Web Services and PC Grid

ONG Guan Sin
<GuanSin.Ong@scs.com.sg>
Grid Evangelist
Singapore Computer Systems Ltd

APBioNet/APAN
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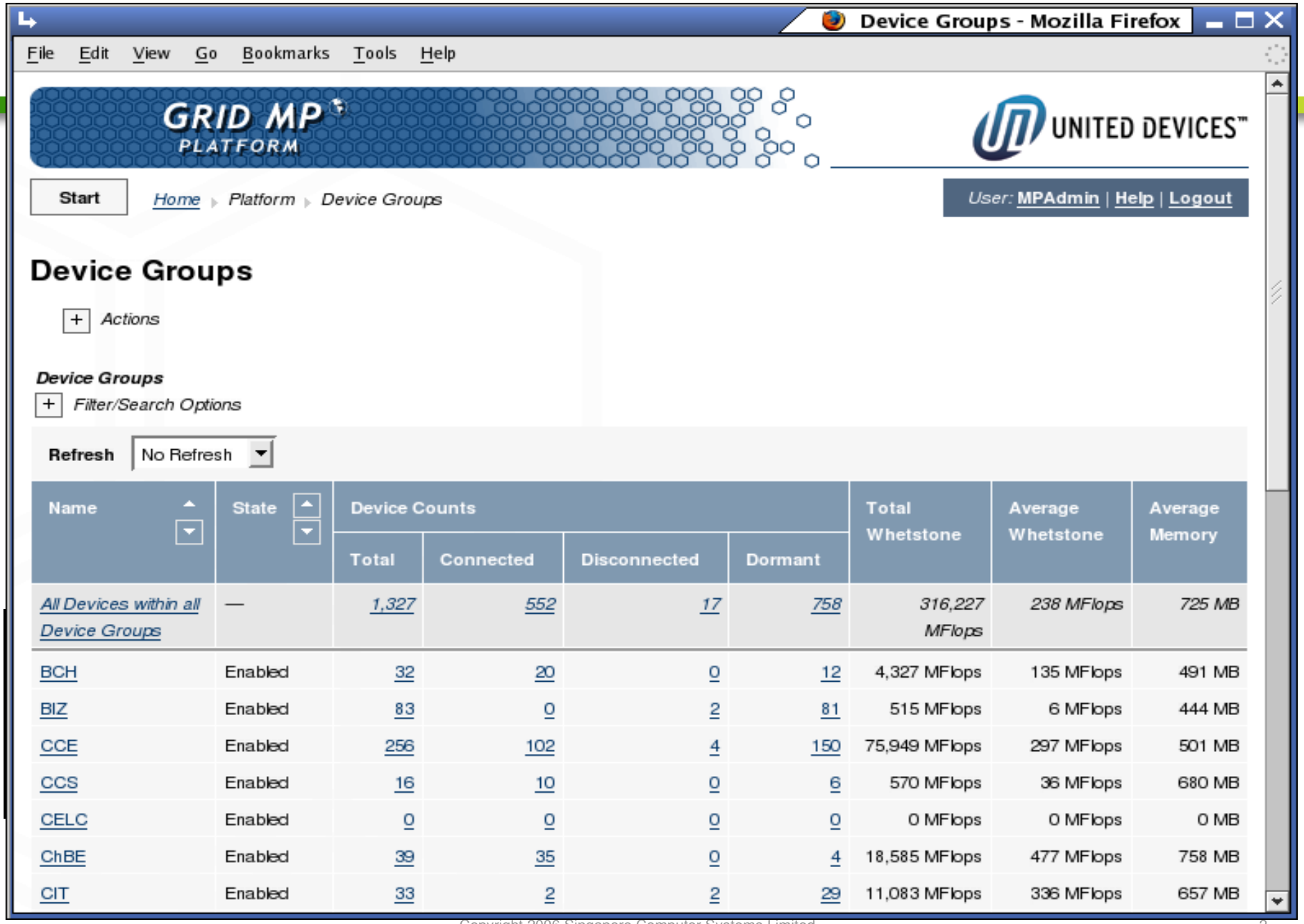
