How to deploy a Shiny app to `shiny-apps.stat.ubc.ca`

`shiny-apps.stat.ubc.ca` is the Shiny server at UBC Statistics. In there, you can upload the apps you have created, be it for the course you are TAing or the RA you have. There are many outstanding resources on the web on how to create a Shiny app—see for example Shiny's web site and the references and examples therein. Sadly, there are very few resources on how to deploy an app to a remote server. This tutorial will help you do that for the UBC Statistics server, although presumably the process should be somewhat similar for other servers. I should add that I am not a tech savvy person, and so this tutorial is written with a similarly non tech savvy audience in mind.

I will assume that you already have a working app, be it a shiny app in an `app.R` file, a flexdashboard, or any other interactive `rmd` file. There are 4 basic steps you should follow to deploy your app to `shiny-apps.stat.ubc.ca`:

1. Log in to the relevant account within the `shiny-apps.stat.ubc.ca` server.

2. Transfer the relevant files (`rmd` files, any data sets or images if your app needs them) to the `shiny-apps.stat.ubc.ca` server.

3. Ask The[1] to install any missing packages.

4. Verify that your app is up and running.

In principle deploying apps is not really difficult. That being said, there is some work that should be done (only once) before following these steps, and even then there are some nuances to be aware of.

1   The relevant account whithin the `shiny-apps.stat.ubc.ca` server

Once you upload your app, the url to it will be something like

$$\text{shiny-apps.stat.ubc.ca/account/app\_name}.$$

You can actually go to that url at any time to see if your app is up and running or if there is some error going on.

The `app_name` will simply be the name of your app file. The relevant account within the `shiny-apps.stat.ubc.ca` server refers to the `account` bit before the app name.

You should consult with your supervisor what the appropriate account name should be—e.g. for apps related to material in StatSpace we have the `FlexibleLearning` account. Then, you should email The and ask him to create the account name and give you access to it (or only the latter if the server already exists).

You can access the server via SSH—short for Secure Shell—using the terminal of your computer: just type in `ssh your.username@shiny-apps.stat.ubc.ca` and then your password when prompted. (Here, `your.username` refers to your `stat.ubc.ca` account, as does the password.)

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[1] Or the corresponding person in charge of IT.

That being said, you don't *really* need to use the terminal. The easiest and most convenient way to connect to the server (for the purposes of deploying apps, at least) is to use an external application. I personally use and recommend FileZilla Client. It's free and available for all operating systems! Furthermore, its main purpose is transfering files, which is all you really need to deploy an application.

2   Transfering files between your computer and the server

How to transfer files

I will show you how to transfer files from and to `shiny-apps.stat.ubc.ca` using Filezilla, but keep in mind that there are more applications like it out there in case you prefer another one (and the process of file transfer should be something similar to the one in here, anyway).

FileZilla is very intuitive and user friendly. In order to connect to `account` within the `shiny-apps.stat.ubc.ca` server you only need to add a new account with the details you will recevie from The. Be sure to select the SFT - SSH File Transfer Protocol option right next to Protocol, as well as the Normal login option. See Figure 1.
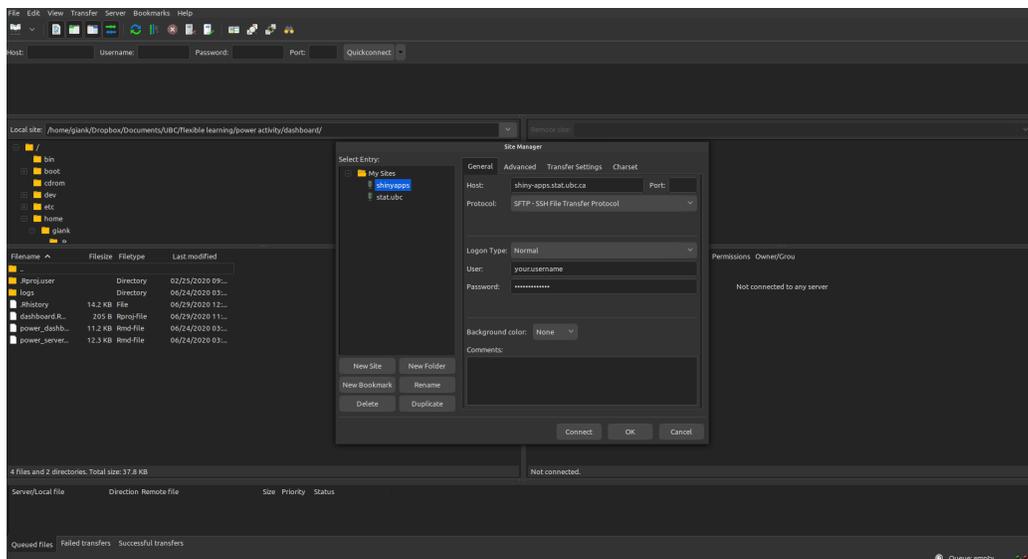

