



Title: A Business Guide to Service Level Agreements: How to be a well-advised user of cloud services

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Executive Overview

SLA-Ready focuses on removing the barriers to Cloud service adoption by analysing current Cloud Service Provider (CSP) practices for Service Level Agreements (SLA) as a critical user-Cloud interface. Based on this analysis SLA-Ready developed a **Common Reference Model** (CRM), which benefits industry by integrating a set of SLA components, such as common vocabularies, metrics and measurements for service level objectives (SLO) to fill identified gaps in the current SLA landscape for European small and medium-sized enterprises (SME).

This report is a **user-friendly guide** to the **legal, technical** and **socio-economic frameworks, regulations** and **compliance** aimed at facilitating the uptake of SLAs in the private sector. The provided Guide has been structured in the form of good practices corresponding to each element of the contributed CRM, also including a checklist and possible adoption roadmaps. Furthermore, for each CRM component the good practices have been subdivided to reflect its level of criticality for the SME (i.e., any of low importance, medium importance, and high importance).

Besides the documented good practices, this deliverable also introduces the “SLA Aid” as an automated tool to provide SMEs with a customised checklist and roadmap for the possible adoption of cloud SLAs based on a easy-to-use questionnaire interface. The SLA Aid introduced in this deliverable is one of the publicly available tools developed by SLA-Ready, just as detailed in Deliverable 4.3 “SLA-Ready Hub and Social Marketplace - final iteration”.

The results presented in this Deliverable, in particular the good practices and the SLA Aid, have been extensively presented to interested stakeholders at workshops in order to fulfil their mission of becoming effective cloud SLA tools (for more information related to SLA-Ready dissemination activities please also refer to D4.3). The received stakeholders’ feedback was used during the duration of SLA-Ready to constantly polish and improve the outcomes of the project presented in this report. In order to serve cloud customers as effectively as possible this Guide will be constantly polished even after the finalisation of the project.

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List of Acronyms

| | |
|----------|---|
| AB | Advisory Board |
| CC | Cloud Customer |
| CD | Committee Draft (ISO/IEC) |
| CSA | Cloud Security Alliance |
| CSA STAR | Cloud Security Alliance's Security Trust and Assurance Registry |
| CSP | Cloud Service Provider |
| DIS | Draft International Standard (ISO/IEC) |
| EC | European Commission |
| ENISA | European Network and Information Security Agency |
| ETSI | European Telecommunications Standards Institute |
| EU | European Union |
| EU27 | 27 EU Member States |
| FDIS | Final Draft International Standard (ISO/IEC) |
| FP7 | The Seventh Framework Programme (2007-2013) |
| H2020 | Horizon 2020 |
| ICT | Information and communications technology |
| IS | International Standard (ISO/IEC) |
| ISO | International Organization for Standardization |
| ISP | Internet service provider |
| JTC | Joint Technical Committee |
| MS | Member States |
| R&D | Research and Development |
| RTD | Research and Technological Development |
| SDO | Standards Development Organization |
| SLA | Service Level Agreements |
| SLO | Service Level Objectives |
| SME | Small and Medium-sized Enterprise |
| WD | Working Draft (ISO/IEC) |
| WG | Working Group |
| WP | Work Package |

1 Introduction

Nowadays, cloud computing is continuously driving the vast spectrum of both current and emerging applications, products and services, and is also still considered a key technology enabler for the Future Internet (e.g., Internet of Things, Connected Vehicles, etc.). Unfortunately, 24 months after the start of SLA-Ready we are still observing that the use of “take-it-or-leave it” standard contracts, including Service Level Agreements (SLA), is an optimal cost-saving solution for CSPs, but SLAs are not necessarily the best option from the cloud customer’s perspective. Standard SLAs often fail to address the operational and legal risks inherent in cloud-based service offerings, such as not delivering the right performance outcomes or shifting many significant risks to the customer. These issues are magnified in the case of small and medium-sized enterprises (SMEs), which are a core component in Europe’s economy.

In this context, SLA-Ready’s vision relates to the development of cloud SLAs that match the specific and evidence-based needs of the private sector in Europe. Meeting these needs is key to overcoming the different barriers to the uptake of cloud services, whether that is lack of SME knowledge or a lack of SME understanding of cloud contracts/SLAs. SLA-Ready’s vision was partially fulfilled thanks to the development of the standards-based Common Reference Model (CRM) presented in WP2’s deliverables. The CRM contains a set of SLA elements that the consortium considered highly important for SME’s willing to embrace the full potential of cloud computing.

In order to fully realise SLA-Ready’s ambition, the present deliverable contributes with a user-friendly guide to the legal, technical and socio-economic frameworks, regulations and compliance aimed at facilitating the uptake of SLAs in European SMEs through the CRM. The referenced guide follows the structure of the CRM and provides a set of good practices associated to each one of the CRM elements. In order to accommodate the needs of European SMEs, the provided good practices are organised in three different levels of importance (i.e., low, medium and high). Performed dissemination activities¹, to audiences of SMEs at workshops hosted by National Trade Associations and ICT clusters, have supported the SLA-Ready consortium in its task of empirically validating the provided good practices. Therefore, the resulting guide should fit the security/privacy posture, and functional needs of most European SMEs as reflected by the use cases documented by the consortium in the WP2 activities.

As part of the project’s sustainability actions, this Guide will be updated and improved even after the finalisation of SLA-Ready thanks to collaborations established with ongoing EU H2020 projects like CloudWATCH2 and MUSA.

By acknowledging the lack of specialised tools aiming to empower SMEs in their cloud procurement/operation/termination processes the SLA-Ready consortium has developed

¹ Please refer to Deliverable D4.3

the “SLA Aid” i.e., an online service aiming to deliver “customised” versions of the developed CRM guide in the form of a checklist and roadmap. The SLA Aid tool is also documented in this deliverable.

1.1 Positioning this document within SLA-Ready

The CRM guide presented in this deliverable, along with the supporting SLA Aid tool, have been developed thanks to the feedback received from other WPs/Tasks within SLA-Ready, as shown in Figure 1. Furthermore, this deliverable is also supporting other project’s activities, just as seen in the same figure.

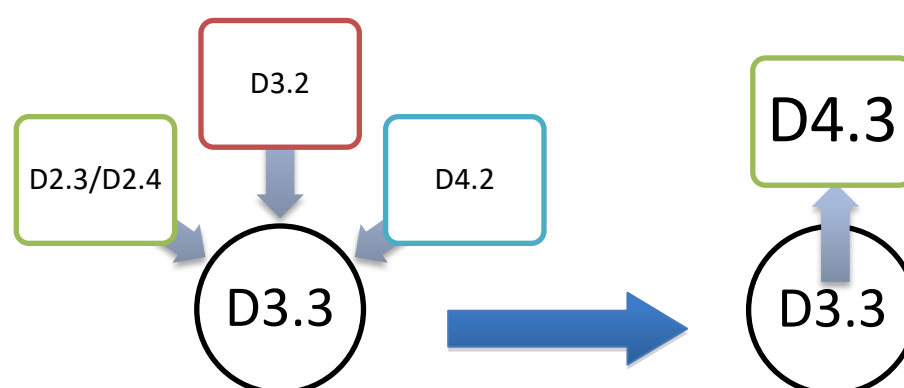


Figure 1. Role of D3.3 in SLA-Ready

As seen in Figure 1, the good practices documented in this deliverable have been elicited based on the CRM contributed by WP2 (cf., Deliverables 2.3 and 2.4). Furthermore, the presented good practices are also aligned to relevant standards and industrial practices thanks to the input provided by Deliverable 3.2, and the feedback received from SLA-Ready Advisory Board members (Deliverable 2.4). One of the main outcomes from D3.3, the SLA Aid tool, is a direct contribution from WP3 to the SLA Marketplace and Business Hub documented in D4.3

1.2 Structure of the document

This document is structured as follows:

- Section 2 reviews the developed Common Reference Model (CRM), and presents the good practices as a “Business Guide” outcome of SLA-Ready’s activities.
- Section 3 introduces the project’s checklist and tools, instantiated as the SLA Aid service, and their integration into the SLA Marketplace.
- Finally, Section 4 presents the conclusions.

2 Good Practices Associated with the Common Reference Model

This section introduces the good practices developed by SLA-Ready i.e., the Business Guide. Our goal is to provide the mechanisms to fully exploit the benefits of the Common Reference Model (CRM), in order to support the adoption of cloud services in the private sector through SLAs.

Next we present a high-level overview of the CRM using the level of detail required by the reader to fully understand the Business Guide introduced later in this section. More information related to the development and validation of the CRM are presented in D2.4

2.1 Revisiting the Common Reference Model (CRM)

SLA-Ready's CRM provides a structured and methodological approach for SMEs willing to maximize the benefits expected from the adoption of cloud computing, thanks to the identification of core elements that (should) appear in cloud SLA offers. The development of the CRM started with a set of requirements elicited from (i) relevant case studies, (ii) state of practice/state of the art, (iii) standards/best practices, and (iv) the analysis of economic, sociological and legal/governance domains (cf., Figure 2).

