



ICAO

International Civil Aviation Organization

The Fifth Meeting of System Wide Information
Management Task Force (SWIM TF/5)

Video Tele-conference, 9 – 11 August 2021.

- Agenda Item 6:** Updates on the assigned tasks by task leads/contributors including progress report and issues
- d) Governance

SERVICE LEVEL AGREEMENT IN THE CONTEXT OF APAC SWIM: INTRODUCTION

(Presented by USA/FAA)

SUMMARY

This Working Paper describes the enabling technologies and practices for instituting a *SWIM Service Level Agreement (SLA)* in the context of APAC SWIM.

The paper introduces a conceptual model that is useful for identifying the components from which an SLA is constructed, as well as typical usage patterns in a complex service-centric environment. It also provides a content which can be used for developing a future SLA template.

1. INTRODUCTION

- 1.1 The rapid evolution of the SWIM paradigm is leading to the emergence of new services, new collaborating and interacting models, and new approaches in service governance. A Service Level Agreement (SLA) is universally considered to be an indispensable tool for establishing and sustaining service-centric ecosystems.
- 1.2 An SLA is a contract that defines mutual obligations between two parties: a service consumer and a service provider.
- 1.3 It represents a set of obligations by a service provider to perform a service according to agreed-upon service qualities or characteristics, which usually include performance parameters (e.g., availability, response time) or other attributes that may affect the delivery of the service. It may also include policies or conditions of use defined by the service provider.
- 1.4 This paper examines the concept of SLA and discusses its usage scenarios and the agreement content that can be used in future developments in the APAC SWIM.

2. DISCUSSION

2.1 Objectives

2.1.1. Commonly recognized objectives for deploying an SLA are:

- 2.2.1.1. To provide a clear reference to service ownership and identify all parties entering the SLA, including their respective roles;

- 2.2.1.2. To present a clear, concise, and measurable description of service provision to a service consumer;
- 2.2.1.3. To establish a commitment to quality levels required by service consumers and providers to interact effectively;
- 2.2.1.4. To match perceptions of expected service provision with actual service support and delivery.

2.2 SLA Use Cases

2.2.1 At the conceptual level, an SLA's actors and their interactions may be described as follows:

- 2.2.1.1 A *Service*, the mechanism that provides access to one or more capabilities [SWIM-CV], is managed by a *Service Provider (SP)*, an organizational entity responsible for provisioning the Service.
- 2.2.1.2 A *Service Consumer (SC)*, an organizational entity, consumes the Service by using a *Consumer Agent*, a component designed to exchange messages with the Service;
- 2.2.1.3 Both the Service Consumer and Service Provider sign an *SLA* to ensure a common understanding about the provided service, responsibilities of each party, performance parameters, and applicable policies.

2.2.2 Figure 1 illustrates this use case.

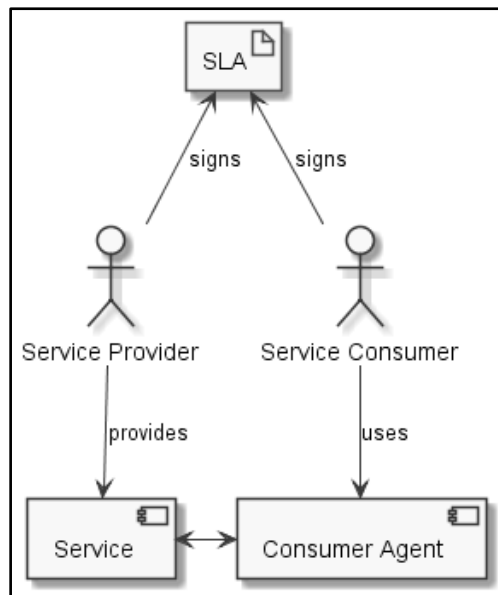


Figure 1 Basic SLA use case.

2.2.3 In today's service-centric environments, many organizations provide services that depend on other *intermediary* services, i.e., services that process exchanged messages

in a value-added way¹. These services are often provided by another organizational entity called a *Third-Party Provider (TPP)*.

- 2.2.4 In some situations, unavailability or poor performance of one of the services may compromise the whole customer experience. Defining “back-to-back” SLAs between all involved parties is a common way of evaluating and addressing performance issues, while satisfying the definition of an SLA as being between two parties. Figure 2 depicts an example of a multi-SLA solution.

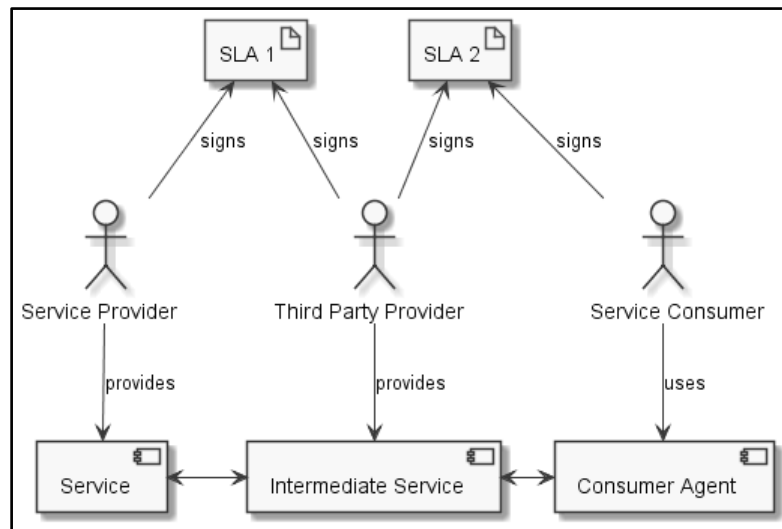


Figure 2 SLA solution with intermediate service provided by a Third-Party Provider.

