdrive to the current drive letter.  
cygwin\bin\rm.exe /curdrive  
cygwin\bin\ln.exe -s %WD% /curdrive
```

This makes a symlink from “/curdrive” to our current drive letter. That way you can always “cd /curdrive” to get to your current drive letter. Otherwise, you will find yourself hunting for the drive letter in “/cygdrive/{drive_letter}”.

Next, add this to your .bat file:

```
REM Actually run the bash instance.  
cygwin\bin\bash --login -i
```

This of course actually runs Cygwin. You will now be logged in as your specified user, and should end up in a home directory with the same username you specified in this .bat file, instead of your Windows user name.

The bat file will halt at this point until you exit the Cygwin session. We need to add this final but to the end of the .bat file to do some cleanup. It will execute after you exit the Cygwin session.

```
REM Cleanup and replace pre-existing mounts.  
cygwin\bin\rm.exe /curdrive  
cygwin\bin\umount -U  
cygwin\bin\bash cygwin\tmp\mount.log  
cygwin\bin\rm cygwin\tmp\mount.log
```

We remove our symlink to “/curdrive” since it will be remapped, potentially to a different drive letter, on the next run anyway.

And that is it! Now any time you want to run your portable Cygwin, just execute your “Run Cygwin.bat” file that we created here, and you should always be running as the same user and in the same group.

As an additional note, when you run this .bat file in Windows, it will usually come up in a pretty small command shell window. You can add some lines to your .bat file to change the default width and height of this window. At the *TOP* of your .bat file, add the lines:

```
REM Set screen dimensions.
```

```
mode con: cols=120 lines=40
```

Here you can specify the number of rows and columns for the command shell window, so it can always start the same size. The hard part is if you run from different resolution displays. For example if you sometimes run from a large external LCD display, and sometimes from a small netbook, then you won't be able to get a good default size here. I [have another blog post about always getting Cygwin to run fullscreen](#), on any resolution.

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