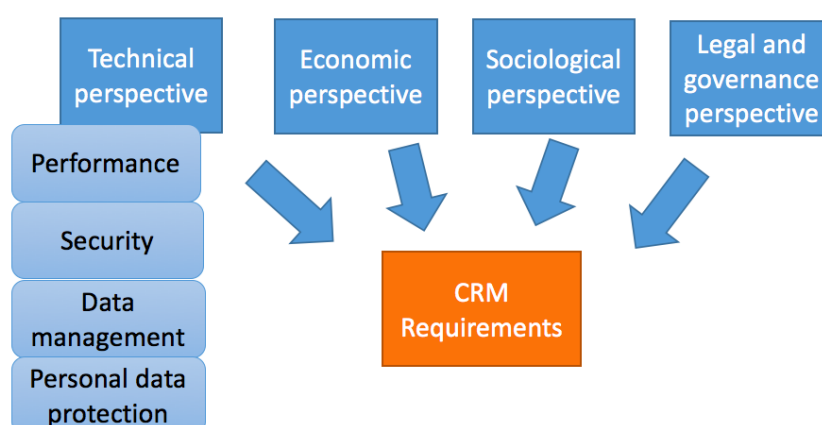


Figure 2. Requirements elicitation

Elicited requirements were used by the consortium to move from the information expected in a SLA to specific elements of the CRM. In order to facilitate the applicability of the CRM and increase the granularity of the analyses that will be done with it, SLA-Ready organized the CRM into the eight subgroups shown in Table 1.

Table 1. CRM Groups

| CRM Group | Description (cf., Deliverable 2.4) |
|-------------|--|
| General | Describes general purpose features of the SLA |
| Freshness | Describes features related to the validity of the SLA |
| Readability | Describes features related to the level of understanding of the SLA |
| Support | Describes features related to the level of support that customers can receive from the CSP |

| CRM Group | Description (cf., Deliverable 2.4) |
|--------------------------|---|
| Credits | Describes features related to the costs and billing management of the SLA |
| Changes | Describes features related to eventual modifications carried out in the SLA and the management associated to those changes |
| Reporting | Describes the features related to the communications that the CSP transmit to the customers with respect to the SLA managed |
| SLO & Metrics | Describes the features related to the technical elements of the SLA and its corresponding components. |

Furthermore, each CRM group was used as a container for one or more elements directly extracted from the elicited requirements. The following table shows the final set of CRM elements identified in each group.

Table 2. Groups and elements of the CRM

| Group | Name of CRM element |
|--------------------|---|
| General | SLA URL |
| | Findable |
| | Choice of law |
| | Roles and responsibilities |
| | Cloud SLA definitions |
| Freshness | Revision date |
| | Update Frequency |
| | Previous versions and revisions |
| | SLA duration |
| Readability | SLA language |
| | Machine-readable format |
| | Nr. of pages |
| Support | Contact details |
| | Contact availability |
| Credits | Service Credit |
| | Service credits assignment |
| | Maximum service credits (Euro amount) provided by the CSP |
| Changes | SLA change notifications |
| | Unilateral change |
| Reporting | Service Levels reporting |
| | Service Levels continuous reporting |

| | |
|---------------------------|--|
| | Feasibility of specials & customisations |
| | General Carveouts |
| SLOs & Metrics | Specified SLO metrics |
| | General SLOs |
| | Cloud Service Performance SLOs |
| | Service Reliability SLOs |
| | Data Management SLOs |
| | Security SLOs |
| | Personal Data Protection SLOs |

Finally, the CRM's elements were associated with one or more Service Level Objectives (as applicable), as shown in Figure 3. SLA-Ready's CRM is the foundation for the cloud SLA good practices presented in this deliverable, tools like the SLA Aid, and other relevant project's outcomes like the SLA-Repository. Furthermore, the CRM has been iteratively refined based on the feedback received from CSPs and cloud customers.



Figure 3. Components of the SLO & Metrics element of the CRM

Next we present the good practices associated to the contributed CRM.

2.2 SLA-Ready Business Guide

This section introduces the SLA-Ready's Business Guide i.e., a set of good practices developed and structured based on the reference model and with the goal to facilitate European SMEs the adoption of the contributed CRM.

In order to facilitate readability of this Business Guide, elicited good practices are linked to CRM elements, which are then classified according to the CRM categories, and finally

subdivided according to its relative importance or priority to the SME (any of low, medium, and high). The rationale behind the chosen classification relates to the real-world use cases presented and analyzed in D2.4

Furthermore, the good practices have been documented based on a common template containing the basic information required by the SME to fully benefit from the CRM. The developed template is shown in Table 3.

Table 3. Documenting CRM good practices in the Business Guide

| | |
|---|--|
| CRM Element | Unique ID and name of the associated CRM Element (cf., Section 2.1) |
| Why should you take it into account? | Short description of the CRM element from the CSC perspective. |
| Good practice (Low Importance) | The element is of low importance for the user. The minimum outlined in the recommendations is suffice. |
| Good practice (Medium Importance) | The element is of medium importance for the user. |
| Good practice (High Importance) | The element is of high importance for the user and therefore a priority to check in the SLA. |

The presented good practices are meant to support European SMEs during the whole life cycle of their cloud services (cf., D2.2) from the SLA perspective. However, this Business Guide is not meant to be used as a compliance tool nor as a replacement of any relevant cloud SLA standard.

2.2.1 CRM Guide

Our guide covers the 30 elements of the CRM, and associates a maximum of three good practices² (depending on its level of importance) to each one of those elements. For readability we present the technical good practices in a table format.

2.2.1.1 CRM Category: General

| | |
|--|--|
| CRM Element | 1 – SLA URL |
| Should the Cloud SLA be accessible on the Cloud Service Provider's website? | During the cloud service pre-procurement phase, it is important for potential customers (or existing ones willing to switch Cloud Service Provider) to access the current SLA being offered by the different providers being evaluated. Undoubtedly, most customers will first visit the provider's webpage in order to access the respective SLA. |
| Good practice (Low Importance) I do not need to access the SLA from | On request, prospective cloud customers should be able to obtain from the Cloud Service Provider the URL corresponding to the latest version of the applicable cloud SLA. The provided URL |

² Good practices are incremental (except where the contrary is explicitly mentioned). For example, a „medium importance“ good practice considers that the „low importance“ one has been implemented.

| | |
|--|--|
| the provider's website. | may not refer to a public resource (i.e., may require some kind of authentication for being accessed). |
| Good practice (Medium Importance) Yes, it would be great if the SLA is accessible from the CSP's website. | The URL corresponding to the cloud SLA should be publicly available on the Cloud Service Provider's website, although not necessarily at its home page. |
| Good practice (High Importance) It is critical to have public access to the cloud SLA without having to contact the CSP. | The SLA should be publicly available at the Cloud Service Provider's home page, with an easy to remember URL e.g., https://www.csp_name.com/SLA . |

| CRM Element | 2 – Findable |
|---|--|
| Should the SLA be easy to find on the provider's website? | The Cloud Service Customer shouldn't have to spend too much time finding the cloud SLA, and therefore be able to devote time to studying and understanding it. |
| Good practice (Low Importance) Not very important, I can devote some time to find it. | The SLA should be easy to find through an external search engine (e.g., by querying "[csp_name] sla"). |
| Good practice (Medium Importance) It should not take more than a few clicks in order to find the cloud SLA. | The SLA should be easy to find through the Cloud Service Provider's own search engine (e.g., by querying "sla"). |
| Good practice (High Importance) It is important to quickly and easily find the cloud SLA, at the CSP's website. | The SLA should be easy to find directly at the Cloud Service Provider's home page. |

| CRM Element | 3 - Choice of Law |
|---|--|
| Should the SLA specify to which particular jurisdiction or geographical area it is applicable? | <p>The choice of law, that is, the law that is proposed to be applicable between the Cloud Service Provider (CSP) and Cloud Service Customer (CSC), can change quite a lot, and this can easily cause confusion about rights and obligations. In addition, cloud service customers often have little relevant knowledge about the mentioned jurisdiction and the consequences it brings by agreeing.</p> <p>Jurisdiction governing contractual relationships often do not correspond to where the CSC may reside or be active with its business. In addition, conflicts between mandatory law where the CSC resides or is active with its end-users, may occur, leading to more insecurity and lack of trust.</p> <p>Generally, a lot of 'one jurisdiction fits all' approaches are encountered, basically being the laws of the country or state of the CSP where it has its headquarters being applicable to any</p> |

| | |
|--|--|
| | CSC, regardless of where it resides, is active and of which mandatory laws are applicable to the CSC. |
| Good practice (Low Importance) No, that information is not critical to my organisation. | Getting to agreement with applicable law where the data resides. |
| Good practice (Medium Importance) It would be desirable to have access to that information from the CSP. | Getting to agreement with applicable law of a member state of the European Union. |
| Good practice (High Importance) Definitely, my organization needs to know that information. | Getting to agreement with applicable law where the CSC has its offices or where is active with its end-user. |

