

Switching of Cloud Services Providers



EXECUTIVE SUMMARY

A study prepared for the European Commission

DG Communications Networks, Content & Technology by:



Switching of Cloud Services Providers

This study was carried out for the European Commission by IDC and Arthur's Legal.

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Executive summary

This is the Executive Summary of the Final Report of the study "SMART 2016/0032 – Switching of Cloud Services Providers" entrusted by the European Commission DG CONNECT to IDC and Arthur's Legal.

This study collected evidence on practices relating to switching of cloud services providers and analysed in depth the barriers potentially preventing data and/or application portability, as well as the policy measures needed to overcome these barriers. The conclusions and recommendations of the interim report of this study, as well as the input collected at the workshop that took place on 18 May 2017 in Brussels, contributed to the Impact Assessment of the proposed regulation on a framework for the "Free flow of non-personal data in the European Union"¹, published by the European Commission in September 2017.

In this study portability was defined as follows:

'Data portability is the ability to easily transfer data from one cloud service provider to another cloud service provider without being required to export and re-import the data; similarly, application portability is the ability to easily transfer an application or application components from one cloud service to a comparable cloud service and run the application in the target cloud service'.

Note that portability of data may, also, refer to the portability of data to the cloud customer's own IT systems; the latter option does not fall directly, though, under the scope of the present study.

The Cloud Market Context

Uncertainty about data/application portability between different cloud providers is a barrier currently preventing many cloud users from increasing their use of public cloud and "going up the stack", which means investing in more sophisticated services or applications. This concern was shared by approximately 25% of the respondents to IDC's annual Cloud View Enterprise Survey and confirmed by the case studies and interviews carried out by this study.

Another factor driving the need for a policy intervention in portability is the increasing concentration of the public cloud market in Europe. The top 5 public cloud providers increased their collective market share from 22% in 2013 to 31% in 2016, while the top 10 providers control 39% of the market, according to IDC data. Considering only the public cloud platform services market (IaaS plus PaaS) the share of the top 5 Cloud Service Providers (from now on CSPs) was already over 50% in 2016, with increasing dominance of the top 3 CSPs. While the SaaS market is consolidating but still maintains a plurality of suppliers, the IaaS and PaaS market is at risk of becoming an oligopoly of a less than handful of providers.

These trends may further reduce the market power of cloud users in their contractual relationships with providers and increase the risks of customers' lock-in, providing grounds for a counterbalancing policy action guaranteeing portability.

¹ Brussels, 13.9.2017, COM(2017) 495 final, 2017/0228 (COD)

The Main Data and Application Portability Challenges

The key findings of this study show that irrespective of the size of an organization, cloud portability is likely to be hindered by technical, economic/financial and legal challenges, given the current maturity of cloud services users across the EU. However, the ability to overcome the various challenges that are linked to data portability and application portability is related to the combination of multiple factors; for instance:

1. the service model (IaaS, PaaS and/or SaaS),
2. the complexity, quality and quantity of the data, data architecture, various data formats, data portability interfaces and data transfer rate,
3. the specification of the associated Service Level Objectives (SLOs) under the Service Level Agreement (SLA) concluded between the Cloud Service Provider (CSP) and the Cloud Service Customer (CSC)
4. the size and buying power of the cloud service customer.

Parity between data formats emerges as one important and complex barrier to data portability. Cloud users often need to invest in tools or services to re-process exported data and reformat the data to fit into the formats used by the cloud vendor to which they are migrating. The low levels of parity between the services provisioned by cloud vendors (often the result of conscious attempts by vendors to differentiate their services in a competitive environment) can potentially increase exponentially the technical challenges faced by end users when seeking to port data from one cloud provider to another. It is therefore particularly important that cloud vendors be transparent about their data formats.

Besides the issues related to data formats, the physical movement of data – particularly in large quantities - can be another notable inhibitor to data portability. Network bandwidth can be costly when customers are porting their data from a cloud service provider, as transferring very large datasets may take a long time or be unfeasible over internet connections. Organizations may find that they are offered significantly lower bandwidth speeds for extracting their data than the one they are offered for putting their data into the cloud service.

From a legal standpoint, there is a series of legal issues emerged from the field research carried out by the study team, which can be summarized as follows:

1. Absence of an Exit Plan under the contractual agreement between the CSP and the CSC.
1. Absence of provisioning of the portability related attributes under the Service Level Agreement.
2. The lack of meaningful remedies.
3. The ineffective or inconsistent use of standards that hampering, also, the wide-spread adoption of portability related practices in the market.
4. The unwillingness of certain large CSPs to cooperate with CSCs.

For large organizations, the technical, financial/economic and legal challenges emerging during cloud migration projects should usually be surmountable – although at a cost. This is for example because larger organizations have sizeable budgets, prior experience of large and complex project migrations, as well as the negotiating power to influence the actions of their cloud services providers.

