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## **Enabling the use of e-Infrastructures with Microsoft HPC and the Matlab distributed compute server**

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Many scientists with smaller scale problems could benefit from e-Infrastructures but are often discouraged by their complexity. These users have little experiences with shell based Linux environments typically offered; instead, they often use Windows-based platforms and higher level packages like Matlab. In this talk we present a case study from microsystems research, focusing on how the usage of recent technologies like the Microsoft HPC server and the Matlab distributed computing toolbox can improve the productivity of the researchers and allows them to exploit existing e-Infrastructures.

### **Detailed analysis**

While portals are an excellent means of shielding the user from the complexity of e-Infrastructures, this approach has limitations, particularly, it typically doesn't allow the user to run their own programs. Many users still require direct access to run their computation but have little experiences with shell based Linux environments typically offered on today's e-Infrastructures.

Instead, these users often use Windows-based platforms and higher level packages like Matlab. This has also been recognized by EGEE and prototypes that allow the integration of resources enabled by Microsoft HPC and Matlab's distributed computing toolbox have been developed, the latter has even been used for a tutorial at SC'08.

Microsystems research is one examples of users that could benefit significantly by having these tools offered as a regular service on today's e-Infrastructures. These users often require complex simulations of e.g. fluidic or Electromagnetic systems, which are on the limit of a standard PC. These users depend on e-Infrastructure providers like local data centers or campus Grids to enlarge their available resources without having the burden of administering these systems.

### **Conclusions and Future Work**

We have shown how the entrance barrier to exploit e-Infrastructures can be lowered by using recent technologies like the Microsoft HPC server and the Matlab distributed compute toolbox thus making the infrastructures accessible to new user communities.

For future work we intend to expand the prototype locally by increasing the number of resources available to it and integrating it with the existing EGEE infrastructure making it accessible worldwide. We will also explore different federated identity management solutions like Shibboleth.

### **Impact**

By providing access to a Windows HPC and Matlab distributed compute server based platform at PDC, KTH, the Microsystems researchers have seamless access to an enlarged resources pool and benefit from professional support available at the data center. These resources act as an extension of their local desktop and relying on the active directory based user management already established at KTH the usage of these resources is actually completely transparent to the user.

This prototype shows the potential e-Infrastructures have supporting also users with small to medium sized problems and how the entrance barrier for this class of users can be lowered such that e-Infrastructures become a viable tool for them. Using the techniques prototyped by other groups in integrating Microsoft HPC with the EGEE infrastructure we intend to widen the scope of this service from local campus e-Infrastructure to an international scale. This will also require the use of federated identity management system as experience has shown that these kind of users have great difficulties in dealing with Grid certificates.

## **Keywords**

MS HPC, Matlab

## **URL for further information**

<http://www.pdc.kth.se/projects/mshpc/>

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