| CRM Element | 4 – Roles and Responsibilities |
|--|---|
| Should roles and responsibilities be clearly defined in the SLA? | A consistent and sound definition of SLA-related roles and responsibilities is required by the Cloud Service Customer to fully understand in which terms the Cloud Service Provider will commit to provision the cloud service. |
| Good practice (Low Importance) I do not expect this information to appear in the SLA. | Even if not written in the cloud SLA, the Cloud Service Provider should provide on customer request, a clear definition of related roles and responsibilities. |
| Good practice (Medium Importance) My organisation would expect to obtain this information either from the SLA or the Cloud Service Provider. | Roles and responsibilities should be specified in the cloud SLA. |
| Good practice (High Importance) It is critical for my organisation that this information is presented on the SLA. | Roles and responsibilities should be specified in the cloud SLA, and aligned to the definitions in standards like ISO/IEC 17788 and ISO/IEC 17789. |

| CRM Element | 5 – Cloud SLA Definitions |
|--|--|
| Should relevant definitions for terms used in the SLA be provided? | The inclusion of terms and definitions being used in the cloud SLA will benefit Cloud Service Customers and help them to understand the provider's SLA, while also avoiding unnecessary ambiguities. |
| Good practice (Low Importance) I do not think that is necessary. | Even if not written in the cloud SLA, the Cloud Service Provider should provide, on request, a clear set of terms and definitions used in the SLA. |
| Good practice (Medium Importance) | Terms and definitions should be specified in the cloud SLA. |

| | |
|--|--|
| Yes, but the definitions can be also provided by the CSP if requested. | |
| Good practice (High Importance) Yes, it is important for my organisation to have a clear understanding of the used SLA definitions. | Terms and definitions should be specified in the cloud SLA, and aligned to EU guidelines ³ and international standards ⁴ . |

2.2.1.2 CRM Category: Freshness

| CRM Element | 6 – Revision Date |
|--|--|
| How important is it for your organisation to know when the cloud SLA was last revised? | As in the case of many other related documents (e.g., Master Service Agreement and Cloud Service Agreement), the Cloud Service Provider should update its SLA based on for example, business needs or technology updates. In these cases, the revision date becomes a metric for the Cloud Service Customer to assess how often the Cloud Service Provider is aligning its published SLA to those updates. |
| Good practice (Low Importance) This information is not needed by my organisation. | If the revision date is not mentioned on the SLA, then the Cloud Service Provider should provide it on request of the customer. |
| Good practice (Medium Importance) The revision date should be provided by the Cloud Service Provider. | The revision date should be mentioned in the SLA. |
| Good practice (High Importance) This is very important to know, and I expect it to appear on the SLA. | The revision date, along with a log of changes, should be included in the SLA. |

| CRM Element | 7 – Update Frequency |
|--|--|
| If the CSP publishes the revision dates of its SLA, would you be interested in also having the information related to the frequency of such SLA updates? | This is very much related to the revision date of the SLA. Its importance resides in communicating to the customer how concerned the Cloud Service Provider is about updating its SLA, the nature of the performed changes, and how the SLA has matured over time. A frequently updated SLA may not necessarily imply a better SLA. Accordingly, an occasionally updated SLA might not mean that the document is reliable. The |

³ For example the guidelines issued by the EC's C-SIG SLA group <https://ec.europa.eu/digital-single-market/en/cloud-select-industry-group-service-level-agreements>

⁴ Please refer to ISO/IEC 19086-1

| | |
|---|---|
| | customer should be able to assess the criticality of performed changes based on information received from the provider. |
| Good practice (Low Importance) Not really, this is not relevant to my organisation. | On the request of the customer, the Cloud Service Provider should provide a log of all updates performed to its SLA. The update log may not be included in the actual SLA. Performed updates are expected to be infrequent (e.g., once every 24 – 30 months). |
| Good practice (Medium Importance) If available then I would be interested in having that information. | All performed SLA updates/log of changes should be easily found on the SLA. Performed updates are expected to be more frequent (e.g., once every 18 – 24 months). |
| Good practice (High Importance) Definitely, this is very important information for my organisation. | Performed updates should be clearly documented in the SLA and also communicated regularly and promptly to the customer (please also refer to questions 18 - SLA Change Notifications and 19 - Unilateral Change). Performed updates are expected to be every 12 months. |

| CRM Element | 8 – Previous versions and revisions |
|---|---|
| Do you require access to previous versions of the SLA? | Having access to previous versions of the SLA enhances a customer's awareness and understanding of the cloud SLA and how the Cloud Service Provider operates. In particular, customers are expected to have access to this information in order to compare previous revisions of the SLA either during their procurement processes, or while assessing a potential SLA change, previously communicated by the Cloud Service Provider. |
| Good practice (Low Importance) This is not important for my organisation. | The Cloud Service Provider should provide, on request, some kind of access (e.g., URL, archive, etc.) to the repository of previous versions/revisions of its SLA. |
| Good practice (Medium Importance) If available then I would be interested in having this information. | The Cloud Service Provider should have a publicly available repository of previous versions/revisions of its SLA. This repository should be kept up-to-date. |
| Good practice (High Importance) That information is very important for my organisation. | Besides providing public access to its SLA repository, the Cloud Service Provider is expected to diligently provide integrity/authenticity protection to the stored SLAs, along with a summary of the relevant changes in each version/revision. |

| CRM Element | 9 – SLA Duration |
|--|--|
| Should the SLA clearly specify its validity period? | The validity period of an SLA is important for Cloud Service Customers to understand the normal conditions under which the Cloud Service Provider can revise the SLA in order to potentially create a new version. It is important to remember |

| | |
|---|---|
| | that other (unplanned) changes to the SLA might still occur during the duration of the SLA. When the SLA is coming to an end, the Cloud Service Customer might then decide to renegotiate, terminate, or accept the new SLA (if applicable). |
| Good practice (Low Importance) It is not important. | The Cloud Service Provider should provide, on request, all information related to the validity period of the corresponding cloud SLA |
| Good practice (Medium Importance) Yes, but only if the Cloud Service Provider can provide that information. | The validity period should be clearly specified by the Cloud Service Provider either within the SLA, or as part of the provider's SLA repository. |
| Good practice (High Importance) It is very important to have access to that information. | Besides specifying the SLA validity period, the Cloud Service Provider is expected to clearly communicate the conditions under which the SLA may be changed (please also refer to "high importance" good practices in elements 18 - SLA Change Notifications and 19 Unilateral Change) or become invalid before its expiration. |

2.2.1.3 CRM Category: Readability

| CRM Element | 10 – SLA Language |
|---|--|
| Is it important that the CSP offers its SLA in more than one official language? | When the cloud SLA is offered in an official language corresponding to the Cloud Service Customer's business location it is easier for them to fully understand the benefits and conditions of the SLA, and therefore avoid conspicuous ambiguities. |
| Good practice (Low Importance) Not really, having the SLA in English is sufficient. | The Cloud Service Provider should offer the SLA in English. |
| Good practice (Medium Importance) It is sufficient that the CSP is able to provide a localised version on request | The CSP should offer the SLA in English, and also in at least one additional official language. ⁵ |
| Good practice (High Importance) It is very important to have a localised version by default. | The CSP should offer the SLA in English, and also in at least one official language corresponding to the CSC's business location ⁶ . |

⁵ Please refer to https://en.wikipedia.org/wiki/List_of_official_languages

⁶ Please refer to https://en.wikipedia.org/wiki/List_of_official_languages_by_country_and_territory

| CRM Element | 11 – Machine Readable Format |
|--|--|
| Is it important that the SLA is accessible in machine-readable format? | Machine-readable SLAs are the basis for integrating realistic levels of automation into the cloud service's life cycle management process (e.g., negotiation and monitoring). This might be a requirement for a Cloud Service Customer that is willing to lower their cloud services' operational costs |
| Good practice (Low Importance) My organisation doesn't need this. | If available and on customer request, the Cloud Service Provider should provide a machine-readable version of its cloud SLA. |
| Good practice (Medium Importance) This could be good to have, but it is not vital. | A machine-readable version of the Cloud Service Provider SLA should be available at the provider website. The provider may include links to previous SLA versions/revisions. |
| Good practice (High Importance) Yes, it is very important for our purposes. | A fully documented, machine-readable version of the Cloud Service Provider SLA should be available at the provider's website. The provider should include links to previous SLA versions/revisions. The machine-readable version should be compliant with relevant standards like ISO/IEC 19086-2 (metrics model), and WS-Agreement. |

| CRM Element | 12 – Number of Pages |
|--|---|
| To make the SLA easier to read, should the pages of the SLA be numbered? | Nowadays, it is very common to find cloud SLAs in electronic formats where the number of pages cannot be counted (e.g., webpages, popup panels). However, our findings show that "long SLAs" do not necessarily mean "clearer SLAs". On the contrary, if the SLA takes several screens to display or is very long, then the prospective Cloud Service Customer will most likely avoid reading it in full or will be unable to easily find key SLA/SLO information. Shorter, but concise/standardised SLAs are expected to greatly benefit Cloud Service Customers. |
| Good practice (Low Importance) Having the SLA pages numbered is not important. | The Cloud Service Provider should publish its SLA in a web-friendly electronic format, although not necessarily in a document-format (PDF, DOC). The SLA should be structured/compliant with a relevant standard (e.g., ISO/IEC 19086-1/-2/-4) in order to make it easier to read. |
| Good practice (Medium Importance) It is somewhat important and helps to make the SLA easier to read. | The Cloud Service Provider should publish its SLA in a document-format, and it should be structured according to relevant standards. |
| Good practice (High Importance) It is very important to have a short, but concise SLA with numbered pages. | The Cloud Service Provider SLA should present in a concise and easy to find/navigate manner all the information the customer would expect to find, according to relevant standards. Supporting information (e.g., metrics' specification), is expected to be added as appendices to the main SLA document. Pages should be numbered (if applicable). |