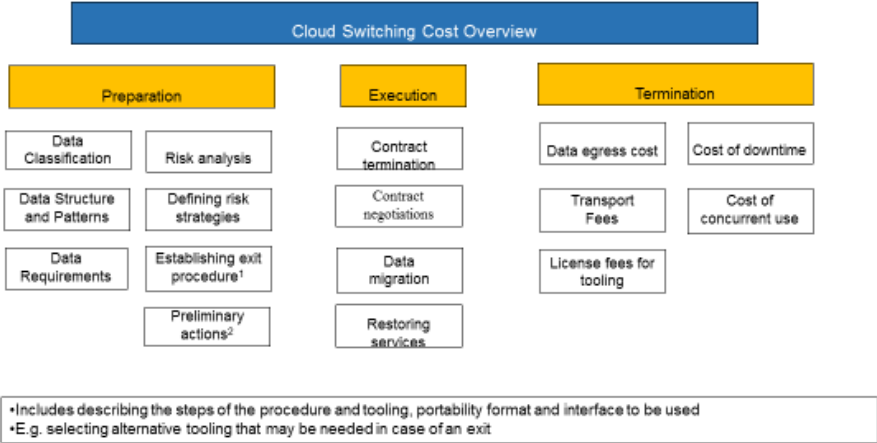
Small and medium sized enterprises (SMEs) on the other hand, do not necessarily have these attributes and may therefore be deterred from attempting cloud migrations because of their limited

resources, experience and negotiating power. In the cases where cloud migration is attempted, business disruption and possible business discontinuity can be a serious risk, especially for SME organizations. Moreover, the financial, and cyber-security risks associated with porting data may be more difficult to handle for SMEs.

Cost analysis of cloud portability

The study carried out a detailed analysis of the costs of cloud portability in 3 anonymized use cases. As shown in the figure below, the typology of costs is articulated in the 3 main phases of the contract life-cycle (preparation, execution and termination), and includes data egress costs, transport fees, human resources costs. The costs resulting from the use cases (which are only indicative and are based on a set of assumptions about the typology of services and the circumstances of switching) range widely from approximately €18.800 in a simple case of data portability, to €119.400 in a medium complex case, to €231.400 for a highly complex case. This however excludes the termination costs including the costs of downtime and concurrent cloud use, which may create business disruption and be particularly heavy.

Comparing the switching costs to the annual estimated costs for a cloud subscription in the same case, it appears that they represent 125% of annual costs in the simple case, 100% of annual costs for the medium complex case, and only 40% for the complex case. In other words, for both the simple and medium-complex cases the costs of switching are comparatively high so that companies will probably think long and hard before making this decision. With regards to the complex case, the costs are lower compared the cost of annual subscription, but the potential risks due to business disruption and unforeseen complexities are difficult to evaluate.



Policy Scenario

Building on the analysis of the technical, legal and economic issues identified, the study team considered and assessed a wide range of potential policy measures in terms of their impact on the entire set of cloud stakeholders. Based on these considerations, we developed 3 potential policy scenarios as follows:

1. A "**No EU Policy Action**" impact scenario, which leaves relevant actions for portability to the Member States, if they are willing to do so, with the risk to increase markets fragmentation and therefore hampering the Digital Single Market both at micro and macro level.
2. A "**Soft Regulation**" scenario, which assumes that the European Commission promotes cloud portability by encouraging the adoption of self-regulatory measures, instead of taking any immediate action linked to the introduction of a statutory right. Soft regulation may involve – among other things- supporting the wide adoption of the existing guidelines and codes of conduct that provide in a transparent and detailed manner for portability in the cloud environment; it may, also, encourage taking actions aiming at the consistent use of standards and at the performance of awareness campaigns on the relevant topics targeting the entire spectrum of cloud stakeholders including both the demand and the supply side.
3. A "**Mandatory Regulation**" scenario, which assumes the introduction at EU level of a new right to portability of customer data (including both personal and non-personal data) for professional users and a new right to portability of applications, building on the data portability right introduced by the General Data Protection Regulation (GDPR) in relation exclusively to personal data.

Potential economic impacts of the policy scenarios

The potential economic impact of the policy scenarios was estimated based on an economic model estimating the growth of public cloud demand under each scenario to the year 2025, measured as the variation of public cloud spending in the EU27 (excluding the UK), leveraging IDC data and user surveys. Building on the evidence collected by this study that many cloud users are reluctant to increase their use of cloud because of fears of customer lock-in and concerns about portability, the model developed by IDC estimates the potential increase in public cloud uptake enabled by regulation and other policy measures overcoming these barriers.

