## RM-Replay for Cluster Scheduling Project Report 2/29-3/14

### Zhen Huang, Blake Ehrenbeck

This two week we are trying to solve two main tasks: (1)After the meeting with Boyang from last Thursday, we found the metrics.log was incorrect, so we need to identify and fix the bug. (2)After repairing RM-Replay, migrate the dataset from Argonne Theta Machine to the RM-replay.

#### Progress This Week

After our debugging, we found that the trace\_metrics.c in the container that we build every single time, some setting for the metric.log are hardcoded, so we needed to adjust the parameters including Nnodes\_mc, Nnodes\_gpu,Nnodes to be consistent with Jarvis configuration to make sure the metric.log shows up correctly. Also, the metrics builder doesn't consider jobs less than 2 hours, so we modified it to read our jobs.

#### Modification

# After building the Docker images, go to /slurm/slurm-replay/submitter, and open the trace\_metrics.c

 Change the Nodes\_mc to be 8, Nodes\_gpu to be 3, and Nodes to be Nnodes\_mc+Nodes\_gpu. (This is the configuration of the Jarvis machine we ran our tests on).

210	double coervar_nare;
244	double dispersion;
245	double slowdown;
246	<pre>int Nnodes_mc = 8;</pre>
247	int Nnodes_gpu = 3;
248	int Nnodes = Nnodes_mc+Nnodes_gpu; // all daint + data movers
249	size_t nlistjobs;
250	unsigned long long idx_jobid;
251	unsigned long* listjobs;
252	int list_file = 0;
253	long start_range, end_range;

2. Change the time\_wait\_arr[j] to be bigger than 2 minutes, this will change change the ignoring job duration from 3 hours to 2 minutes which allowed our testing job to not get ignored.



These modifications produced a sensible metrics output.

We are now in the process of rebuilding the Slurm database, adding in the data from Argonne so the trace builder from RM-Replay can produce a trace.

SCHEMAS	47		Name: jarvis_job	_tab	le								Schema: slurmdb	
Q Filter objects		<u></u>												
▼ 🛢 slurmdb		Column	Datatype		PK	NN	UQ	BIN	UN	ZF	AI	G	Default / Expression	
🔻 💼 Tables		💊 id_job	INT(11)										NULL	
jarvis_job_table		💊 id_user	INT(11)										NULL	
tiews		💊 account	TINYTEXT										NULL	
Stored Procedures		exit_code	INT(11)										NULL	
Functions		job_name	TINYTEXT										NULL	
		id_group	INT(11)										NULL	
		Column details 'id_job'												
		Column Name	e: id_job										Datatype: INT (11)	
		Charset/Collation	n: Default Char										○ Default NULL	
		Comments	5:										Storage: VIRTUAL STORED	
													Primary Key Not NULL Unique	
													Binary Unsigned ZeroFill	
													Auto Increment Generated	
Object Info Session														
Table: jarvis_job_table														

Building the jarvis\_job\_table

We will migrate the CSV table to this database.