
Lab

Scalability Testing on Ranger Environment

Scalability Testing

- Log into Lonestar using the SSH secure-shell client:
 - Host Name: ranger.tacc.utexas.edu
 - User Name: train##
- Untar the scalability-lab.tar file into your directory:
tar xvf ~train00/lab-scalability.tar
- Enter the scalability-lab directory:
cd lab-scalability

Scalability Testing

- The directory contains the following files:
 - **graph_results.sh** (shell script to display data)
 - **strong_scale.sh** (shell script to start the strong scaling test case)
 - **weak_scale.sh** (shell script to start the weak scaling test case)
 - **Imp_linux** (the application we will be analyzing)
 - **inputs** (directory containing application data files)

Strong Scaling

- We will start with the strong scaling test
- Begin the strong scaling test by executing `strong-scale.sh`
 - This script will execute the sample program as a series of jobs, each using a power-of-two number of processing elements (2, 4, 8, 16, 32, 64, 128, 256)
- When run, the script will tell you the jobIDs of the jobs for this particular scaling set
- Allow 10-15 minutes for your scaling set to complete
- Use ``qstat`` to monitor the progress of your jobs

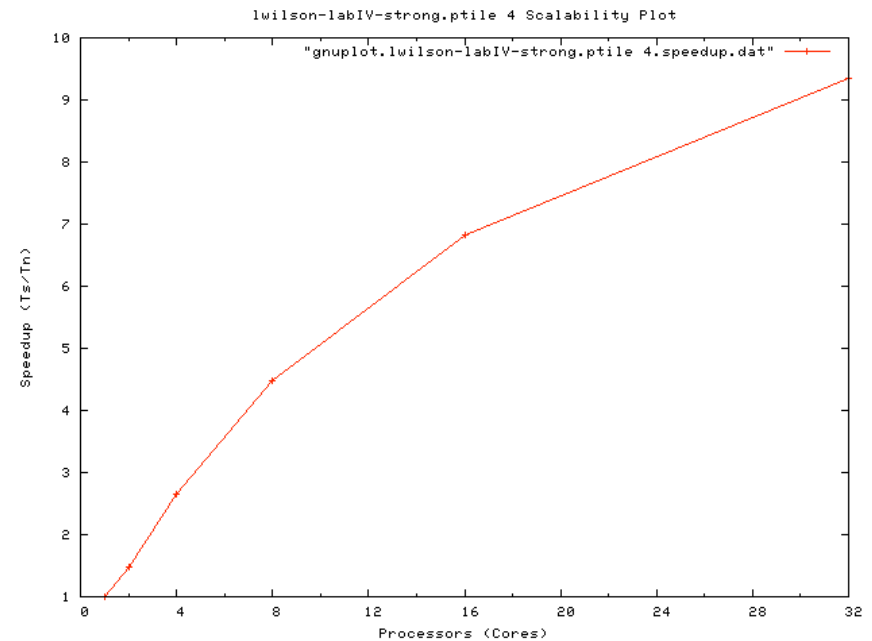
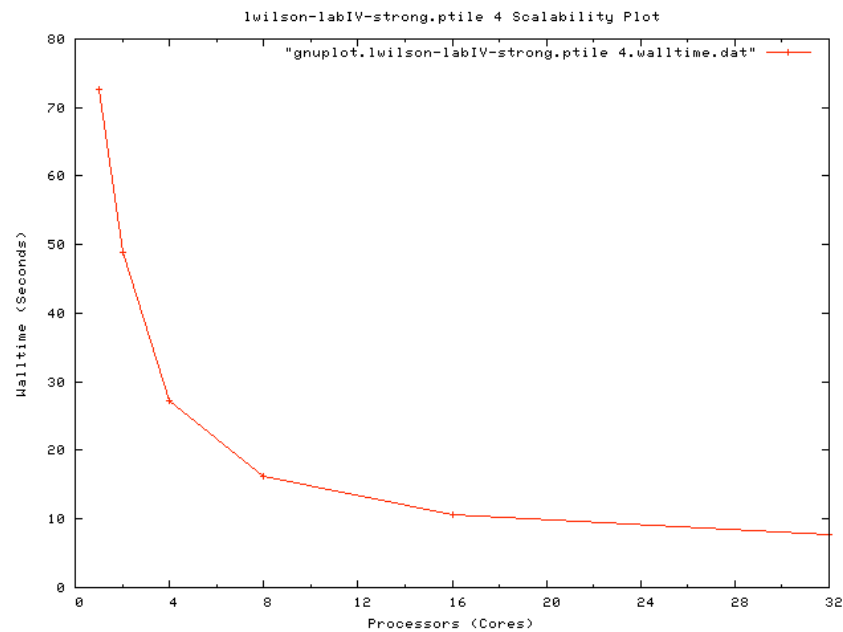
Strong Scaling

- When the scaling series is finished, qstat will report no more jobs
- Your directory now contains a series of folders corresponding to the different runs in the series.
- To generate graphs for the strong scaling case, type:
`./graph_results.sh train##-lab_scale-strong.ptile_16`

Strong Scaling

- This script will create two images in PNG format
 - The first shows the real walltimes of each run
 - The second shows the speedup factor
- To see these images:
 - open a 'File Transfer Window' from the top menu of your SSH client
 - double-click on the 'lab-scalability' folder in the right pane
 - double-click on the icon corresponding to the file you wish to look at

Strong Scaling Example Plots



Weak Scaling

- Now we will look at a the weak scaling test
- Run the following to start the weak test set:
`./weak_scale.sh`
- When the job series completes, graph the results:
`./graph_results train##-lab_scale-weak.ptile_16`
- Grab the new graphs using the SSH File Transfer window

Weak Scaling Example Plots

