

Supporting MiG & WebCom Interaction

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Keywords: MiG, WebCom, sandbox, workflow, grid, PRC Model

The Minimum intrusion Grid (MiG) [1] and WebCom [2] are two separate and independent middleware implementations, developed at different universities for different target groups. Both systems implement grid middleware properties, and provide a fully functional grid system, yet they are fundamentally different by design and implementation. Despite their differences, both middleware solutions were designed for user transparency with the vision of the ability to facilitate a grid operating system that would fully leverage the grid potential.

This report presents a collaborative effort between these two grid middleware systems, where we present a methodology that on the one hand provides WebCom users access to special sandboxed environments on a computing platform composed of the resource richness of the PRC model, and on the other hand, MiG users can exploit the ease of use of the Visual programming model offered by WebCom by embedding their applications within a dynamic workflow execution environment. This also eases utilization of the MiG sandboxes significantly thus effectively expanding the user group of the MiG system.

The PRC model has shown its potential in many scenarios; many scientific projects utilize a PRC platform, and many private people are willing to contribute. Equally high on the hype curve is the trend of visually aided application development. Each of the two middlewares are specialized in each of these domains, which makes a combined effort quite unique. Ultimately, the potential of this work allows people with no or only little knowledge about programming and Grid technology to easily make use of the enormous pool of aggregated compute resources in the Grid.

Using sandbox technology, the resource platform is rendered uniform, and applications are securely isolated from other processes on the host system and vice versa. The applications are constructed using Condensed Graphs where the traditional complexities involved in developing parallel and distributed applications are removed from the user burden.

The report details initial investigations into these interactions between the two quite different grid middlewares, by adding functionality to the WebCom that facilitate the

targeting and execution of MiG jobs. A test application proved successful and justified the need for further research to be conducted; many different scenarios seem ideal for this collaboration, including the use of more scientific computations such as Fast Fourier Transformations and extending the nodes available when creating visual applications for MiG.

References

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