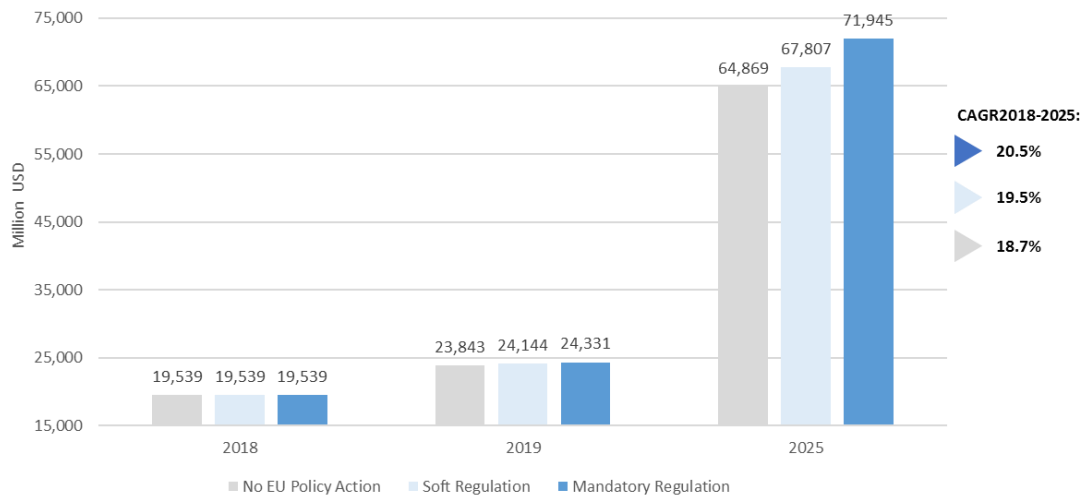
As shown by the following figure, according to IDC estimates:

- In the "**Soft Regulation**" scenario, demand for public cloud services in the EU in 2025 is 6.0% higher than it is under the "No Action" scenario in 2025. This represents a difference of €3.9 billion in public cloud demand for 2025 between the two scenarios.
- In the "**Mandatory Regulation**" scenario, demand for public cloud services in the EU in 2025 is 10.9% higher than it is under the "No Action" scenario in 2025. This represents a difference of €7.1 billion in public cloud demand for 2025 between the two scenarios.

While the impact of policy action on demand growth rates is not huge, the absolute value of the market increase by scenario is substantial and would provide additional benefits in terms of overall economic growth and welfare in Europe.

There would also be costs to market actors associated with regulatory action and (to a much lesser extent) with non-regulatory action by the European Commission, even though they should be affordable and compensated by additional demand.

Total Public Cloud Spending: 3 Scenarios



Indeed, the CSPs interviewed for this study made clear that in their opinion compliance costs would be acceptable for increased transparency (for example of data formats and schemes), but could be relevant for data and application portability (unless standardization grows faster than expected). The CSPs underlined that any obligation to ensure data portability must be clearly defined and scope-limited, otherwise compliance costs would be "impossibly high" to meet. What is especially feared is being obliged to adjust to every single user requirement, which may require an infinite flexibility. This worries both large and small CSPs.

Conclusions

The study produced an assessment of the potential measures considered appropriate to address the issues of portability of data and applications in the cloud, as briefly discussed earlier in the document.

There is a series of **soft law instruments** currently available relevant for portability of data in the cloud environment. As far as those instruments are concerned, it is of high relevance to stress that: existing guidelines created, specifically, for the cloud environment do provide detailed guidance in a transparent manner concerning portability. Cloud Service Level Agreement Standardization Guidelines², for instance, constitute an appropriate and fully-fledged instrument providing, also, for the portability of data in the cloud environment. Similarly, available technical standards (e.g. ISO19086) do provide detailed guidance to organizations in relation to complex matters at the level of implementation. The common denominator of soft law instruments is the potential lack of "real effectiveness" due to their voluntary nature and the related absence of meaningful redress mechanisms.

The level of commitment to existing soft law instruments appears to be rather low within the EU market. Technical standards are not consistently used, while existing guidelines regulating behavior in the cloud environment –including in relation to portability practices- do not seem to be widely adopted by

² [Cloud Service Level Agreement Standardisation Guidelines, available at: https://ec.europa.eu/digital-single-market/en/news/cloud-service-level-agreement-standardisation-guidelines](https://ec.europa.eu/digital-single-market/en/news/cloud-service-level-agreement-standardisation-guidelines)

market players. 4. Should the engagement of cloud stakeholders to existing soft law instruments was encouraged, their effectiveness would be substantially enhanced and, thus, portability would be addressed sufficiently both at an organizational and at a technical level.

