A Portal-based Cluster Monitoring System

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Abstract

Portal frameworks, such as uPortal [1] and Sakai [2], are increasingly being adopted by enterprise, industry, and educational institutions as the means of providing services and collaborative tools for their users. Portals typically contain a collection of visual components, known as portlets, which can be perceived as mini-web applications with a range of typical GUI capabilities. Portal users are able to subscribe to or select groups of portlets, allowing users to customise their environment. Currently, portlets are developed with Java-based technologies and comply with JSR-168 [3]. Not only do portals provide a range of services and tools, they have their own security infrastructure, including ACLs that allow hierarchical access to portlets and content.

Currently, cluster monitoring is efficiently handled by web-based applications, such as Ganglia [4]. Ganglia, collects statistical information from cluster nodes and presents them in a web page. There is no security or user access control included with Ganglia, nor is there, any means to interact with the monitoring activities. We propose a system, which will allow regular web applications, such as Ganglia, to be used from within a portal. Such a system will permit cluster administrators or administrative teams to communally monitor their systems. This is more relevant when dealing with larger clusters or for administrators who manage more than one

cluster. The delegation of monitoring tasks can be given to different members of a team, with use of the portals security infrastructure. Cluster users can also view monitoring information relative to cluster nodes they are using. This distribution of monitoring activities should ensure efficient monitoring, for users and administrators alike.

Our system provides the mechanisms for reusing existing web applications in a portal. Typically this is not the case, non-Java applications need to be redesigned, re-implemented, and integrated with Java for use within a portlet. This can be time consuming, and more seriously may cause a fork in the software development tree. Thus, we present a mechanism that allows us to reuse existing non-Java web applications from within portlets and demonstrate a cluster monitoring application, namely Ganglia, working from within a portal framework.

This paper is appropriate for the late paper session as it includes, new work on cluster monitoring, which has been started recently.

References

[1] uPortal, http://www.uportal.org

[2] Sakai, http://sakaiproject.org/

[3] JSR -168 specification, http://www.jcp.org/en/jsr/detail?id=168

[4] Ganglia, http://ganglia.sourceforge.net/

[5] GridSphere, http://www.gridsphere.org

[6] JISC VRE, http://www.jisc.ac.uk/programme_vre.html