The University of Virginia Campus Grid (UVaCG)

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Abstract:

As part of an NSF NMI-funded project for the development of WSRF on the Microsoft .NET Platform (WSRF.NET), we have deployed a near-production quality Grid at the University of Virginia based on Globus Toolkit v4 and our own WSRF.NET. Our focus on this deployment effort (and in this talk) is to re-use as much existing campus infrastructure as possible (only deploy *NEW* infrastructure if no existing campus infrastructure already exists).

Because there is not enough time in the talk to get into details of all of the aspects of our campus grid identified in the call for presentations, our presentation will focus on the following topics:

1. User Access: We are convinced that a portal environment is necessary, and further it should be built by the community (we see no utility in creating our own). We selected OGCE/uPortal because UVa ITC is using uPortal in a separate effort (http://myuva.virginia.edu). We are first developing a "Grid-specific" portal; once users are acclimated, we plan to merge the two portals as necessary. How best to provide documentation/user services is still unresolved.

2. Applications: We have built a generic infrastructure that supports all applications. That said, we are particularly focusing right now on matlab and computer architecture simulations. Other UVa campus researchers have expressed an interest in application-specific portals for high-energy physics, chemistry, chemical engineering, and biomedical engineering.

3. Infrastructure:
2a. Our software is the NMI stack (particularly GT4), plus our own WSRF.NET.
2b. Authentication: UVa Institutional PKI is being utilized; PubCookie-MyProxy integration supports "transparent access" to the Grid, including the TeraGrid
2c. Authorization: We wrote an LDAP-based service is used that is compliant with the GGF OGSA SAML Authorization Service.
2d. Resources: CS-owned resources, School of Engineering resources, and campus-wide resources. Note: we recently stood up a windows cluster (Windows Compute Cluster Edition, in pre-Beta) and plan to discuss its integration in our Campus Grid via WSRF.NET.

4. Management: This is one of the more challenging aspects that we believe has the most open issues. We are coordinating management with the UVa Central Computing Department (Jim Jokl from ITC), but there remain a lot of tricky policy issues that are

addressed now in only an ad hoc basis. We are particularly interested in seeing how others approach this.

In addition to discussing the overall design and implementation of our campus grid, we would like to make a presentation at this workshop so that we can expose the community to our .NET-based Grid software (and its interoperability with Globus) and show that it is stable and used in a near-production environment. We feel the strength of the presentation would be the discussion of novel uses of Windows in the grid environment, plus our novel integration with the campus IT infrastructure.