

# A Test Framework for Movement of Monte Carlo Data Using SAM SRM Interface

# 1 Introduction

A test framework has been setup for movement of Monte Carlo (MC) data between Storage Element(SE) at Fermilab and UCSD. Both the SE is being managed by dCache based Storage Resource Manager(SRM). The following SEs have been used for setting up the framework.

1. dCache managed SRM at Fermilab: “srm://cmssrm:8443/srm/managerv2?SFN=/resilient/NONCMS\_GUEST\_30DAYLIFETIME/cdfguest/McData/”
2. dCache managed SRM at UCSD: “srm://t2data2.t2.ucsd.edu:8443/srm/managerv2?SFN=/pnfs/sdsc.edu/data2/cdf/McData/”

It is the user’s responsibility to generate the MC data with its metadata. For testing the framework, we have used the already generated MC data and its metadata available in SAM database. A process is running which transfer files (data and its metadata) available in SAM to dCache managed SRM at Fermilab. There is an another process which transfer the files from dCache managed SRM at Fermilab to SRM at UCSD. In this document, we are summarizing the results for which the files transfer continuously takes place for two hours between the two SRMS. For robust framework, more test is needed and it will be done in coming days.

## 2 Composition of Files

Figure 1 shows the composition of files used for testing the framework. Every data file has its own metadata file. So they are equal in number. The data file is the output of MC job and in the present context, its size is of the order of 500 Mega bytes. The metadata file contains information relevant to MC job output and its size is of the order of few Kilo bytes. Figures 2 and 3 show the sizes of the data and its metadata files which are used for testing the framework.

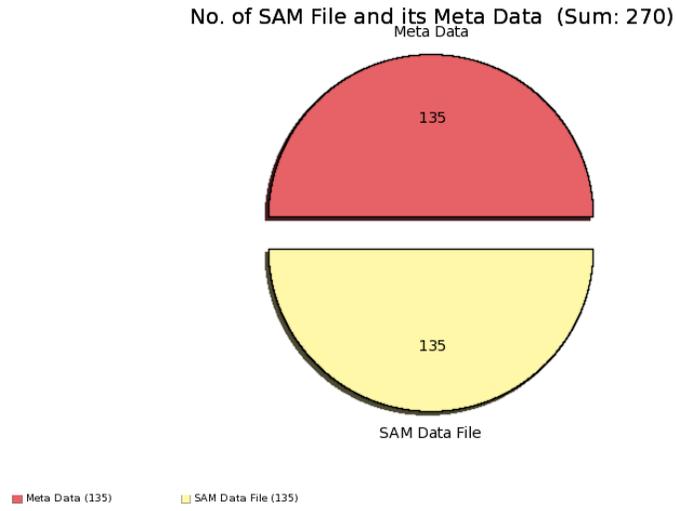


Figure 1: Composition of files which are used for transfer between two SRMs.

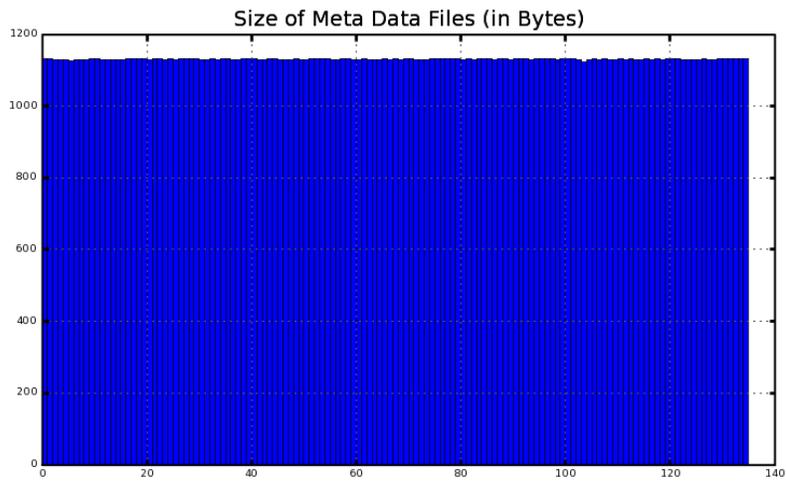


Figure 2: File size of each meta data files.

