CS543 - Paper Review Report # II

Hailu Belay Kahsay - 20155624

Title: The Many Faces of Publish/Subscribe

Author: PATRICK TH. EUGSTER, PASCAL A. FELBER, RACHID GUERRAOUI, ANNE-MARIE KERMARREC

In distributed systems communication is an important issue as communicating entities exchange information (requests and responses are sent in the form of messages). In a distributed system, building a communication facility that achieve high communication performance is the main concern. The performance of the communication facility is influenced by the *speed of a communication network*, *the communication protocols* and *the communication paradigm*.

This paper discuss, in detail, about publish/subscribe, an event-based interaction communication paradigm in which subscribers have the ability to express their interest in an event, or a pattern of events, and are subsequently notified of any event, generated by a publisher, which matches their registered interest. i.e. It relies on an event notification service providing storage and management for subscriptions and efficient delivery of events. In the paper it is stated that the strength of publish/subscribe scheme lies in the full decoupling in time, space, and synchronization between publishers and subscribers.

Comparison, focusing on decoupling abilities, between publish/subscribe scheme and other communication paradigms(its cousins) namely message passing, RPC, Notifications, Shared spaces, and Message queuing, is included in the paper.

Unlike to publish/subscribe all of the remaining communication paradigms do not have full decoupling feature. i.e. Message passing, RPC/RMI, Asynchronous RPC/RMI, Future RPC/RMI and Notifications (observer pattern) do not provide time and space decoupling. But producer-side synchronization decoupling is provided by Message passing and RPC/RMI; whereas Asynchronous RPC/RMI, Future RPC/RMI and Notifications models provide synchronization decoupling. Tuple spaces and Message queuing (Pull) models have space and time decoupling, and producer-side synchronization decoupling.

As subscribers are usually interested in particular events or event patterns, and not in all events, there are several subscription schemes: topic-based, content-based and type-based(recently proposed scheme) publish/subscribe. Details, with example(s), on these schemes is also discussed in the paper.

Finally, the paper discusses about some implementations issues such as Events(and their different forms: messages and invocations), the media (Architecture and Dimensions) and QoS(Persistence, Priorities, Transactions and Reliability).