MAGIC Meeting Minutes
October 5, 2016

Attendees

David Anderson	UC Berkeley
Rich Carlson	NSF
Vipin Chaudhary	NSF
Dan Gunter	LBL
Shantenu Jha	Rutgers
David Martin	Argonne
Bill Miller	NSF
Grant Miller	NCO
Rajiv Ramnath	NSF
Kevin Thompson	NSF
Ed Walker	NSF

Action Items

1. Grant Miller will notify MAGIC members of the time, place, agenda for the November MAGIC meeting to be held at SC16.

Proceedings

This MAGIC meeting was coordinated by Rich Carlson of DOE and Rajiv Ramnath of the NSF. David Anderson of UC Berkeley gave a briefing on BOINC, a user platform to facilitate volunteer computing.

BOINC: Dave Anderson

BOINC provides middleware for volunteer computing. It is NSF funded, open-source, and community maintained. The server is used by scientists to do projects. The client runs on consumer devices and fetches and runs jobs in the background.

Example projects for which BOINC is used include:

- Climateprediction.net out of Oxford University
- Rosetta@home
- Einstein@home
- IBM World Community (generally biomedical and environmental simulations)
- CERN particle physics analysis

Current BOINC resources include 500,000 active devices, 2.3M CPU cores, 290,000 GPUs, 93 PetaFlops on 85% Windows, 7% Mac, 7% Linux. The potential is much higher if people subscribed to BOINC (up to 1 billion desktop/ laptop PCs and 5 Billion Smartphones.

The cost of a BOINC TeraFlop is extraordinarily small compared to equivalent resources on a CPU cluster or Amazon EC2.

The BOINC model ofuse is that an app can have many versions. Jobs submit to apps, not versions, and the BOINC scheduler decides what version to use. Apps include: Windows/ Intel, Mac OS X, Linux/ Intel, Linux/ ARM, multicore, and GPU apps.

Apps include: a VM image + executable, aBOINC client interface via a Vbox Wrapper, and Docker apps.

A VC has a variable turnaround so it works best for bags of tasks. It provides moderate RAM and has moderate storage requirements. It can function up to the network capacity and provides privacy.

Under a "new" BOINC model volunteers see "Science@home", not separate projects. Volunteers can express the science preferences. Science@home allocates computing power to projects. Prototypes of this model are being implemented at TACC and nanoHUB.

Corporate partnerships are with IBM World Community Grid, Intel Progress Thru Processors, HTC Power to Give, an dSamsung Power Sleep. Partnerships are being developed with Blizzard Entertainment (games) and EE (a British cell phone provider).

For the complete briefing please see the MAGIC Website, October 2016 meeting minutes at: https://www.nitrd.gov/nitrdgroups/index.php?title=MAGIC_Meetings_2016

Potential MAGIC Tasking from LSN for FY2017

MAGIC members discussed potential tasks they would like to focus on for FY17 including a continuation of the topics addressed last year:

- Convene the OSG, CERN, OGF… communities to discuss their different approaches and what has worked/what has not worked.
- Identify how commercial resources (e.g., cloud environments) can be used/integrated into science environments
- Bring the NSF funded cloud environments into the MAGIC discussions to represent academic community interests
- University community researchers and providers to identify current capabilities and desired future capabilities.
- SDN developers to identify how their developing technology might impact virtual environments and distributed resources/distributed processing

Additional tasks suggested by the MAGIC members include:

- Data movement and data management. Middleware is expediting movement of data across collaborating groups and among science disciplines. An example is cooperation among NSF data hubs for moving data to/from supercomputer centers. CASC is participating in this effort.
- Evolving Identity Management (IdM)
- Improving the reliability of middleware and grid environments. Software and networking are critical components for improving reliability
- Discuss the utility, deployment, use, and experience with the Science DMZ.

Next MAGIC Meeting

November meeting will be at SC16. The time and place are to be arranged.

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