

Spring 2007 – CS 633/733 Grid Computing
Homework 2

Due: February 26, 2007 1:00 pm. Individual work only. 200 points.

1. Login to one of the Vulcan machines and follow the instructions for setting up Globus Toolkit (GlobusSetup.pdf). [50 points]
2. Write a script (say, *runremote.sh*) that will execute on one of the Vulcan machines and perform the following operations: [50 points]
 - a. Create a proxy certificate with a lifetime of 24 hours;
 - b. Display the information about the proxy certificate;
 - a. Create the input file *HPL.dat* using the template *HPL.dat.template*;
 - b. Copy the input file *HPL.dat* to the specified hostname using `globus-url-copy`;
 - c. Submit the job for execution on the specified hostname using `globus-job-submit`;
 - d. Wait for the job to complete (use `globus-job-status` to determine the job status);
 - e. Copy the output file generated from the specified hostname to Vulcan after the job completes using `globus-url-copy`;
 - f. Destroy the proxy certificate.

The script *runremote.sh* must accept the following arguments (either as command-line arguments or by prompting the user to enter appropriate values):

- a. Hostname where the job must be submitted
- b. Name of the executable (with full path)
- c. Any arguments that must be passed to the executable (problem size (N) and number of processes (P and Q))

Test the script by submitting jobs on both Everest and Olympus for different values of N, P, and Q.

3. Use the `globus-url-copy` command to transfer the file **/home/puri/file3** from **everest.cis.uab.edu** to your home directory on **olympus.cis.uab.edu** using the following options and tabulate the time taken for all options b-e: [50 points]
 - a. Using `-dbg` option of `globus-url-copy`
 - b. Using 4 parallel data streams
 - c. Using a TCP buffer size of 1048576 bytes
 - d. Using a block size of 1048576 bytes
 - e. Using 4 parallel data streams, TCP buffer size and block size of 1048576 bytes.Note that you have to use `-vb` option of `globus-url-copy` to monitor the performance. Include both the average transfer rate and instantaneous transfer rate. You can include all these commands in a single script. See “`globus-url-copy -help`” for various options required to perform these operations. Please delete `file3` at the end.
4. Destroy proxy certificate created for questions (1) and (2). Upload a proxy certificate with a lifetime of two weeks to the MyProxy Repository at `myproxy.uabgrid.uab.edu`. Retrieve the proxy certificate from the MyProxy repository and repeat question (1). [50 points]

For more information on using the Globus Toolkit please refer to the handout given in class and the Globus Quick Start guide at <http://www.globus.org/toolkit/docs/2.4/admin/guide-user.html>.

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Submission:

Use the “script” command to capture the interactions. Start the session by typing “script”. The inputs and outputs are sent to a file called “typescript” in your current directory. Perform the various operations described in question 2 and 3 and then type “exit” to end the session (first try all the command and once you have figured out the different command and options to used then use script to capture the output for final submission). Create a tar file for all the scripts, instructions, and the typescript file and upload the tar file to WebCT. Do not make any changes to the scripts, I will look at the timestamps when you demonstrate the homework.