2.2.1.4 CRM Category: Support

| CRM Element | 13 – Contact Details |
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| Should the SLA include a help desk number or other details to contact the Cloud Service Provider? | Knowing the Cloud Service Provider contact information is essential to provide assurance to the Cloud Service Customer in case something goes wrong with the cloud service, or support is required with the SLA. It is expected that the Cloud Service Provider should be able to provide specialised SLA-related support to the customer. |
| Good practice (Low Importance) It is not important. | The contact details are provided on the Cloud Service Provider's home page. The provider should at least have a contact email as an entry point to solve questions related to the SLA. |
| Good practice (Medium Importance) I may need it, but only on request. | The contact details should be provided on the SLA, and present contact information localised for the customer. The contact details might refer to the help desk as an entry point for SLA-related questions. |
| Good practice (High Importance) The Cloud Service Provider should always specify and provide this information. | The Cloud Service Provider should provide the contact information for SLA-related questions. Furthermore, it is expected that the provider makes available more than one communication channel e.g. email, telephone, live-chat, etc.. |

| CRM Element | 14 –Contact Availability |
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| Should the SLA specify the Cloud Service Provider's contact availability? | In addition to finding a Cloud Service Provider's contact details for the SLA, Cloud Service Customers also need to know when the contact is available e.g., days of the week and working hours. This way potential customers can evaluate if the guaranteed availability is sufficient to cover their operations. |
| Good practice (Low Importance) No, it is not important to have this information. | Information on contact availability is provided on the Cloud Service Provider's home page, as part of the corresponding contact details. Provider contacts should be available during the operation of the cloud service (as guaranteed on the respective Service Level Objectives). |
| Good practice (Medium Importance) I may need it, but only on request to the CSP. | Contact availability should be specified as part of the SLA. For SLA-specific support, the Cloud Service Provider should provide business hour availability in order to guarantee coverage of the cloud service's lifecycle. |
| Good practice (High Importance) The Cloud Service Provider should always specify and provide this information. | Contact availability for SLA-related questions should be continuously provided by the Cloud Service Provider, therefore covering the complete SLA life-cycle. |

2.2.1.5 CRM Category: Credits

| CRM Element | 15 – Service Credit |
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| Should the SLA provide a clear explanation of whether service credits can be provided? | Before entering into a contractual relationship with a Cloud Service Provider, a Cloud Service Customer not only wants to know, assess and understand what their rights and obligations are, but also know what remedies they are entitled to. |
| Good practice (Low Importance) No, this information is not required by my organisation. | Reasonable service credits as a percentage of the yearly fee, in addition to improvement programs that aim for zero-repeat should be discussed and agreed upon with the Cloud Service Provider. |
| Good practice (Medium Importance) Yes, but only if this is requested by my organisation. | Reasonable terms of remedies, including without limitation the right to claim direct damages, next to improvement commitment for zero-repeat should be discussed and agreed upon with the Cloud Service Provider |
| Good practice (High Importance) Yes, it should be always mentioned on the SLA. | Reasonable terms of remedies, including without limitation the right to claim full damages, except to the extent non-insurable by the Cloud Service Provider, next to improvement commitment for zero-repeat should be discussed and agreed upon with the Cloud Service Provider |

| CRM Element | 16 – Service Credits Management |
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| Should the SLA include the conditions under which service credit is provided? | A Cloud Service Customer needs to know, assess and understand what remedies it has in case of an incident and related damages. In the case of service credits being granted, they generally do not result in a pay-out to the customer as a fixed damage/cost contribution but is rather credited against future monthly fees. |
| Good practice (Low Importance) This is not important. | Pro-active incident management notification, with service credits being paid out in financial funds should be discussed and agreed upon with the Cloud Service Provider. |
| Good practice (Medium Importance) It is important, but only on request to the Cloud Service Provider. | Pro-active incident management notification, with service credits being paid out in financial funds should be discussed and agreed upon with the Cloud Service Provider. |
| Good practice (High Importance) It is very important, and it should be always mentioned on the SLA. | Continuous monitoring as well as pro-active incident management notification, with incurred damages being paid out in financial funds should be discussed and agreed upon with the Cloud Service Provider. |

| CRM Element | 17 - Maximum service credits (Euro amount) provided by the CSP |
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| Should the SLA describe how much currency credit the Cloud Service Provider should reimburse the | A Cloud Service Customer needs to be able to know, assess and understand what remedies are available in the case of an incident and related damages. Often service credit offered by |

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| Cloud Service Customer? | a provider does reflect the impact that an incident may have on the customer. It is important to check this. |
| Good practice (Low Importance) No, I do not think that this information is important. | Reasonable service credits as a percentage of the yearly fee, next to improvement programs that aim for zero-repeat should be discussed and agreed upon with the Cloud Service Provider. |
| Good practice (Medium Importance) Yes, but only if requested by the customer. | Reasonable terms of remedies, including without limitation the right to claim direct damages, next to improvement commitment for zero-repeat should be discussed and agreed upon with the Cloud Service Provider. |
| Good practice (High Importance) Yes, it should be specified on the SLA. | Reasonable terms of remedies, including without limitation the right to claim full damages, except to the extent non-insurable by the Cloud Service Provider, next to improvement commitment for zero-repeat should be discussed and agreed upon with the Cloud Service Provider. |

2.2.1.6 CRM Category: Changes

| CRM Element | 18 – SLA Change Notifications |
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| Should the SLA specify how customers are notified about changes to the SLA made after service usage has commenced? | No customer appreciates a vendor or supplier that is entitled to change the rules of engagement unilaterally. The same goes for the contractual relationship between a Cloud Service Customer and Cloud Service Provider. Unilateral change arrangements can sometimes be detrimental to the customer. These are generally recorded in standard SLAs, although some do not mention whether and when SLA change notifications are sent to the customer. |
| Good practice (Low Importance) This is not important as long as the changes are communicated sooner or later. | Changes to the SLA should be communicated to the customer before they are applied (at least 3 months in advance). Differences should be identified with respect to the (still valid) SLA. |
| Good practice (Medium Importance) Important, but only if this is provided on request of the Cloud Service Customer. | The notification period should be of at least 6 months, and the Cloud Service Provider should clearly explain to the Cloud Service Customer the magnitude of these changes based on the originally agreed SLA. The customer should have the option of terminating the SLA in advance, based on the assessed severity of the changes. |
| Good practice (High Importance) This is very important, and should be always specified. | The information provided by the Cloud Service Provider, specialised support, and notification period, should be sufficient enough to give customer the chance to evaluate the severity of the planned SLA changes. The provider should allow renegotiation of the SLA, and it should be feasible for the customer to initiate a termination of the SLA. |

| CRM Element | 19 – Unilateral Change |
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| Should the SLA detail if the Cloud Service Provider is entitled to unilaterally change the SLA? | Whether or not a SLA and related documentation are available, understandable or even acceptable to a Cloud Service Customer, after entering into a contractual relationship with a Cloud Service Provider, generally a customer should be sure that an amendment to the SLA would only be possible with prior written consent by the customer. One exception to that default rule, could be in the case of an increase of certain attributes or service levels that are beneficial for the customer. What is generally seen in cloud SLAs is that the provider is entitled to change the SLA unilaterally. This obviously leads to a lower level of confidence and trust in such providers, Whether the change is advantageous or not for the customer. |
| Good practice (Low Importance) This is not critical for my organisation. | Any clause on unilateral change should be deleted or declared not applicable. |
| Good practice (Medium Importance) Somewhat important, and if requested then the Cloud Service Provider should provide this information. | Any clause on unilateral change should be deleted or declared not applicable, except for unilateral changes of the services itself that are beneficial and non-detrimental for the Cloud Service Customer. |
| Good practice (High Importance) This is very important, and should be always specified. | Any clause on unilateral change should be deleted or declared not applicable, and arranged so that any changes of the services itself that are beneficial and non-detrimental for the Cloud Service Customer need to be discussed and agreed upon with the Customer in advance. |

