

Autonomics of Self Management for Service Composition in Cyber Physical Systems

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Abstract. Autonomic Computing is an approach to address the complexity and evolution process. It is also defined as high level systems that can manage high level objectives with minimum human intervention. Autonomic computing approach has become inevitable as we desire highest degree of smartness in every application and every service. IBM has taken initiative for defining aspects of autonomics of self management which are mainly all self X properties we desire in the application. Various methods to achieve degree of self management are proposed in different domains. Optimal service selection(OSS) while doing service composition is a crucial task because of the presence of set of similar functionality services. To solve this problem potential candidates can be the techniques of Multi Attribute Decision Making (MADM) methods. In this paper suitability of some selected MADM methods is analyzed for solving optimal service selection problem. Accuracy and execution time are used as a measure for analyzing the performance.

Keywords: Cyber Physical Systems, Service Composition, Resource Provisioning, Autonomics.

1 Introduction

Cyber Physical Systems have gained lot of popularity since its inception. Lot of research work is seen on abstraction, architecture, verification, validation, certification, robustness, safety, security, reliability, co-design tools, model based development, service composition, autonomics and resource management[1]. Major work done by various researchers along with different approaches and challenges in service composition, resource provisioning and autonomics is summarized in [2]. Service composition means to combine more than one service when an individual service is not sufficient to satisfy the requirement but after combining it satisfies the