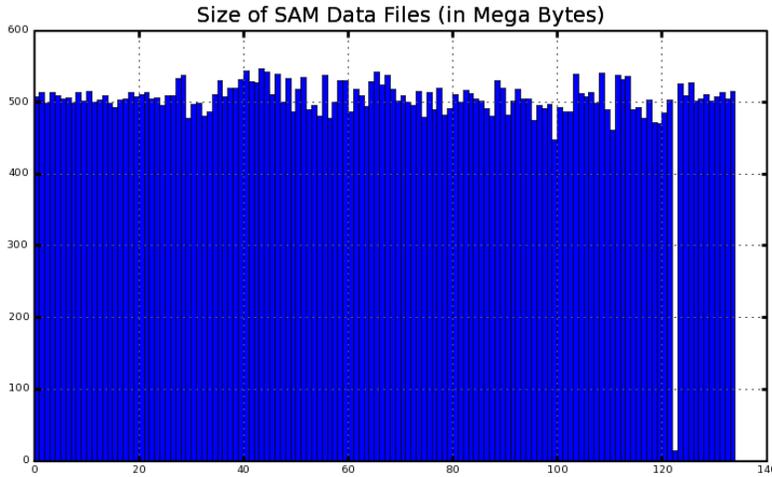


Figure 3: File size of each SAM data files.

### 3 Monitoring Parameters

In the following sections, we are showing some parameters that will help us in evaluating the performance of the framework.

#### 3.1 Time Plot

Figures 4 and 5 show the time needed for copying of files from dCache managed SRM at Fermilab to SRM at UCSD. Time needed to transfer metadata ( few Kilo bytes in size) and data files ( 500 Mega bytes in size) between the two SRMs are 14 and 34 seconds respectively.

Figures 6 and 7 shows the movement of SAM metadata and its data file during the fixed interval of time period. It can be seen from the Figure 7 that during certain time period(18:32 - 19:02) there is low evolution of SAM data files at the the other end of SRM. These duration of time is being utilised for transfer of small size metadata file. Hence it is necessary for the optimum performance of the frameowrk, the file size should be kept as big as possible.