2.2.1.7 CRM Category: Reporting

| CRM Element | 20 – Service Level Reporting |
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| Should the SLA clearly describe if Service Levels have been achieved? | Reporting of achieved Service Levels is necessary for CSCs to assess if the provider is fulfilling agreed Service Level Objectives (SLO). In order to guarantee these high levels of assurance and transparency, it is necessary for the CSC to have access to the mechanisms (e.g., tools, specifications) and know-how to perform the monitoring/assessment of CSP's Service Levels. |
| Good practice (Low Importance) It is not important. | On request, the Cloud Service Provider's should provide to the customer a report with relevant Service Levels assessed during the requested period of time. Reported Service Levels should correspond to the SLOs specified in the SLA. |
| Good practice (Medium Importance) Important, but only if this is provided on CSC request. | The Cloud Service Provider's should provide to the customer a periodic report with relevant Service Levels. The reporting period should be aligned to the agreed billing period. |

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| Good practice (High Importance) It is very important, and should be always specified. | The Cloud Service Provider should provide the customer with the tools, training and support to directly measure the achieved ServiceLevels, and evaluate them with respect to the agreed SLOs. Measured ServiceLevels should be integrity- and authenticity-protected, so the customer can use them to demonstrate potential violation of the SLA by the provider. |
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| CRM Element | 21 – Service Level Continuous Monitoring |
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| Should the SLA clearly explain if or how service level reports are continuously updated? | Currently, most cloud mechanisms for service level reporting are “point-in-time” i.e., the Cloud Service Provider periodically performs service level measurement at certain intervals of time. However, these assessments miss Service Level fluctuations (including SLA violations) occurring in between two scheduled assessments. A “continuous monitoring” based approach is much more advantageous for the customer. This fully assesses service levels, covering a specified period of time e.g. the whole contract length. Cloud Service Customers should be well-informed about the provider’s capabilities to perform the continuous monitoring of offered Service Level Objectives, along with the associated trade-offs (e.g., performance, and price). |
| Good practice (Low Importance) It is not important. | The Cloud Service Provider may offer to the customer (possibly at an additional cost), the possibility to continuously report a fixed set of Service Levels. |
| Good practice (Medium Importance) Important, but only provided if requested by the Customer. | The Cloud Service Provider should document in the SLA which are its continuous monitoring capabilities, specifying parameters like associated costs, mechanisms/tools, responsibilities, and known limitations. |
| Good practice (High Importance) | The Cloud Service Provider should provide a certified form of continuous monitoring-based Service Level reporting. An example of such certification scheme is CSA Open Certification Framework – Level 3 (OCF – STAR Continuous ⁷). |

| CRM Element | 22 - Feasibility of specials & customizations |
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| Would you expect a clear definition of extras or exceptions to the SLA and other customisations? | Many Cloud Service Customers have special requirements and wishes. In general, many of these can be offered by a Cloud Service Provider, either for free or for an additional fee. However, not all providers are willing to give these services to small and medium businesses. |
| Good practice (Low Importance) | Always assess, prepare and negotiate. The default cloud SLAs which are initially made available by providers may be less |

⁷ Please refer to https://cloudsecurityalliance.org/star/#_overview

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| My organisation doesn't need this. | hard-coded, fixed and non-negotiable as customers may think. This is especially applicable now, as the cloud services market is still maturing. |
| Good practice (Medium Importance) It may be good to have, but otherwise my organisation does not need it. | Always assess, prepare and negotiate. The default cloud SLAs which are initially made available by providers may be less hard-coded, fixed and non-negotiable as customers may think. This is especially applicable now, as the cloud services market is still maturing. |
| Good practice (High Importance) Yes, it is very important for our purposes. | Always assess, prepare and negotiate. The default cloud SLAs which are initially made available by providers may be less hard-coded, fixed and non-negotiable as customers may think. This is especially applicable now, as the cloud services market is still maturing. |

| CRM Element | 23 – General Carve-outs |
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| Should the SLA include a clear definition of carve-outs to the negotiated cloud services, SLOs and SLAs? | <p>Always read the small print! Whether or not a SLA and related documentation are available, understandable and perhaps even acceptable to a Cloud Service Customer, the fine-print should never be ignored.</p> <p>Carve-outs include provider assumptions, exclusions and scope of force majeure. One can generally identify variations and specials in the carve-out conditions, including uncustomary restrictions, thresholds and other conditions. For the Customer it can be quite difficult to assess these, and the consequences should such conditions arise.</p> |
| Good practice (Low Importance) This is not important. | Read the small print as well as any other part of the applicable documentation. Try to identify where the risks are and what kind of impact such incidents may have on your business. |
| Good practice (Medium Importance) It may be good to have, but otherwise my organisation does not need it. | Read the small print as well as any other part of the applicable documentation. Try to identify where the risks are and what kind of impact such incidents may have on your business. Discuss these with your Provider. |
| Good practice (High Importance) Yes, this is very important for us. | Read the small print as well as any other part of the applicable documentation. Try to identify where the risks are and what kind of impact such incidents may have on your business. Discuss these with your Provider, and negotiate on those that the Customer finds unreasonable and unacceptable for its intended use and possible impact. |

2.2.1.8 CRM Category: SLO & Metrics

| CRM Element | 24 – Specified SLO Metrics |
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| Should the SLA include a clear, | Well-documented and standardised metric definitions in the SLA |

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| standardised and unambiguous specification of metrics related to the defined SLOs? | will allow customers to compare different cloud offers, or to assess achieved versus committed SLOs during the operation of the cloud service. In general, clearly defined Service Level Objectives (SLO) metrics improve Cloud Service Provider's trust and transparency. |
| Good practice (Low Importance) My organisation does not need this information. | On request the Cloud Service Provider should provide the specification of the metrics related to the SLOs contained in the SLA. Metrics may be specified based on an standardised model e.g., ISO/IEC19086-2, or NIST SP 500-307. |
| Good practice (Medium Importance) Yes, it should be provided by the CSP, but only if requested by my organisation. | The Cloud Service Provider should include a specification of all the provided SLO metrics (possibly based on a standardised model) in the SLA. |
| Good practice (High Importance) Yes, this is very important for our purposes. | For all SLOs contained in the SLA, the Cloud Service Provider should provide a metric specification based on a well-known standard e.g., ISO/IEC 19086-2, or NIST SP 500-307. |

| CRM Element | 25 – General SLOs |
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| Should the SLA provide a clear specification of general SLOs? | The set of general SLOs (including accessibility, availability, termination of service, governance, certifications and support), should provide enough information to the customer to perform an initial/high-level comparison between available cloud offers. During the actual operation of the cloud service, the customer may want to deploy continuous monitoring mechanisms in SLOs like availability. |
| Good practice (Low Importance) My organisation does not need this information. | The Cloud Service Provider should at least define SLOs related to the offered cloud service's life cycle management e.g., certifications, availability, and termination of service. Related metrics may be specified in a standardised way. |
| Good practice (Medium Importance) Yes, it should be provided by the Provider, but only on request. | The specified general SLOs should be compliant with the core requirements presented in ISO/IEC 19086-3. |
| Good practice (High Importance) Yes, this is very important for our purposes. | Metrics definitions associated to the General SLOs should be based on a standardised model e.g., ISO/IEC 19086-2. |

| CRM Element | 26 – Cloud Service Performance SLOs |
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| Should the SLA provide clear SLOs for Cloud Service Performance? | Cloud Service Performance SLOs are related to issues such as response time, capacity, and elasticity. The customer should assess all of the defined service performance SLOs in order to verify that functional requirements are fulfilled. |

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| | Response time can be a highly significant aspect of the user experience of a cloud service. Response times are rarely dealt with directly by certifications. Furthermore, response times can vary depending on the nature of the request or the type of service being considered. |
| Good practice (Low Importance) My organisation does not need this information. | The SLA may include a subset of the service performance SLOs presented in ISO/IEC 19086-1. Related metrics may be specified in a standardised way. |
| Good practice (Medium Importance) Yes, it should be provided by the Provider, but only on request | A factor that needs to be considered is that many cloud services support multiple and different operations and that it is likely that response time will vary for the different operations. As a result, response time SLOs should clearly state which operation(s) are affected by this. The specified service performance SLOs should be compliant with the core requirements presented in ISO/IEC 19086-3. |
| Good practice (High Importance) Yes, this is very important. | The Customer should be able to request changes to the capacity SLO limits for the consumed service(s). Furthermore, the SLA may specify related SLOs contained in additional documents like the EC's "SLA Standardisation Guidelines". Metric definitions associated to the General SLOs should be based on a standardised model e.g., ISO/IEC 19086-2. |

| CRM Element | 27 – Service Reliability SLOs |
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| Should the SLA provide clear service reliability SLOs? | Reliability SLOs concern service resilience, disaster recovery, and customer's data backup/restore. Service reliability is the property of a cloud service to perform its function correctly and without failure, over a period of time. Allowable downtime, which accounts for scheduled maintenance and any other element carved out in the SLA, should be taken into account for this SLO. Note that reliability also covers the capability of the cloud service to deal with failures and to avoid loss of service or loss of data in the face of such failures. |
| Good practice (Low Importance) My organisation does not need this information. | Information related to reliability SLOs may be either included directly on the SLA, or referred to the appropriate Cloud Service Provider certification. Related metrics may be specified in a standardised way. |
| Good practice (Medium Importance) Yes, it should be provided by the provider, but only on request. | The target for reliability needs to be stated so that the customer can assess whether the particular cloud service meets their business requirements. The specified SLOs should be compliant with the core requirements presented in ISO/IEC 19086-3. |
| Good practice (High Importance) | All reliability information should be found on the SLA. The CSP may also refer to reliability SLOs in the Data Management |

