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Flexible notification service for Grid monitoring events.

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Monitoring activity plays an essential role in Grid Computing: it deals with the dynamics, variety and geographical distribution of Grid resources in order to measure important parameters and provide relevant information of a Grid system related to aspects such as usage, behaviour and performance. One of the basic requirements for a monitoring service is the capability of detection and notification of fault situations and user-defined events. As regards this aspect, we describe the architecture and implementation of a flexible notification service designed to be incorporated, in a modular way, into a Grid Monitoring tool. A Grid notification service should be able to: receive data from several resources, filter them against a set of users specifications, aggregate and customize filtered results and, finally, deliver them only to interested users. A suitable model is represented by the publish/subscribe system based on event-driven mechanism and useful for distribuited data, regardless the recipients identity or location. In such a model, involved entities are publishers and subscribers that exchange messages trough a broker; messages from publishers are named events, while messages from subscribers are named subscriptions. The broker implements a filter algorithm in order to execute matching between events and subscriptions. Today, the incresing success of XML as a standard for data representation and exchange over the Internet has lead to a consequent increasing interest in filtering and content-based routing of XML data; events are formalized as XML documents, while subscriptions are expressed trough a language able to specify constraints over both events structure and content. After the description of both requirements and architecture, we present a multithread implementation of our Notification Service. We also report on experimental results in the context of the integration of this system with the GridICE Monitoring System, a distributed monitoring tool designed for Grid systems.

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