System Administrator DeCal
Week 5 Homework

Due by next class (3/6)

February 28, 2007

1 Administrative

- As usual, homework should be submitted to `aoaks+decal@ocf.berkeley.edu`
- By popular demand, the decal now has an AIM screen name. Hit up **ineedsyshelp** if you have questions.
- The virtual servers have been set up and are ready to use:
  - Server: tempest.ocf.berkeley.edu
  - Username: root
  - Port: 2XX22, where XX is your id number (you id number is based off the last letter of your inst account name and is that letter's position in the alphabet. i.e.: cs198-fm $\rightarrow$ m $\longrightarrow$ 13)
  - Password: You should have been given a password at the end of class. If for some reason you need to get a new one, hit up the AIM screenname.
  - Each virtual server has been given 99 ports on tempest. These ports range from 2XX01 to 2XX99. You can use these ports how ever you like. However, note that the SSH server on each machine has been configured to listen on 2XX22.

2 Regular Users

It is not always a good idea to do all your work on a server as root. Sometimes being a normal user can save you from making mistakes that could otherwise be disastrous. To keep from always logging in as root, you will set up a basic user and a sudo.

1. The virtual servers run Debian Linux, which provides the `adduser` command. This is a slightly 'friendlier' version of the lower level `useradd` command. Use this to create a regular account on your system. What command did you use?

2. This user will be an administrator on the system, so create a group called `wheel` and add the user to the group. What commands did you use?

3. By default, Debian does not come with the `sudo` system, but it does come with the very powerful **APT** package management system. Use the `aptitude` command to install the `sudo` package. `aptitude` can be called with arguments to non-interactively install packages, or it can be called without arguments to start an interactive GUI (though I usually complain about GUIs, I find the GUI to be extremely well built). Once `sudo` is installed, add an entry to the `sudoers` file that grants everybody on group `wheel` full sudo. Test it out by running `sudo -l` as your normal user. What commands did you use during this process?

3 Building Software

The objective of this homework is to get you to try out compiling a program from source code. As an example, we will be using the **Ganglia** Monitoring System. "Ganglia is a scalable distributed monitoring system for high-performance computing systems such as clusters and Grids" (from Ganglia Website). This is a very useful system for monitoring systems in a lab environment. The infrastructure has already been set up on the main server, so your your task will be to build the monitoring daemon on your system and configure it to send data to our grid.

4 Building the Software

1. Ganglia is available from `http://ganglia.sourceforge.net`. Get the latest (3.0.4) source package and extract it. What commands did you use?

2. As you may have read (if you read the Ganglia documentation), Ganglia has the option to be built with `gmetad`. You need not compile this. `gmetad` is used to gather and store the data from the various server nodes. This has been set up on the main server. Configure the package so that it will be installed in `/usr/local/ganglia-3.0.4`. What command did you use?

3. Build the software. What command did you use?

4. Install the software. What command did you use?

5 Configuring the Software

Now that your program is ready for use, you will need to configure it to behave properly. Normally, you would have to figure this out yourself, but this homework is supposed to be about compiling software, not so much about configuring

Ganglia. Therefore, a configuration file `gmond.intermediate.conf` is provided on the website.

You may want to make an `etc` directory in the Ganglia installation directory and put the configuration file in there. For some reason, Ganglia defaults the location of the configuration file to `/etc/gmond.conf`, which isn't what we want. How do you manually specify the location of the configuration file you want Ganglia to run with? (hint `./gmond -h`) Start the monitoring daemon with the custom configuration file. What command did you use? Use `ps -ef | grep gmond` to confirm that the daemon is actually running. If for some reason it doesn't start, try using the `-d1` option, which will turn on debugging output and keep the daemon in the foreground.

6 The Finished Product

If all goes well, you should now have a monitoring daemon running in the background, reporting usage statistics to the cluster monitor. I have set up the web frontend at `http://tempest.ocf.berkeley.edu/ganglia`. If you did everything correctly, you should see your node in the **Intermediate Cluster**!!