Instructions for running RAMS on Yellowstone

MRI (11/17/14)

*Yellowstone Environment*

Make sure to have run through the basics on: <http://www2.cisl.ucar.edu/resources/yellowstone>

Basic programs are run through precompiled “modules”. One does not need to point a bash\_profile (for example) to make RAMS run. My example “.profile” is included which has some useful aliases. Nothing more is really needed. I loaded the following modules: ncarenv/1.0, ncarbinlibs/1.1, intel/12.1.5, ncarcompilers/1.0, job\_memusage/1.0, hdf5-mpi/1.8.9. You should only need to “module load” the last one. Load with “module load hdf5-mpi/1.8.9”. Make sure this is loaded every time or check the “module save” command.

You have two primary directories. Your login directory, ~, is /glade/u/home/yourname. This is directory where you will keep RAMS. Your storage directory is /glade/scratch/yourname. This is where you will point RAMSIN to output data. You can maximally have 10TB of data in your storage directory at any one time.

You will need to replace “yourname” in most of the attached files with your login name.

*RAMS Environment*

I have included my “include” file. Compile the code with a “make” command as usual submitted directly from the command line. Make sure you be using the “\_dm” versions of things when relevant in RAMS.

*RAMS Execution*

You will need to submit RAMS to a queue. You will submit the job via a batch file. Mine is included – “batchfile.RCE.CTL.” It includes several arguments that you might change. See <http://www2.cisl.ucar.edu/resources/yellowstone/using_resources/runningjobs> for an explanation of the arguments in that file. If you have a standard memory usage run, make sure you –n argument is evenly divisible by 16. Each node (I.e. each 16 processors) has something like 20GB of memory. The other major choice is into which queue you want to jump. See the next paragraph about queues. You will submit the job with “bsub < batchfile.RCE.CTL’. You will see a jobID displayed. Take note of this. If you need to kill the job use “bkill jobID”. The “machs” file is now irrelevant.

My experience with queues is purely anecdotal. The “regular” queue uses 1x core-hours. When I submit to this queue my job always executes immediately. The “economy” queue uses 0.7x core-hours. If I submit my job before 7am EST, it usually begins execution before 9am. If I submit to this queue after 12pm EST, it usually takes between 8 and 12 hours to begin running.

Monitor jobs as you would with a normal RAMS run. You can only run for a maximum of 12 consecutive hours at a time. But there is no waiting period after execution, so I perform two 12 hours runs a day. Use the job\_memusage command at the execution line in the submission batch file to check memory usage.

*Data Transfer*

Data transfer can be divided into two parts, compression and the actual transfer. The compression can be completed with the ‘x.repack\_nocopy’ script attached. As with RAMS execution, you should submit the script with a batch file to the machine. Submit the Compress script to the “Geyser” machine on Yellowstone. This will allow you to execute on a single processor. You probably asked to 100 core hours on Geysers.

It is recommended that you use *Globus* for all data transfer of files larger than a few MB. You will need to use a local transfer node and the ncar#gridftp node to transfer data. See <https://www.globus.org/>.

It is also possible to transfer files via SCP, but this is not compliant with the Yellostone best practices. But it is likely to be successful if you try. If you’re willing to SCP, then you can use the online compression and transfer file x.repack. I haven’t included that here, but it’s around.

*Recommendations for Proposals to CISL*

“Core-hours” are easy to come by. Ask for the maximum. If you anticipate a large amount of files to be output by your simulation, ask for more than the suggested 100 core-hours on Geyser/Caldera. The rumor is that if you run out of core-hours, it is easy to come by more, but I can’t speak to this from personal experience.

*Disclaimer*

This set of instructions is a work in progress. These instructions build on the help MRI received from LDG and SRH.