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| | <p>section of the SLA. Furthermore, the SLA may specify related SLOs contained in additional documents like the EC's "SLA Standardisation Guidelines"⁸. The reliability SLOs specified by the CSP should assist the CSC in putting in place Recovery Point Objective and Recovery Time Objective when using the cloud service.</p> <p>Metrics definitions associated to these SLOs should be based on a standardised model e.g., ISO/IEC 19086-2</p> |
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| CRM Element | 28 – Data Management SLOs |
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| Should the SLA include clear data management SLOs? | <p>Data management SLOs concern aspects such as IPR, CSC/CSP data, derived data, account data, portability, data deletion/location/examination, and law enforcement access to customer data.</p> <p>The data management SLOs presented in the SLA cope with important quantitative and qualitative indicators related with data lifecycle management. They can be considered as complementary to existing and applicable security and data protection certifications offered by the Cloud Service Provider.</p> <p>Customers should verify the fulfilment of their requirements based on the information presented on the SLA and (if applicable) the respective provider's certifications.</p> |
| <p>Good practice (Low Importance)</p> <p>My organisation does not need this information.</p> | <p>The SLA should specify the reliability SLOs (or a subset of those) presented in ISO/IEC19086-1. Clear specification of terms, definitions, and objectives related to customer's data should be added to the SLA. Where applicable, customer data protection should link to the corresponding data protection SLOs.</p> <p>Related data management SLO metrics may be specified in a standardised way.</p> |
| <p>Good practice (Medium Importance)</p> <p>Yes, it should be provided by the provider on request.</p> | <p>In order to guarantee the customer's rights, pay particular attention to the derived data SLOs, and their ownership. The specified SLOs should be compliant with the core requirements presented in ISO/IEC 19086-3.</p> |
| <p>Good practice (High Importance)</p> <p>Yes, this is very important for us.</p> | <p>The SLA may specify related SLOs contained in additional documents like the EC's "SLA Standardisation Guidelines". In particular, the Cloud Service Provider is expected to clearly define the used data classification scheme, data deletion mechanism, data portability format, and relevant links to the personal data protection SLOs (e.g., in relationship to the data deletion SLOs).</p> <p>Metrics definitions associated to these SLOs should be based on</p> |

⁸ <https://ec.europa.eu/digital-single-market/en/news/cloud-service-level-agreement-standardisation-guidelines>

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| | a standardised model e.g., ISO/IEC 19086-2 |
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| CRM Element | 29 – Security SLOs |
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| Should the SLA include clear specifications on security SLOs? | <p>Currently, security is a major concern for (prospective) cloud customers. The specification of security commitments in the CSP SLA (i.e., in the form of SLOs) is expected to become part of standardised SLA templates in the near future. However, it will be equally important for customers to understand how specified security SLOs will relate to their own security requirements (including regulatory compliance).</p> <p>It is important to note that the documented good practices do not suggest any specific SLO/SQO value to the CSC. The required SLO/SQO value should be the result of applying a structured risk assessment⁹.</p> |
| <p>Good practice (Low Importance)</p> <p>The clear and complete specification of security SLOs in the SLA has low importance for my business needs.</p> | <p>The cloud SLA may mostly refers the CSC to the applicable security certifications (i.e., ISO/IEC 27002) instead of explicitly presenting the corresponding SLOs.</p> <p>The CSP is expected to present further details (possibly qualitative) related to the security mechanisms offered and the agreed SLO in areas like access control, cryptography, incident management, compliance, and organisation of information security¹⁰.</p> |
| <p>Good practice (Medium Importance)</p> <p>It has some relevance to my business, so I would expect to find some details on the SLA.</p> | <p>This good practice improves the accountability level of the CSP. Beyond a list of applicable security certifications, as part of the SLA the CSP is expected to present a set of quantitative/qualitative SLOs in areas like:</p> <ul style="list-style-type: none"> • Organisation of Information Security; • Human Resources Security; • Asset Management; • Access Control; • Cryptography; • Physical and Environmental Security; • Operations Security; • Communications Security; • Systems Acquisition; • Development and Maintenance; • Supplier Relationships; • Information Security Incident Management; • Business Continuity Management; • Compliance¹¹. |

⁹ Please refer to <http://www.iso.org/iso/home/standards/iso31000.htm>

¹⁰ Please refer to <https://ec.europa.eu/digital-single-market/en/cloud-select-industry-group-service-level-agreements>

¹¹ Please refer to http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=68242

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| | <p>It is important to note that in this case the structure/classification of the specified security SLOs should be consistent with that used in the security certifications the CSP refers to. For example security SLOs in ISO/IEC 19086-4, along with their corresponding implementation guidance, are structured according to ISO/IEC 27002 and 27017.</p> <p>Specified security SLOs/SQOs should make reference to the verifiable evidence associated to the corresponding and agreed metrics.</p> |
| <p>Good practice (High Importance)</p> <p>It is very important for my operations to have a clear explanation of the security committed by the CSP in its SLA. I need a high-level of detail related to security SLOs on the SLA (including associated metrics).</p> | <p>This recommendation is in addition to those outlined above. The security SLOs, and more in general the cloud SLA, should be specified in compliance with ISO/IEC 19086-1, ISO/IEC 19086-2, and ISO/IEC 19086-3. This will provide the CSC with details related to topics like SLO/SQO monitoring, applicable remedies, metrics specification, and core requirements.</p> <p>Furthermore, for highly important security SLOs it is a good practice for CSCs to obtain from the CSP the information/tools required for monitoring the agreed security commitments continuously¹².</p> <p>Particular attention should be paid to the “Information Security Incident Management” component, where it is expected for the CSP to notify consumers of the occurrence of any breach of its system, regardless of the parties or data directly impacted.</p> <p>Metrics play an important role in critical CRM security components. Metrics and standards for measuring performance and effectiveness of information security management should be established prior to agreeing on the cloud SLA. As a minimum, CSCs should understand and document their current metrics and how they will change when operations are moved into the cloud and where a CSP may use different metrics. Agreed metrics should be compliant with a relevant standard like ISO/IEC 19086-2¹³.</p> |

| CRM Element | 30 – Personal Data Protection SLOs |
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| Should the SLA include specifications on Personal Data Protection SLOs? | <p>Personal data management includes issues such as consent and choice, limitation, accountability, personally identifiable information (PII) collection/use/retention/disclosure limitation, and privacy compliance.</p> <p>SLOs related to PII protection should be considered as a critical element for customers, who must ensure compliance with legal obligations that may derive from the use of cloud services.</p> |

¹² Please refer to <https://www.enisa.europa.eu/publications/survey-and-analysis-of-security-parameters-in-cloud-sl-as-across-the-european-public-sector>

¹³ Please refer to http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=67546

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| | Customers should clearly understand the Cloud Service Provider's roles and responsibilities related to personal data protection both through applicable certifications, codes of conduct, and defined SLOs. |
| <p>Good practice (Low Importance)</p> <p>The clear and complete specification of privacy and PII protection SLOs in the SLA has low importance for my business needs.</p> | <p>The Cloud Service Provider should at least specify a subset of the SLOs mentioned in ISO/IEC 19086-4 which include:</p> <ul style="list-style-type: none"> • consent and choice; • purpose specification; • data minimisation; • accountability; • privacy compliance. <p>The customer is expected to verify that committed SLOs fulfil non-functional requirements, possibly derived from applicable regulations and other obligations.</p> <p>Related metrics may be specified in a standardised way.</p> |
| <p>Good practice (Medium Importance)</p> <p>It has some relevance to my business, so I would expect to find some details on the SLA.</p> | The specified SLOs should be compliant with the core requirements presented in ISO/IEC 19086-4. |
| <p>Good practice (High Importance)</p> <p>It is very important for my operations to have a clear explanation of the privacy committed by the CSP in its SLA. I need a high-level of detail related to privacy SLOs on the SLA (including associated metrics).</p> | <p>The SLA may specify related SLOs contained in additional documents like the EC's "SLA Standardisation Guidelines".</p> <p>Metrics definitions associated to these SLOs should be based on a standardised model e.g., ISO/IEC 19086-2.</p> |

3 How the Business Guide has contributed to the SLA-Ready Marketplace

A major objective in SLA-Ready¹⁴ refers to:

To educate and empower (prospective) cloud customers with services, tutorials (web-based and hands-on) and showcases to facilitate the management and make informed decision about SLAs throughout the service lifecycle;

The business guide outlined in section 2 has contributed to the SLA Marketplace which is includes tools and services developed to help SMEs to have direct access to the tools and services provided by SLA-Ready. The marketplace is made up of four other key outputs:

- i) SLA Essentials: A basic introduction to cloud SLAs and the cloud service lifecycle.
- ii) Use cases: A collection of 23 Use cases providing easy access to user requirements & priorities based on the CRM.
- iii) SLA-Aid tool: Online tool to help SMEs identify SLA priorities relevant to their particular context.
- iv) SLA Repository: Access to information on CSPs that have completed the SLA-Ready self-assessment questionnaire.

