



Cloud Security State of the Art Study

A study made by

CSAES cloud
security
SPAIN allianceSM

CSAPE cloud
security
PERU allianceSM

In collaboration with



2015 Cloud Security State of the Art Study

A study written by the Spanish and Peruvian Chapters of the Cloud Security Alliance

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Executive summary

The 2015 Cloud Security State of the Art Study, carried out by the Spanish Chapter and the Peruvian Chapter of the Cloud Security Alliance, represents the last edition of previous studies on the matter realised in 2013 and 2014 in Spain.

In this edition we confirm the tendency, previously identified, of Cloud Service users to demand high security assurance from Cloud Service providers; especially with regards to key attributes such as confidentiality, availability and readiness, and privacy. Nowadays, and in contrast with previous editions, these attributes play an important role in determining the level of satisfaction with the service.

The services more demanded by the clients are still email and storage services. Those who buy storage service prefer the Private Cloud services.

On the other hand, the criteria adopted by the users to choose the service provider or the delivery model (public or private) have radically changed. While Business Continuity remains the most important aspect taken into account, followed by security, compliance and Service Level Agreements (SLAs) aspects, the geographical location of the provider is now almost not relevant. Security certifications, auditing rights, integration of security checks into the service, are currently more important than geographical location. Within this context, it is worth noticing that users acknowledge the importance of professional certifications such as CCSK or business certification such as CSA-STAR which refers to the provision of secure cloud services.

Professionals interviewed in this study consider that acquiring cloud services through Shadow-IT—i.e. by non-IT department—is not easy and still uncommon. However, the migration to the cloud contributes to improve security incident response capacity: the volume of incidents remains steady or declines; and incidents are less critical.

For the first time, the study also reveals the presence of organisations which have decided to discontinue cloud services (3% of participants; whose organisations were mostly based in Peru and were equally relying on private and public cloud). This finding can be interpreted as a sign of market maturity: clients have tested the service and some of them are not satisfied.

This study is based on information regarding more than 200 organisations, based either in Spain or in Peru or operating globally, as explained in the Methodological Appendix.

Scope of the Study

The aim of this study is to explore the adoption of Cloud Computing, by paying special attention to the role that security plays in technology adoption decision-making process from an user's perspective. Therefore, the study explores users' security expectations, their level of satisfaction with the service, the availability of information and certifications, the most popular models and related results.

The study focuses mostly on the Spanish and Peruvian markets, since the invitation to fill in the electronic survey was distributed by the Spanish and Peruvian Chapters of CSA. Interviews have been carried out only with users of cloud services and not with cloud service providers (CSP).

Results here presented are divided into three categories.

- General conclusions based on the analysis of the entire sample.
- Evolution over time of a few key indicators used in previous editions of the study (2014¹ and 2013²).
- In-depth analysis of some specific aspects based on a comparison between data collected in Peru and data collected in Spain.

¹ See CLOUD COMPUTING Spanish SECURITY State-of-the-Art Analysis 2014, URL: <http://www.ismsforum.es/ficheros/descargas/csa-en-2014-cloudsecuritystateoftheart20141119.pdf>

² See CLOUD COMPUTING Spanish SECURITY State-of-the-Art Analysis 2013, URL: <https://www.ismsforum.es/ficheros/descargas/csa-es-2013-cloudsecuritystateoftheart1386576745.pdf>

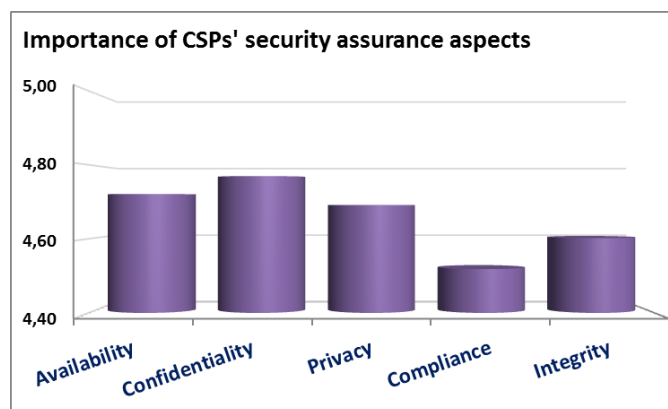
Study findings

This study investigates the following key aspects.

- Cloud service users' expectations
- Users' satisfaction
- Factors determining users' satisfactions with cloud service
- Types of cloud services offered
- The strange case of who left the cloud

Cloud service users' expectations

Users have different preferences regarding services and Cloud Service Providers (CSPs) need to meet these expectations. Some aspects are more important than others.



