A Survey of Versatility for Publish/Subscribe Infrastructures

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Abstract:

Current publish/subscribe middleware infrastructures fall short of mechanisms that allow their customization and configuration to comply with the requirements of different application domains. This shortcoming is a consequence of their original design which does not account for mechanisms or approaches that allow the evolution of this kind of service.

This survey introduces the concept of versatility in publish/subscribe infrastructures and examines the current approaches to versatility in publish-subscribe middleware as well as approaches to versatility that have been applied in other kinds of middleware and may possibly succeed in the context of publish/subscribe infrastructures.

In this context, versatility is defined as a set of properties (such as variability, reuse, dynamism and usability) that allows the customization, extension and compression of middleware. This paper surveys existing and advanced software engineering approaches to address those requirements. A comparative framework on software versatility, as a set of properties, is presented to help researches and practitioners to evaluate and compare the strengths and limitations of such approaches that have been or might be applied to this problem. Our goal is not to compare the approaches with one another, but to show how those approaches can be used to provide some of the versatility properties we identify. An agenda for future research in this topic is also presented.

This survey addresses the following questions: What is versatility? How is versatility defined in the context of publish/subscribe middleware? Which software engineering techniques have been used to provide versatility to middleware in general, and specifically to publish/subscribe middleware? What other techniques may be used to approach this problem? What are their limitations and strengths? What are some of the important open research questions in this area?