

Self-Managing Service Platform

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MAP-i Thesis Proposal

1 Context

There is a large number of enterprises in which core activities depend on complex distributed service platforms: Several tiers of services interact, often backed by a database management system, to provide key business functions.

A compelling example is the SS7 service platform underlying an Intelligent Network (IN) in a Telecom operator. Besides traditional voice call control services, with increasingly complex and ever changing user subscription models and number translation services, such platforms are now expected to interact with general purpose Information Technology (IT) infrastructure and multiple service hosting platforms using open interfaces and architectures.

These trends severely increase the complexity of the the platform, by bringing in additional middleware components from multiple vendors, such as web services (WS) and Java EE for Parlay/X and JAIN SLEE. Nonetheless, a service platform is expected to meet carrier grade availability standards while coping with stringent peak hour throughput requirements.

The challenge faced by such organizations is thus to manage such platforms, namely, by provisioning sufficient resources and tuning key architectural and operating parameters. On one hand, existing long-time expertise is overwhelmed by constant change. On the other hand, existing self-management proposals based on reactive control often fail to meet availability and performance requirements.

2 Objectives

The goal of this project is advance the state of the art in self-managing complex service platforms by:

- Researching and validating models to describe complex service platforms. Such models should allow the setup and evaluation of what-if scenarios to solve tuning and provisioning problems.
- Proposing pro-active self-management mechanisms and policies for complex service platforms. Such proposals will be motivated and validated within realistic models.