A more detailed explanation of Marketplace is available on Deliverable 4.3.

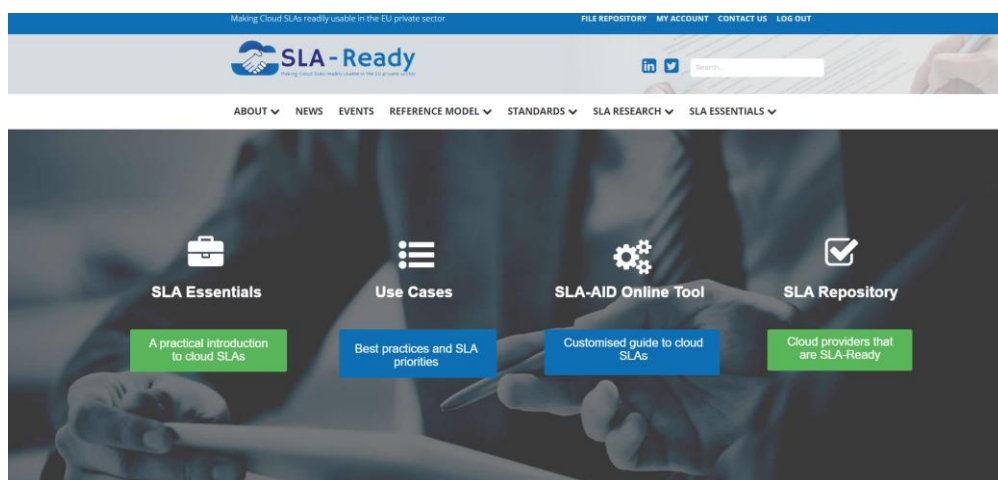


Figure 4 SLA-Ready Marketplace: SLA Essentials, Use cases, SLA-Aid, SLA Repository

Among the referenced services, published through the SLA Marketplace (cf., WP4), both the collection of use cases and the SLA Aid tool can be highlighted as leveraging the good practices documented in Section 2 of this deliverable. The use cases, the SLA Aid and the corresponding mapping of SLA Marketplace tools is presented in this section from the WP3 perspective i.e., focusing on the associated CRM and good practices in order to avoid overlapping with the information provided in Deliverable 4.3 and Deliverable 4.4

¹⁴ Please refer to the project's Description of Work (DoW)

3.1 SLA-Ready use cases

The Marketplace provides quick and easy access to recommendations based on the CRM through a set of 23 real-life use cases¹⁵ which account real-world experiences with cloud services. Use cases have been mapped based on the CRM and level of priority identified for each CRM element as per table three. The use cases serve as a first entry point for cloud customers to access the good practices outlined in section 2.

The use cases cover all phases of the cloud service lifecycle and are based on different entry levels such as the level of technical knowledge and experience of cloud services.

Individual good practice reports can be downloaded. Each report identifies which CRM elements of high, medium and low priority and also include the good practices on high priority CRM elements. More information on the use cases can be found in D4.3.

Basic knowledge customer using SaaS

ConsultLess is a small consultancy firm in the EU that has 20 employees (mostly legal and management experts). One of the employees is partner and also the Chief Information Officer (CIO) of the firm. ConsultLess decides to procure office software as a service (SaaS) for use by its employees; the cloud service offers document storage/editing, email and calendar. This cloud service should replace an internal mail-server and office software installed on computers.

High priority practices

Roles and Responsibilities


Roles and responsibilities should be specified in the cloud Service Level Agreement (SLA), and aligned to the definitions in standards like ISO/IEC 17788 and ISO/IEC 17789.

Cloud SLA definitions

Term and definitions should be specified in the cloud SLA, and aligned to EU guidelines and international standards.

SLA change notifications

The information provided by the Cloud Service Provider (CSP), specialized support, and notification period should be sufficient enough in order to give Cloud Service Customer (CSC) the chance to evaluate the severity of the planned SLA changes. The CSP should allow renegotiation of the SLA, and it should be feasible for the CSC to initiate termination of the SLA.



User Type: SME

User Maturity: Novice, Basic

Cloud Service lifecycle phase: Acquisition

Cloud usage: App on Cloud, Processing Sensitive Data, Data Integrity

Figure 5 Downloadable use case with priority CRM elements and good practices

3.2 The SLA Aid tool: a good practices perspective

Despite the evident usefulness of the SLA Business Guide documented in this deliverable, the consortium realised the need to put it closer to the targeted SMEs through automated/publicly available services of the SLA Marketplace. As described in section 3.2, the use cases provide a first entry point to these good practices. So SMEs can identify which CRM elements are of priority specifically for them, SLA-Ready has provided an online tool called the SLA-Aid which uses the good practices outlined in section 2.

The SLA Aid¹⁶ was designed as a service to take SMEs “by the hand” and guide them through the documented good practices. Furthermore, the SLA Aid seeks to help SMEs in choosing the good practices which are *good enough* to their organizations/business

¹⁵ <http://www.sla-ready.eu/sla-ready-new-use-cases>

¹⁶ <http://sla-aid.sla-ready.eu/>

requirements. Clearly, in the cloud SLA world the “one size fits all” principle does not apply. On the contrary, the SLA Aid supports SME in (i) realizing the relative importance of each CRM element based on their requirements, and (ii) mapping to the good practice associated to the selected level of importance. The consortium took the design decision of considering three different levels of importance (i.e., low, medium, and high), as used in the analyzed use cases documented in Deliverable 2.4, and develop a good practice for each one of these (cf., Section 2.2).

SLA-Aid is an online tool designed to help SMEs to identify priority areas to look out for when comparing cloud SLAs. The tool is based on our SLA Common Reference Model which identifies key elements of an SLA that cloud customers require information on. SLA-AID provides a common understanding of SLAs for cloud services, integrating SLA components like: terminology; SLA attributes; Service Level Objectives (SLOs); guidelines; and best practices.

Each SME has different needs based on the type of cloud service they wish to use, their experience and where they are in the cloud service lifecycle. In order to guide SMEs through the SLA Aid, the tool implements a set of guidance question. Each question is associated to three possible answers (cf., section 2), which are directly mapped to a level of importance. Each element has its own definition and SME should simply select the option that best describes its current expectations or procedures. The whole questionnaire is composed by 30 questions and it will take about 40 minutes to complete. A high-level view of the presented process is shown in figure 8.

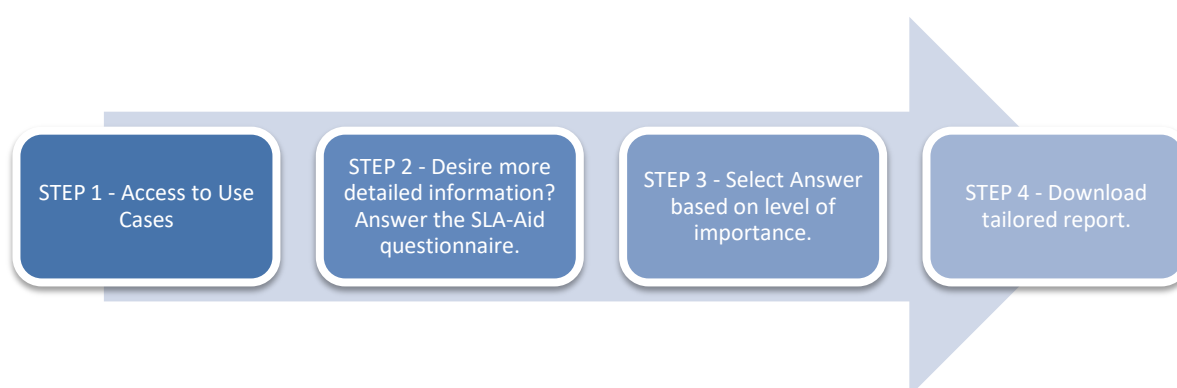


Figure 6 The SLA-Aid end-user procedure

The tool is directly accessible from home page and it can be used without registration. SME need only access to the tool and start answering at the questionnaire.