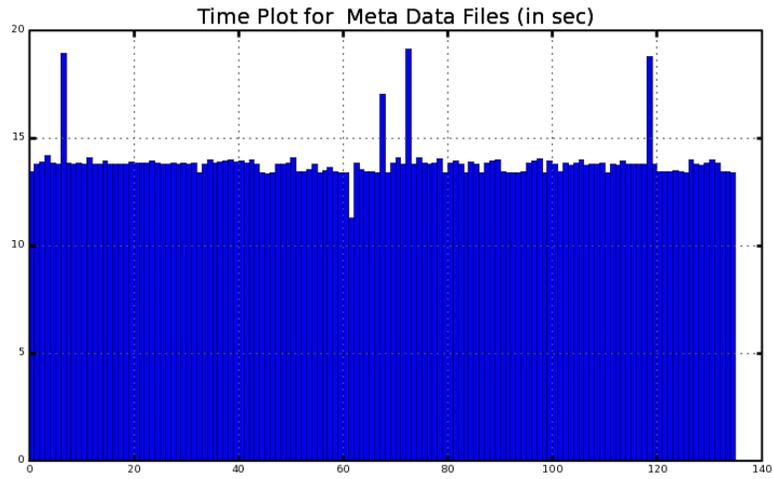


Figure 4: Time taken by SAM meta data files for copying between two SRMs

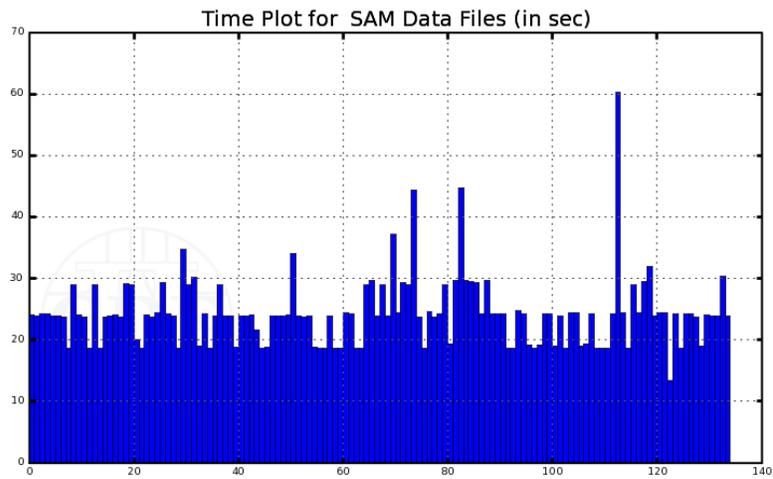


Figure 5: Time taken by SAM data files for copying between two SRMs

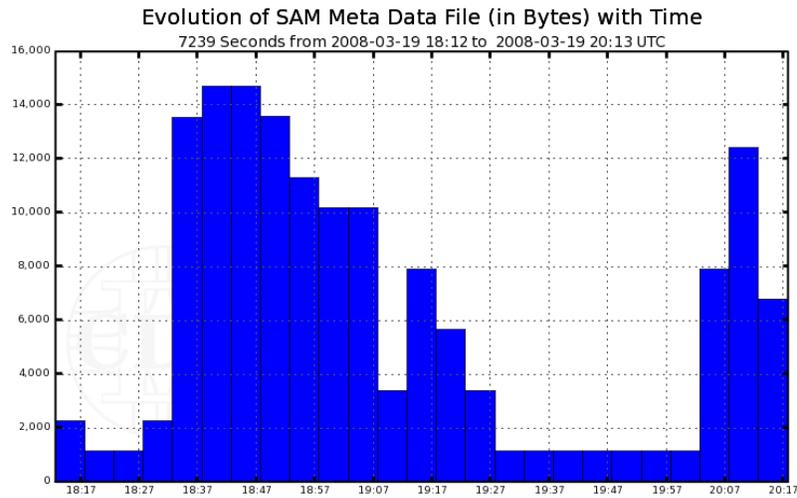


Figure 6: Progress of copying of SAM meta data files with time between two SRMs

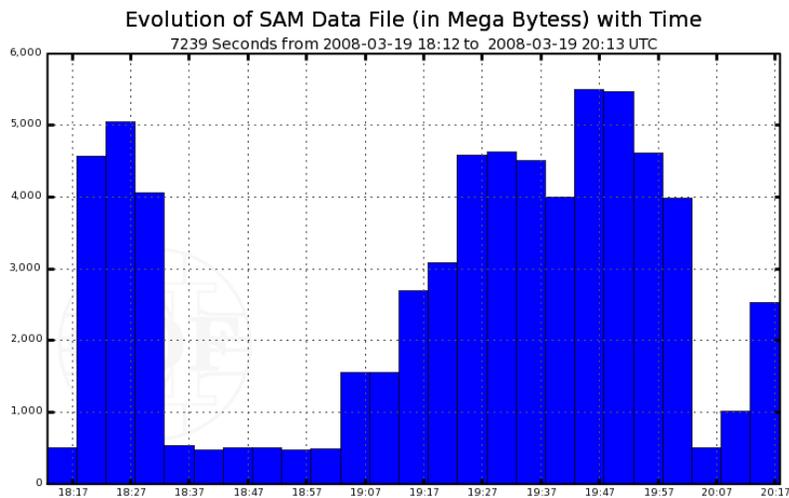


Figure 7: Progress of copying of SAM data files with time between two SRMs

### 3.2 Transfer Rate

Figures 8 and 9 show the transfer rate of moving file between SRMs at Fermilab and UCSD. It is clear from the figures that the transfer rate is much higher as comaprable to the files of the smaller sizes.

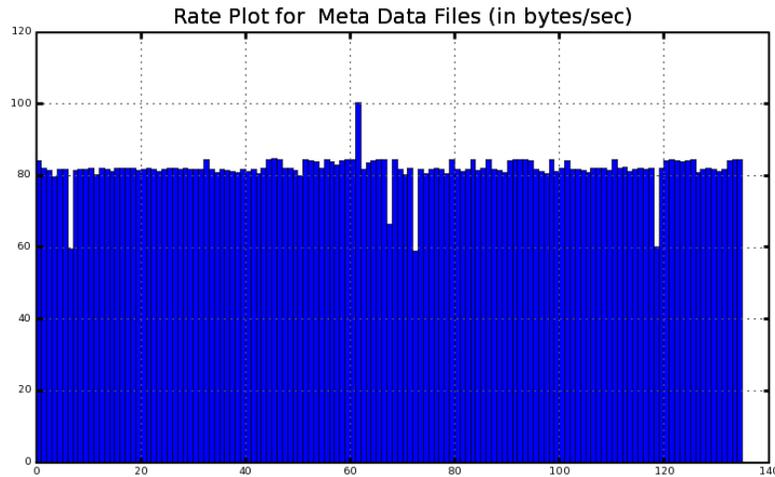


Figure 8: Transfer rate of SAM meta data files between two SRMs

### 3.3 Cumulative Flow of Data

Figures 10 depicts the amount of cumulative data being transfered during the period of testing of the framework. More test is needed for a definite conclusion about the amount of data which will be handed by this framework.

