

UMass Astronomy Work From Home Helpful Tips

Astronomy Computing Committee

Getting on the UMass VPN

What good is a VPN

A VPN, or Virtual Private Network, allows you to create a connection to another network over the Internet. These network streams are usually encrypted and compressed for security and efficiency. A VPN is a type of IP tunnel: it transports another network protocol by encapsulation of its packets.

All major operating systems---Windows, MacOS, Linux, iOS, Android---provide support for VPNs. Once your VPN link is established, your computer or device will appear to originate from the network domain hosting the VPN.

Using the UMass VPN

In particular, UMass IT uses a VPN provided by a company called Global Protect. This application uses a Cisco-developed proprietary protocol, so you will need to download a client following the instructions for most devices (except for Linux, more at that below) at [THIS](#) web site.

Once you have set up the client following the instructions and started the VPN, your device will appear to be in the UMass domain. This will then allow you full access to electronic library resources such as journals and media that allows access for UMass users.

The Computing Committee suggests that this is the easiest method assuming that the VPN is working well for you. Otherwise, see the alternative SSH socks proxy solution below.

Instructions for using Linux and Global Protect

Let's assume you have Ubuntu and are using network manager. Here are the steps to activate access to the UMass VPN:

1. You need the network manager plugin for the Cisco-protocol called "vpnc". You can install that using "sudo apt get network-manager-vpnc-gnome"
2. Then bring up the VPN configurator from the system network preferences tab as follows: system config->network->vpn click add (+)
3. Choose Cisco compatible VPN (vpnc).
4. That will bring on a config window; name it something nice (e.g. UMass). Gateway is: vpn.umass.edu. For user, use your NetID and password is your SSO password. Group name and password are both 'umass-vpn'. You have the option of requesting that the system ask you for your credentials each time you activate the VPN, or remember your credentials.
5. Close the window. Now go to the network tab and turn on the UMass vpn (toggle). Done.

If you are using Gnome, you will see the VPN logo in the indicator next to the network indicator. Obviously, from now on, you can simply use the toggle in the manager to turn the UMass VPN on and off.

Editing text files on your server from home

Often you want to edit your code or LaTeX paper sitting on your server inside the Astronomy private network from your home. You might have your favorite editor such as Emacs or vim running on your home machine, but would like to edit a remote file. Of

course, you can edit files within your SSH session terminal using a terminal text editor like nano, vim, or emacs (depending on what is installed on your server).

Alternatively, on your local machine, you can try an emacs helper mode called Tramp to edit remote files. For information on tramp, please visit:

<http://wikemacs.org/wiki/TRAMP>

If you are a vi or vim fan, fear not. Visit the following site for editing remote files with vim:

https://vim.fandom.com/wiki/Editing_remote_files_via_scp_in_vim

“Set and forget” long-running processes with GNU Screen

Overview

GNU Screen is a terminal multiplexer. It allows you to switch quickly between more than one active terminal session (called "windows") running on a system. Most usefully, these terminal sessions persist after you have logged out of your system, and you can resume your session(s) later. Screen prevents a session from "timing out" from disconnecting SSH connections or local terminal emulators, for example. Screen may be used for a variety of tasks such as maintaining persistent IRC sessions and multitasking in a terminal environment.

Screen runs on any Unix/Linux environment and Mac OS X. Before installing and using Screen, it is recommended that you review the Getting Started Guide. In addition, if you are unfamiliar with using a terminal environment, you will want to review the Using the Terminal Guide.

For a Debian or Ubuntu system use the following commands to update, upgrade, and install Screen:

```
$ sudo apt-get install screen
```

For other Linux distributions, use your package management system as usual to locate and install the screen package.

By default, Screen is installed on most Mac OS X systems and may be used without any other prerequisites.

Basic GNU screen use

- + Enter the command "screen" at a terminal prompt.
- + Once Screen is running, enter an application or program command.
- + Your terminal session will function as usual.
- + To end your current session without impacting any running processes, enter Ctrl+a+d or quit the Terminal application.
- + Once you quit a session, you will be returned to the pre-Screen prompt. The Screen session and applications will continue to run.
- + If you type exit or logout from the command prompt in the screen session it completely ends that particular screen session
- + You may reattach to your session at any time by using the command "screen -r" followed by the screen name that is listed in the "screen -dR" command.

More details

Once you issue the "screen -r" command you will reattach to your last detached session. It is possible to have multiple Screen sessions as well as several detached sessions. A list of detached Screens may appear when you try to reattach to a session. Each session will have a process id or PID. So to determine which session to reattach to use the screen -ls command to display all the Screen sessions and their PIDs. Below is a sample of the screen -ls command:

```
$ screen -ls
```

There are screens on:

28638.pts-32.eagle (Detached)

19680.pts-8.eagle (Detached)

To reattach to a Screen session using the PID, use the following syntax:

```
$ screen -r <28638>
```

If the Screen you want is already attached but you cannot see it, there are a number of command line arguments for invoking your Screen. Below are the different options:

screen -dr - detaches a running Screen from its current session

screen -x - attaches to a running session without detaching from its current attachment

screen -DDR - detaches a running session from its current attachment

and performs a force reattachment. Use this if the -dr option is unsuccessful.

screen -A - forces a Screen to resize all of its windows to the current window when it attaches.

screen -X [command] - starts a Screen session but instead of loading a shell it will run [command].

screen -S [name] If you are running multiple screens in a same machine doing different tasks, you can keep track of which screen is running which task by starting the screen with a name, which will be visible in "screen -ls" command

Once you attach or reattach to a Screen session, all commands are performed by using Ctrl, the letter a, and another letter or number. (Note the Ctrl and a keys are pressed at the same time.) This "magic" key stroke is configurable. E.g. I have changed mine to Ctrl-o so as not to interfere with the emacs Ctrl-a command.

Below is a list of frequently used Screen commands:

Ctrl+a c - Creates a new Screen window. The default Screen number is zero.

Ctrl+a 0-9 - Switches between windows 0 through 9.

Ctrl+a x - Locks your terminal window. You will have to enter your password to unlock your terminal session.

Ctrl+a n - Switches to the next window.

Ctrl+a k - Kills the current window. When the command is issued, you will be asked to confirm by entering a y or n.

Ctrl+a A - Will allow you to enter a title for the current window.

Ctrl+a d - Detaches from a Screen.

Ctrl+a ? - Will display a list of all the command options available for Screen.

Learning and doing more

The command options listed above are only a small portion of the available options. Google is your friend here: there are lots of online resources and tutorials on screen. One last useful tip: you can also customize Screen in a wide variety of ways and save the customization commands in a .screenrc file.