Taking into account the policy options briefly discussed above, the most effective way to lift the barriers to the portability of data and applications in the cloud would be through the introduction of a **statutory right** dictating the portability of data and applications in the cloud that would be applicable both for organizations and individuals. Such right would enhance clarity and, thus, legal certainty for organization, making them more likely to use cloud services. Currently, portability of data is regulated through contractual arrangements, which are subjects to the laws of different Member States, and is thus subject to greater levels of complication and uncertainty than would be the case if there was a harmonized regulatory approach at EU level allowing for portability of non-personal data.

Regulatory intervention would provide additional safeguards protecting consumers and companies from the assumption of unreasonable financial costs, for example preventing end users from being charged unreasonable fees for taking their data and/or applications out of a cloud service. Harmonization of the legal regime concerning portability of data in the cloud environment would enhance trust in the market, thus creating a stronger framework for intra-EU cross-border trade and encouraging the free flow of data. Furthermore, a statutory right providing for the portability of data and applications in the cloud could form an appropriate measure in the context of the rapidly consolidating cloud market.

Technology regulation generally imposes costs on economic actors, and both the Soft Regulation and the Mandatory Policy scenarios would impose costs – mostly to be borne by the supply side (the cloud services vendors and their ecosystems), although economic theory suggests that these costs will likely be passed on to the demand side (enterprises and public bodies) in part or in whole. For cloud service providers, it is likely that the additional costs would be countered (if not entirely outweighed) by increased levels of demand for cloud services, and by the opportunity to take market share more easily from competitors.

One argument against the introduction of a compulsory regulation is that it might have a retarding effect on innovation and on the development of new solutions by providers in the regulated market, by introducing uncertainty about compliance, or by lengthening development cycles (as compliance needs to be built into offering development). Therefore, it is possible that regulation might impose some lengthening of development cycles for new cloud services, although it is far from certain that this would constitute any significant lengthening.

However, the assumption used in this report is that the Mandatory Policy would include some provisions for excluding new or leading-edge cloud offerings from the requirement for portability, as long they saw evidence that the providers and its associated third-party ecosystem would within a reasonable timeframe create tools and standards for end-user organizations, resulting in the new offering with industry-standard levels of portability. Therefore, in the context of portability, provided that certain requirements are met and assuming the "innovation-friendly" approach to regulation, the introduction of a Mandatory Policy would not discourage CSPs from launching new services that are not in their early iterations easy to migrate from.

Recommendations to the European Commission

Introduce a Right to Data and Application Portability

The European Commission is advised to take action by introducing a statutory right providing for the portability of cloud service customers' data and applications. The analysis and the evidence collected have shown in a convincing manner that the most effective way to lift the portability barriers identified would be by assigning cloud service providers with such an obligation by law.

Continue Working with Cloud Stakeholders

The European Commission is advised to continue and to strengthen the initiatives taken in relation to the creation of a discussion platform for all cloud stakeholders.

Recommendations to EU Member States

Encourage Awareness of the Need for 'Exit Plans' in cloud contracts

National Governments are advised to encourage organizations' awareness of the need for clear and well-defined "exit plans" that contain appropriate measures to will guarantee that data and/or applications can be ported between cloud services with minimal, reasonable and pre-agreed costs and delays.

Encourage Dissemination of Best Practices of cloud migration and data porting

National Governments are advised to encourage dissemination of best practices facilitating promotion of greater levels of portability in accordance to the building blocks and other components discussed in the report.

Allocate Reasonable Levels of Resources to Monitor Compliance

National Governments are advised to allocate reasonable resources to the competent authority to be assigned with the supervisory role to monitor compliance. For instance, auditing of cloud service providers requires investment on appropriate organizational resources and expertise.

Recommendations to Cloud Business Users

Implement 'Exit Plans' from cloud contracts

Organizations' of all sizes, including both cloud service providers and their customers, should provide and implement concrete cloud-service "exit plans".

Meaningful and effective redress

Contractual agreements between organizations of all sizes should provide for "meaningful and effective" redress, in case the portability related requirements (e.g. service level objectives) set in the contract are not met.

Treat Portability Strategically, and Plan for it.

Organizations of all sizes, including both cloud service providers and their customers, should consider portability of data and applications in a strategic manner and provide for it within their business continuity plans.

Obtain Data Subject's Consent Before Porting Their Data

Organizations acting in their capacity as cloud service customers should obtain contractually appropriate consent in order to request their cloud service provider to port the data of the data subjects.

Methodology approach

The study team carried out extensive desk and field research. The evidence base includes:

- 16 Case studies of cloud customers dealing with data or application portability;
- 9 Case studies of cloud service providers
- 10 online questionnaires on cloud portability issues
- the results of a Stakeholder workshop held in Brussels in May 2017, with 40 participants from industry, policy and research;
- additional data collection on cloud migration costs in June/July 2017
- additional email survey with cloud service providers in October 2017

European Commission

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