Chapter 14
Lifecycle Management of SLAs for Service Enterprises

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ABSTRACT
Service level agreement (SLA) is becoming an increasingly sought-after topic in recent years, as complex logistics and service chains span across geographical boundaries in the lights of globalization and new technological developments. This chapter introduces the reader to the state of the art lifecycle management of SLA for service enterprises, which covers stages of terms optimization, contract drafting and compliance tracking. In particular, the author identified deficiencies in the area of term optimization and outlines several R&D tracks that would lead to the development of industry-strength SLA optimization capabilities. An initial version of a SLA optimization toolset coded-named SLA-OASIS is reported, in the context of a telecom service, to illustrate such a concept. In addition, some out-of-box toolsets for drafting SLA contracts and tracking SLA compliance are also reviewed.

INTRODUCTION
Services are economic activities offered by one party to another, most commonly employing time-based performances to bring about desired results in recipients themselves or in objects or other assets for which purchasers have responsibility. In exchange for their money, time and effort, service customers expect to obtain value from access to goods, labor, professional skills, facilities, networks, and systems; but they do not normally take ownership of any of the physical elements involved (Lovelock, 2007).

Service level agreements (SLAs) are part of service contracts where the levels of services are formally defined. It records the common understanding about services, priorities, responsibility, guarantees and such – collectively, the level of service. For example, it may specify the level of availability, serviceability, performance, operation, or other attributes of service like billing and even penalties in the case of violation of the SLA (Encyclopedia, 2007).
During 1980s, there were a wave of privatizations in the service sector that liberated service markets and called for regulations to protect the interests of service consumers and providers alike. Companies chose SLAs as legal means to handle relationships with their customers. In recent years, the tide of globalization further highlighted the needs of service standardization, as complex logistics and service chains emerged and spanned across country borders, which requires stricter legislation and enforcement on quality of services. European Committee, for instance, has set up initiatives on service standardization that takes effect in December 2009 (European Committee, 2007).

A full SLA management cycle consists of the following activities: terms negotiation and optimization, contract drafting, compliance tracking and reporting:

- Terms negotiation and optimization. For large service enterprises, by regulations, uniform SLAs are often provided to service customers to guarantee equivalence of services; for small and medium service providers, SLAs are often established via negotiations between service providers and service consumers.
- Contract drafting. To produce an appropriate and focused SLA requires non-trivial legal knowledge and efforts. There are some tools in the market that were designed to make the creation of SLA contracts more straightforward, which is often achieved via a collection of templates that facilitate contract drafting in a formal way (SLA-World, 2002).
- Compliance tracking and reporting. Once SLAs are created, it is important that such SLAs are kept being monitored to ensure its compliance. Industry practice showed that active monitoring of SLAs can typically save 5 to 10% of annual service contract costs. There are some commercial tools to offer the functionalities of SLA tracking and reporting (NimBUS, 2007).

Drafting SLA contracts and tracking their compliance both occur after term negotiation. During the SLA negotiations, either with regulators or service customers, it is crucial for service providers to see the direct impact of proposed SLA terms on their level of profitability, such that they can have reasoned and informed decision makings. To our knowledge, there is no commercial tool in the market that can check levels of profitability for any specified SLAs.

This chapter will walk the reader through state of the art of SLA lifecycle. To remain focused and generic, the discussions will have to be limited to a set of key SLA and operation parameters. The author will explore some work related to SLA optimization and outline some R&D tracks that help build industry-strength SLA optimization capabilities. An initial version of SLA optimization toolkit code-named SLA-OASIS, will be reported, in the context of a telecom service. Furthermore, some typical out-of-box tools that are applicable to certain activities, such as contract drafting and compliance tracking will also be reviewed.

The remaining of the chapter will be organized as follows. Section 2 defines a set of key SLA and operation parameters; Section 3 discusses SLA terms negotiation and computer-assisted optimization; Section 4 covers template-based SLA contract drafting; Section 5 reviews automated SLA compliance tracking and reporting. Finally, Section 6 concludes.

**SLA AND OPERATION PARAMETERS**

Generally speaking, a service enterprise can be considered as an entity that offers and fulfills a set of services. Each service is composed of the following elements: a set of service level agreements, a business process, an enterprise resource plan and a business model. In this section, we use
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