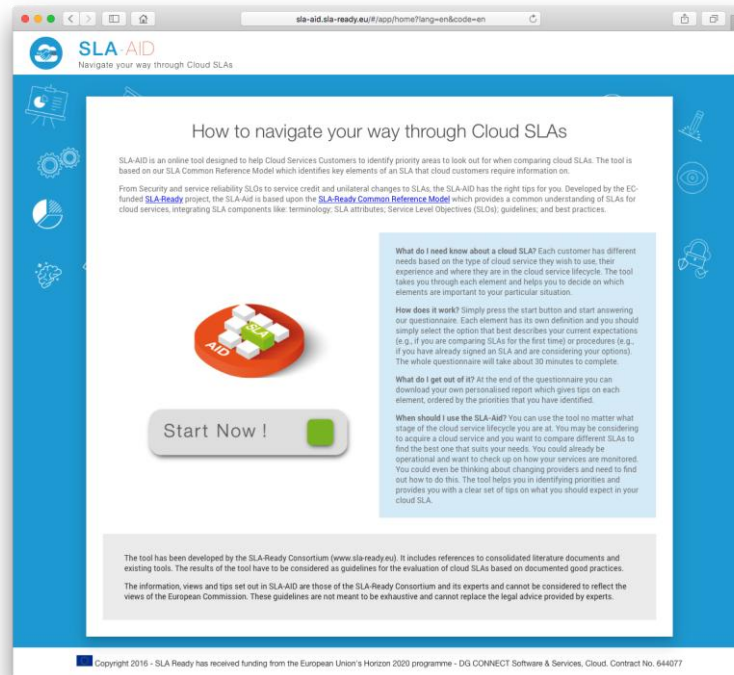


Figure 7 SLA-Aid homepage accessible from the SLA-Ready Marketplace

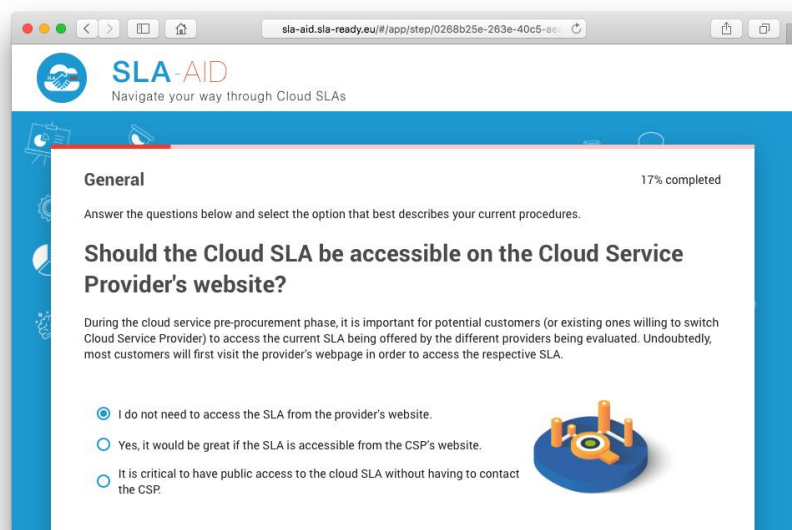


Figure 8 SLA-Aid questionnaire

The tangible take-away from the SLA Aid tool is a downloadable report, customised for the user SME, containing the CRM good practices that cover the presented requirements. The good practices are ordered by the priorities that SME have identified. The tool can be used by any SME, no matter what stage of the cloud service lifecycle they are at.

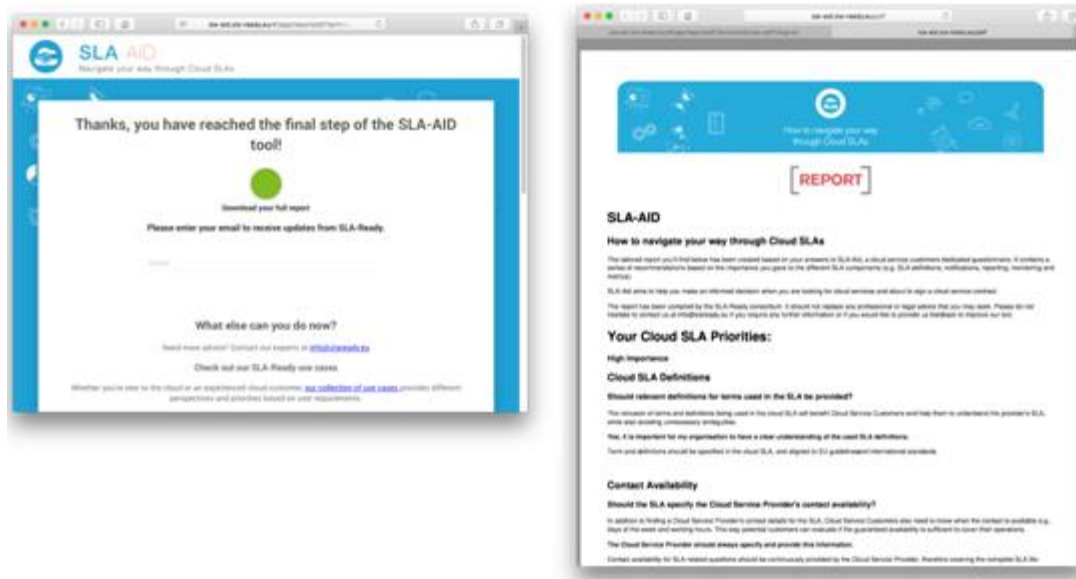


Figure 9 SLA-Aid final page and SLA-Aid Report.

Results collected from the SLA-Aid will be summarized and analysed in D4.4.

The SLA-Aid platform is supported by a user-friendly back office:

- Possibility to create new language versions of SLA-Aid
- Easy to use WYSWYG editing facilities
- Access to statistics with automatic graph creation and analysis

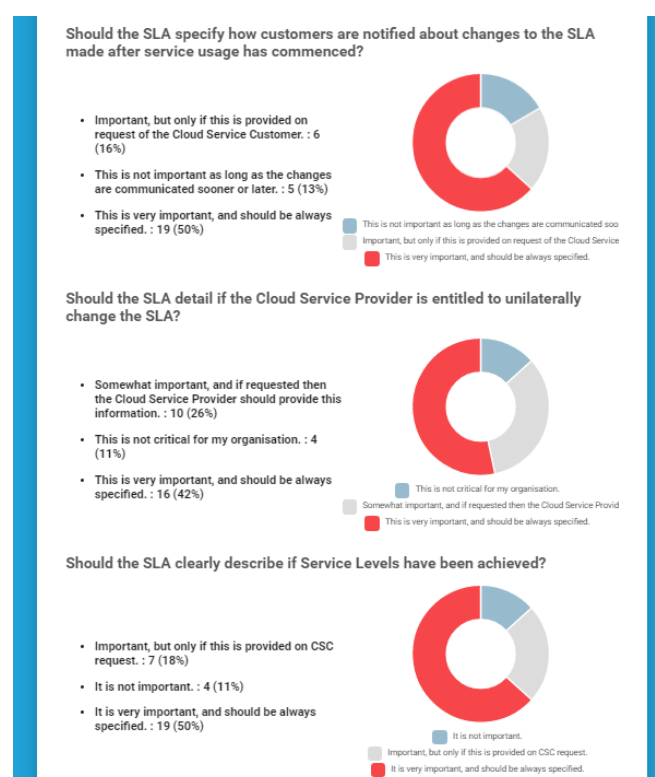


Figure 10 SLA-Aid back office statistics on responses

More information on the results and their impact will be discussed in D4.4.

4 *Exploitation activities to promote SLA-Aid*

The SLA-Aid has been promoted through the channels listed below. This will be reported in more detail in the activity report and D4.4:

1. Website coverage including dedicated news, publication on homepage
2. Newsletter: Promotion through 2 newsletters
3. Promotion through Twitter and LinkedIn including 2 LinkedIn blogs
4. Promotion at 3 workshops at National Associations and ICT Clusters
 - a. Ametic @ CloudForward 2016, 19 September 2016, Madrid, Spain
 - b. ClujIT, 3 November 2016, Cluj-Napoca, Romania
 - c. CONETIC, 15 November 2016, Madrid Spain
5. Distribution of 2 Press releases including one in Spanish following workshop hosted by CONETIC, Madrid, Spain
6. Promotion through F2F meetings and email to National Associations and ICT Clusters (see D4.4)

5 *Conclusions*

In this deliverable we have presented SLA-Ready's Business Guide, a set of good practices aiming to support European SMEs in adopting the developed Common Reference Model (CRM). The documented good practices have been structured according to the CRM, so each CRM element is associated with a specific set of good practices. Furthermore, we have differentiated good practices according to the relative importance that the SME user may put on the CRM element. This follows SLA-Ready's principle "one cloud SLA size, does not fit all SMEs".

Finally, we have also reported the project's services and tools derived from the documented good practices. We refer in particular to the SLA Aid, which was conceived as a service to support European SMEs in their journey to uptake cloud SLAs. The SLA Aid service automates the selection of good practices by helping SMEs realising the CRM elements/level of importance which is good enough for their organizations.

Annex 1 - Document Log

| DOCUMENT ITERATIONS | | |
|---------------------|--|--|
| V1.0 | Initial ToC and timeline | Jesus Luna, CSA |
| V2.0 | Initial set of contributions (1 st integration) | Jesus Luna, CSA, Nicholas Ferguson, Trust-IT |
| V2.0 | Legal contributions | Arthur van der Wees, Arthur's Legal |
| V3.0 | SLA-Aid & Use case contribution | Nicholas Ferguson & Gennaro Fontanarosa, Trust-IT |
| VFinal | Internal review | Damir Savanovic, CSA & Nicholas Ferguson, Trust-IT |