- 2.2.5 A multi-organizational and multi-SLA environment may require defining a specific process commonly known as SLA Management or Service Level Management. The process is enacted by a person or organizational entity referred to as an *SLA Manager*.
- 2.2.6 Key responsibilities of an SLA Manager may include:
- 2.2.6.1 Defining an SLA appropriate for the given SWIM implementation;
 - 2.2.6.2 Facilitating communication between SWIM service providers and consumers to negotiate and maintain the required SLAs;
 - 2.2.6.3 Monitoring SLA performance for compliance with the signed version of the agreement;
 - 2.2.6.4 Regularly reviewing SLAs to ensure they are current and sustainable.

¹ A good example of such a service is the FAA's NAS Enterprise Messaging Service (NEMS), a service that distributes messages among information consumer agents and services while providing publish/subscribe capabilities, fault tolerance, load balancing, and mediation support.

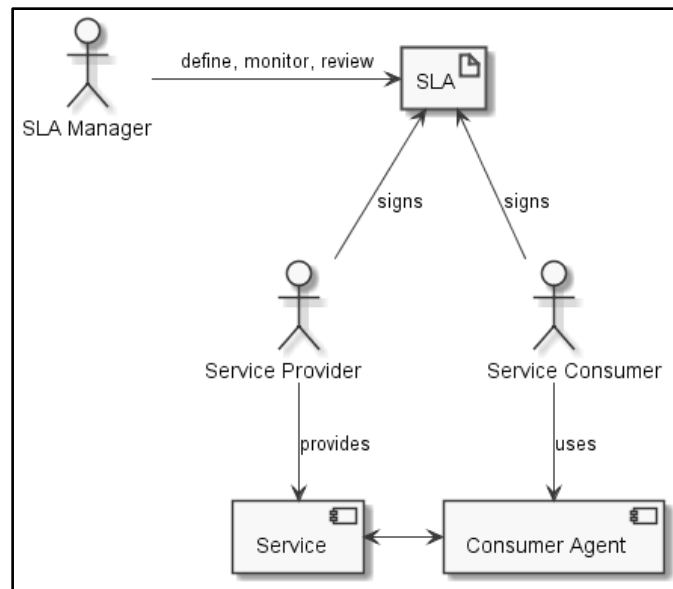


Figure 3 Basic SLA use case with participation of SLA Manager

2.2.7 In SWIM, the responsibilities described above commonly align with the scope and activities typically attributed to a Governance framework. However, given the cross-cutting character of an SLA, other areas such as Architecture or Infrastructure should be considered for SLA Management.

2.3 SLA Content

2.3.1 An SLA is composed of a number of sections describing the service provided and the terms under which the service is provisioned. Table 1 lists the sections that may be included in a SWIM SLA.

<i>Agreement Overview</i>	A general description of the scope and context of the SLA.
<i>Goals and Objectives</i>	A description of the agreed-upon purpose of the SLA as understood by the two parties.
<i>Parties</i>	Information about both parties entering into the SLA, including their respective organizations and Points of Contact (POCs).
<i>Service</i>	A description of the service covered by the SLA which may include references to documents describing the details of the service.
<i>Terms and Conditions</i>	A description of the terms of service provisions and the agreed-upon procedures to terminate and amend the SLA.
<i>Obligations</i>	A description of the obligations of both parties. This section may be subdivided into two sections: Provider Obligations and Consumer Obligations.

	<p>The Provider Obligations section typically includes a set of obligations to perform a service according to agreed-upon service parameters (e.g., availability, response time, and throughput).</p> <p>The Consumer Obligations section may include a set of obligations to adhere to policies defined by the service provider.</p>
<i>Signatures</i>	Official signatures of the Provider’s and Consumer’s authorized representatives.

Table 1 Example of SLA content

- 2.3.2 It should be noted that Table 1 describes only the minimum required sections. Depending on the types of services and operating environments involved, more (or different) sections of the SLA may be defined.

2.4 Conclusions

- 2.4.1 Establishing an SLA is a critical step in creating a sustainable SWIM environment.
- 2.4.2 The SLA presents a common understanding between providers and consumers about the provisioned service, the service objectives, the responsibilities of the parties, and the policies associated with the service.
- 2.4.3 An SLA clearly states both parties' obligations; it reduces the potential for disagreements and problems that might negatively affect interactions and relationships.

3. ACTIONS BY THE MEETING

- 3.1. The meeting is invited to:
 - 3.1.1. Note the contents of this working paper;
 - 3.1.2. Provide feedback on the proposed approach;
 - 3.1.3. Advise on the way forward, and in particular set priorities for future developments and implementers of APAC SWIM SLA.

4. REFERENCES

- [1] The TM Forum SLA Handbook, GB 917 Public Evaluation/Version 1.5; TeleManagement Forum; Carnegie Mellon; June 2001
- [2] DNA1.2.3 - Service Level Agreement Template - Rev. 2; European Middleware Initiative (EMI); 30/4/2012
- [3] Service Level Agreements in Service-Oriented Architecture Environments; Software Architecture Technology Initiative Integration of Software-Intensive Systems Initiative; September 2008