### 3.4 Query Map

The Query map class is a non-traditional graph, but has proved very helpful to display quality data for multiple sites versus time. Each box represents a fixed duration worth of transfers. The closer a box for a site is to green, the higher success rate for that hour. The red boxes represents hours with poor success rates. Figure 11 is the quality

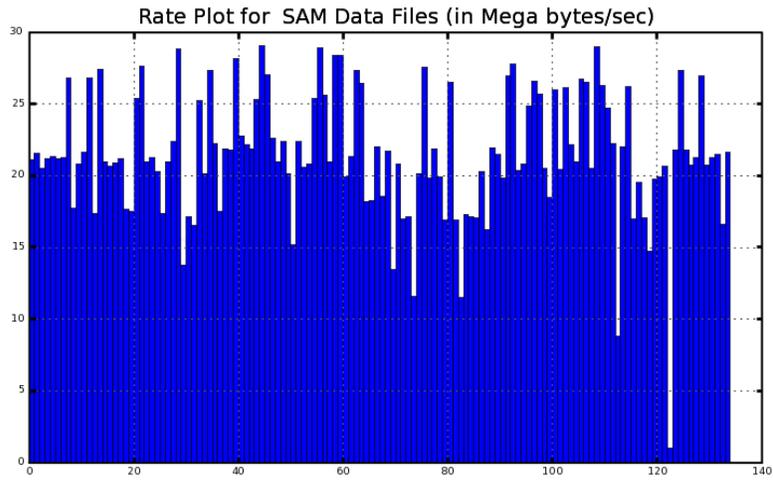


Figure 9: Transfer rate of SAM data files between two SRMs

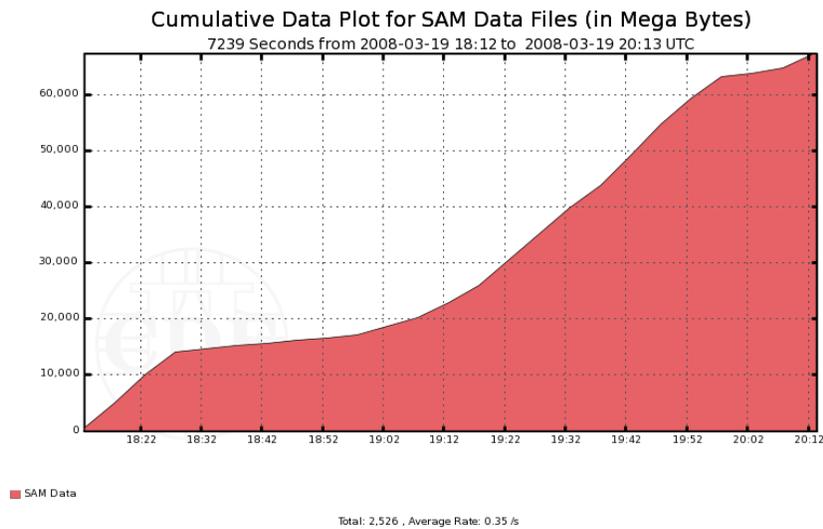


Figure 10: Cumulative transfer of SAM data files with time between two SRMs

plot of our framework. It is not easy to draw any conclusion from this plot due to lack of statistics. But, certainly this plot will help us in evaluating the performance of connectivity of different sites with Fermilab.

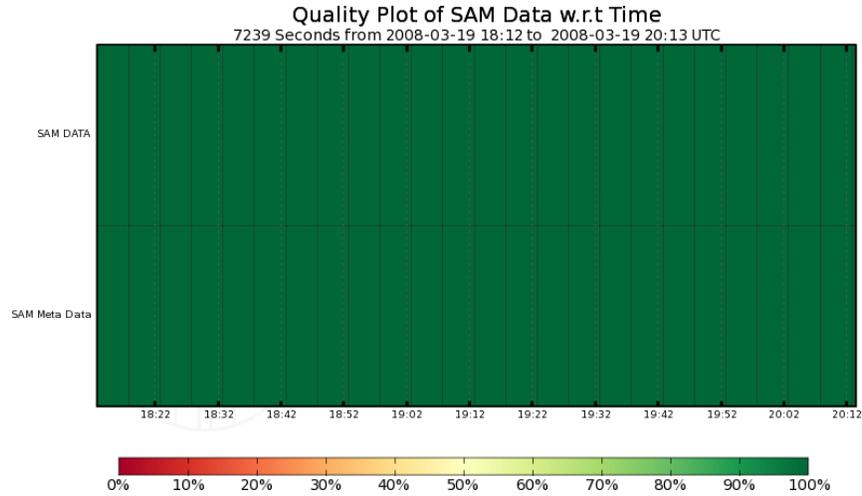


Figure 11: Quality plot of files transfer between two SRMs

## 4 Future Plan

Our next step is to run the test framework for longer period of time, say a week. Then we will study the above mentioned parameter in more detail. The comments of the group members will be helpful in filling the loopholes of the framework. May I request you to have your expert comments !