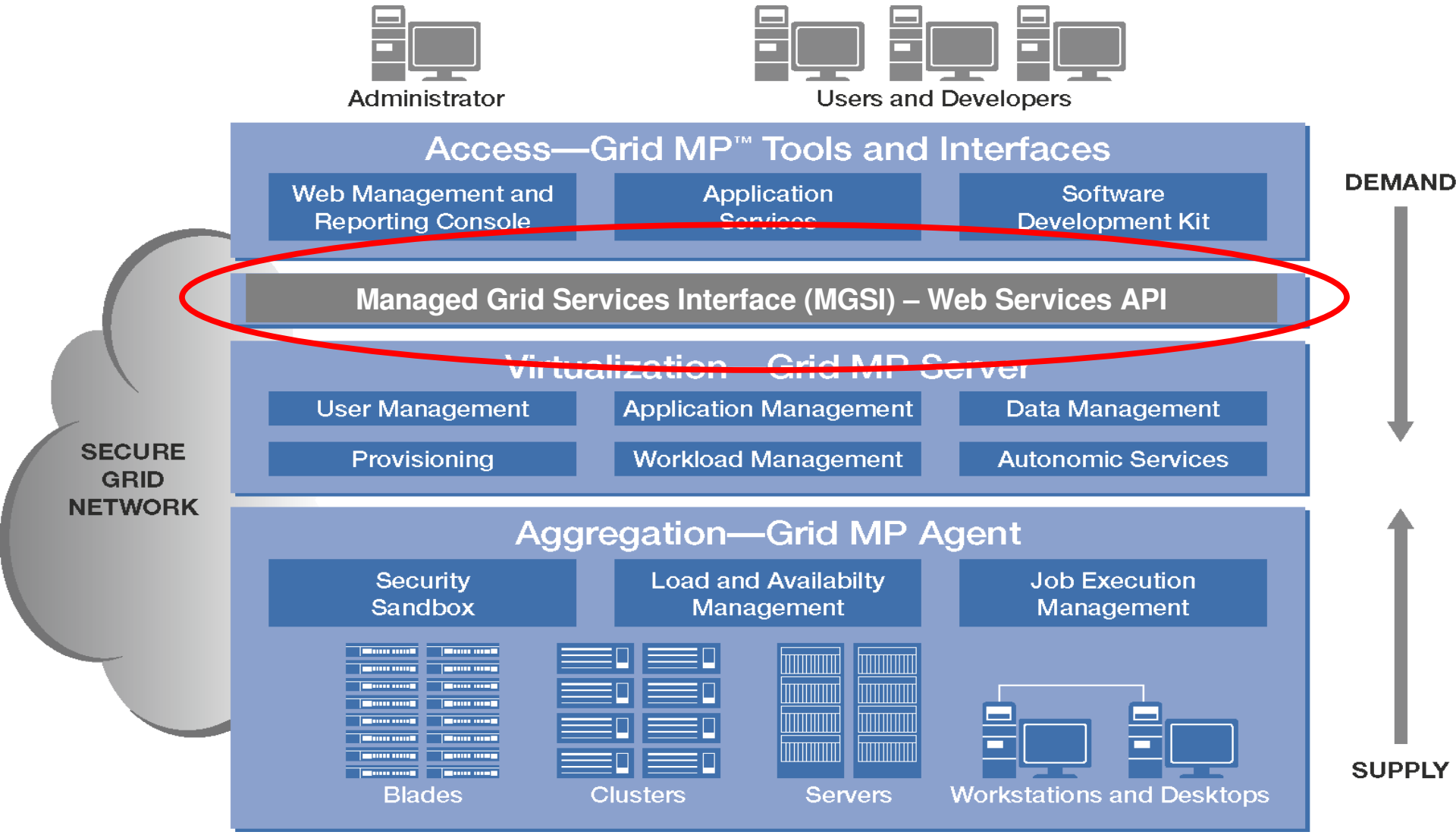
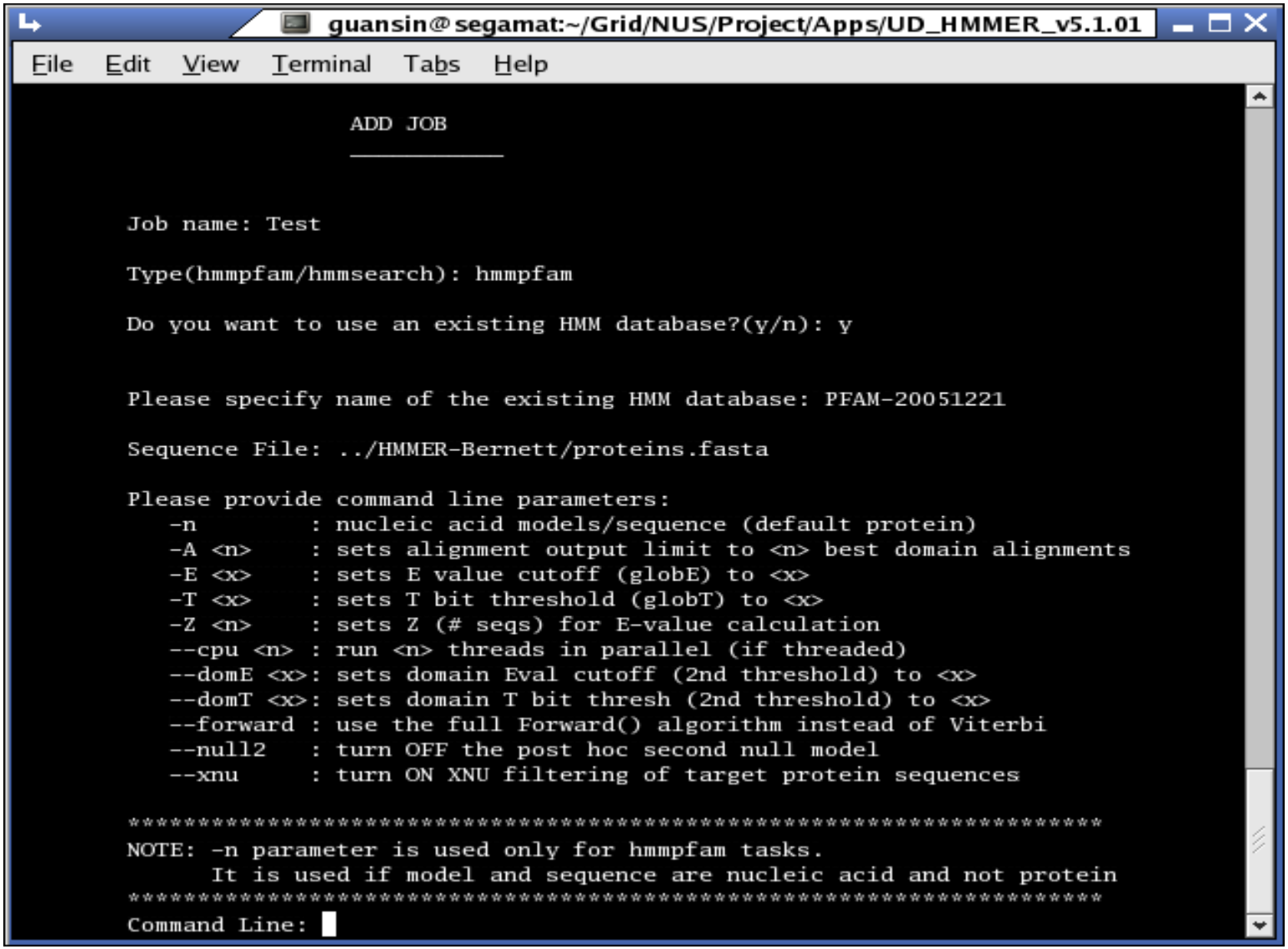