Figure 1: Setting up the remote server in FileZilla

You can now easily connect to the remote server, where all the files related to your app should be located. Once you connect to the remote server, you will have files on both panels of the screen. The files on the left panel are located in your computer and the ones in the right panel are located in the remote server. Transferring files is as easy as you would think—just drag and drop!

Where to transfer files

Now that you know how to transfer files, you can use the right panel in FileZilla to move between folders in the remote server. The folder we are interested in is the one with the `account` name. Its location should be `zfs/users/your.username/account`. Once there, create a new folder **with the same name as your app**. If the names do not match, the app will not be deployed! Afterwards,

transfer the relevant files from your computer to the server. (This does not delete the files from your computer, don't worry.)

What files to transfer

When you compile an app sometimes many auxiliary files (e.g. `html` files) get created. Which ones you need to transfer depends on your app, and you can always go for trial and error here. Some general rules of thumb:

- The main `app.R` or interactive `rmd` file *always* has to be included.

- All files needed by your app (e.g. data sets) also need to be transfered, including whatever folder structure you have in your project locally.

- In case you do have additional files, you also want to include an `.Rproj` file, which is needed for `R` to determine where your files live. (And it is good practice to not use absolute paths anyway.)

- In general, `html` and other files generated when locally compiling your app are not needed *unless* your app needs to rewrite them. In this case you do need to transfer them. (And this is actually related to the Shiny server not having permissions to create files rather than the app not being able to run without them.)

Remember: when in doubt, you can always figure out if a file is needed by trial and error. Try both with and without it and see if the app runs.

3 Installing missing packages

Once you uploaded all your files, go to your app's url (`shiny-apps.stat.ubc.ca/account/app_name`) and see if you are able to use it. You might have to wait a couple of minutess while everything is processed. If either that doesn't happen or you get an error, the most likely reason is that the packages used by your app are not installed in the remote server.

You most probably do not have permissions to install packages in the server, which means you will have to contact The and ask him to install them for you. Make sure to send him a list with all the packages that need to be installed. Once he installs them, go back to the app's url to see if it is now up and running.

4 Troubleshooting

If after doing all of the above your app is still not running, here are some other ideas that can help you figure out what is going wrong:

1. It should go without saying, but make sure there are no bugs in your code. Your app should be running smoothly in your computer before you deploy it.

2. Make sure that all the files (such as data sets) that your app needs are also in the server, in the correct folders, and that you have an `Rproj` file to deal with relative paths.

3. If the above do not work, you should check the logs of your app in the remote server.

Checking the logs of your app

The logs will contain any errors encountered by `R` while trying to run your app. They are located in `/zfs/users/shiny-apps/shiny-apps/var/log/shiny-server/`. Use FileZilla to navigate to that folder, where you will see multiple files. Each app in the server will have multiple log files, so the easiest way to find the latest log file of your app is to order all files by date and search for the first one with your app's name. (This is especially useful when you look for log files many times, say after reviewing them, debugging your app, and realizing that something is still not working.) Once located, use FileZilla to transfer the log file to whatever folder you prefer in your computer. Hopefully by inspecting the log file, it will be easier to determine what is causing your app to not run. If this still does not help, ask The for help!