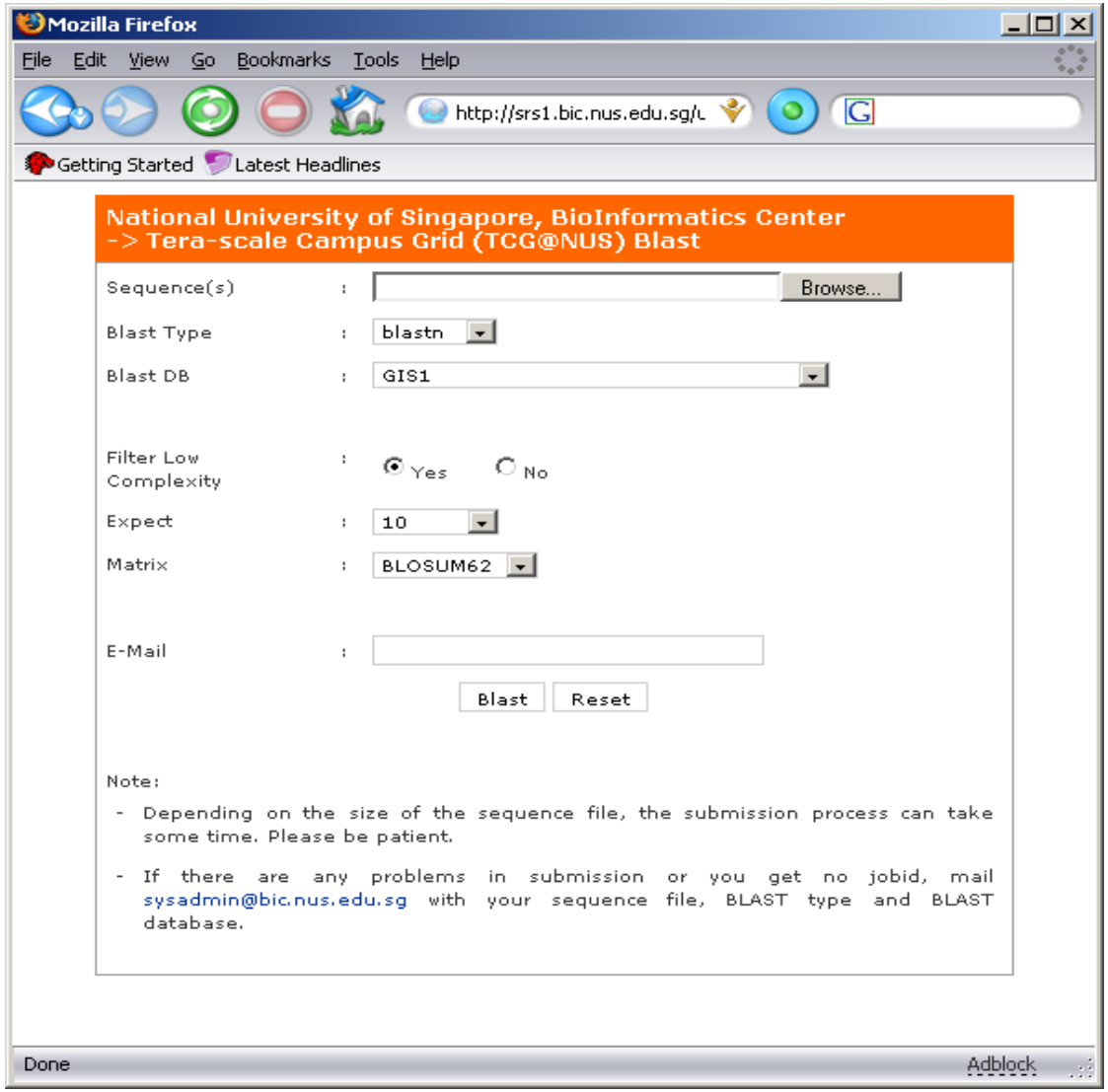
UD Grid MP Architecture



Command-line Interface Application Service



Simple Web Interface



Application Service Overview

- Application Service
  - Is a job submission and result retrieval program which provides users with a simple interface for performing work on the Grid
  - It is responsible for Splitting and Merging Application Data
- Features
  - Control the Grid MP Sever with SOAP or XML-RPC communications
  - SOAP and XML-RPC Communications are protected with SSL encryption
  - SOAP and XML-RPC are language and platform independent with many publicly available toolkits and libraries.
  - User interface can be command-line, web-based, GUI, etc.
  - Can be written to run on various operating systems
- MP Grid Services Interface (MGSI)
  - All Objects in the Grid MP platform can be controlled through the MGSI
  - The Grid MP SDK provides a MGSI Clients in C++ and Java for Easy Application Migration to a Grid Environment

Pre-processing Program Flow

- Initial setup
  - **Login** to the Grid MP and get authentication token to perform all MGSI Calls
  - **Create an Application** object by determining which application you wish to work on, by querying for a list of applications or from information stored in a configuration file
  - **Create a Program** object. This is usually done by getting a list of Programs that belong to the Application
- Creating Data
  - **Create a DataSet** Object to hold All Data chunks to be processed
  - **Split** original input data into chunks and for each chunk -
    - Package data using **buildpkg**
    - **Upload** each Data to the Grid MP File Server
    - **Add** Data Information to a List
    - **Create all Data** Objects in List using a MGSI Call

Pre-processing Program Flow (cont.)

- Creating Job
  - **Create a Job** Object. This Job will contain All Job Steps (usually there is only 1 Job Step per Job) to be processed
  - **Create Job Step** to contain new pieces of work to be processed
  - **Generate all Workunits** automatically by using a MGSI call that requires a list of Datasets to use per workunit
  - **Set Job Step State to Closed** so the Grid MP System knows that no more work will be added to this Job Step:
    - Get Job Step Structure to Update
    - Change Job Step State to Closed
    - Submit Changes to Job Step
  - **Output Job ID** to the User for use in the Post processing Step

Post-processing Program Flow

- Initial setup
  - **Login** to the Grid MP and get authentication token to perform all MGSI Calls
  - **Create an Application** object by determining which application you wish to work on, by querying for a list of applications or from information stored in a configuration file
  - **Create a Program** object. This is usually done by getting a list of Programs that belong to the Application

- Merging
  - **Get the Job Structure** from the Grid MP using the Job ID returned in the Preprocessing Step
  - **Get the Job Step** for the Job
  - **Get a list of the completed Workunits** belonging to the Job Step
  - For each Workunit:
    - Get the Result record for the Workunit
    - Download Result file from the Grid MP File Server
  - **Merge** all the Results that have been downloaded into the Final Result

Thank You

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