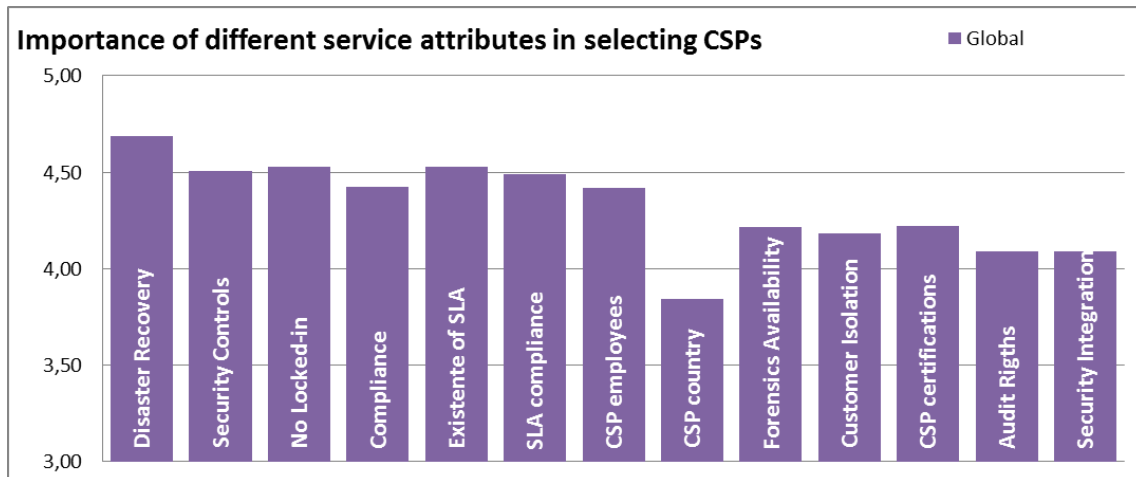
1.- Users' expectations of CSPs' security assurance aspects

Users (figure 1) have very high expectation in general (all aspects have been graded more than 4.5 over 5.0). Yet, the most important aspects are certainly confidentiality (4.77), availability (4.72) and privacy (4.69). Users are now fairly aware of the compliance requirements associated with cloud services, and know how to deal with them.

These findings are consistent with those found in previous editions of the study.

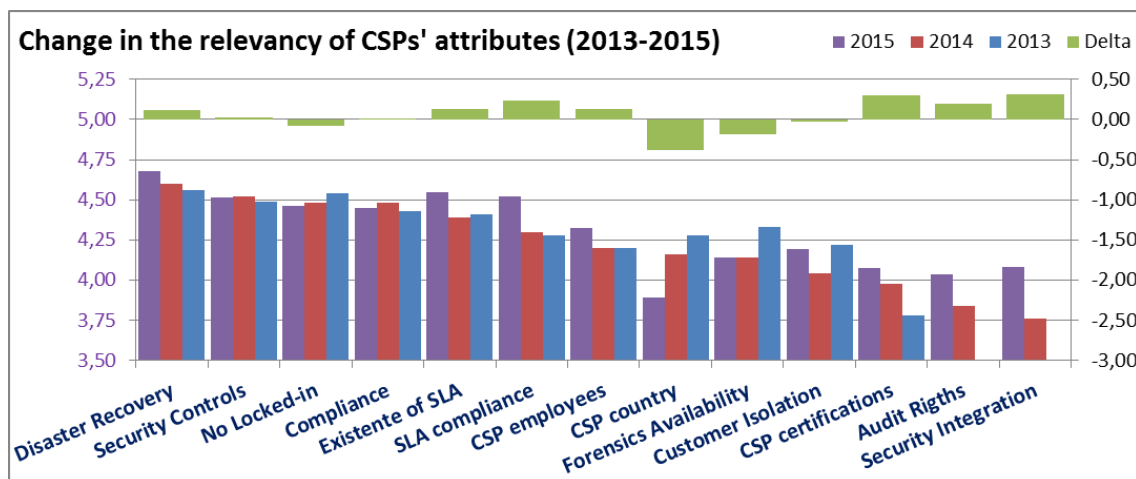
However, it is interesting to see how these expectations are translated into service attributes. Figure 2 shows how business continuity guarantee is currently the most important attribute demanded by users (4.69 over 5.0). (a) Security aspects, such as firewalls, antimalware, backup, and so on, (b) portability, that is the opportunity to easily change provider without losing data, and (c) SLA security guarantees, are also very important aspects (4.4 and 4.5).

All other attributes seem to be less important (4.1-4.2). Service provider’s geographical location has lost importance (3.84) in comparison to previous years when it used to strongly influence the decision of which provider to choose. Data protection legal requirements in Europe are fairly clear and understandable nowadays and the existence of regional Cloud Solution Providers has contributed to reduce users’ compliance concerns.



2.- Overall importance of CSPs’ attributes from an user’s perspective

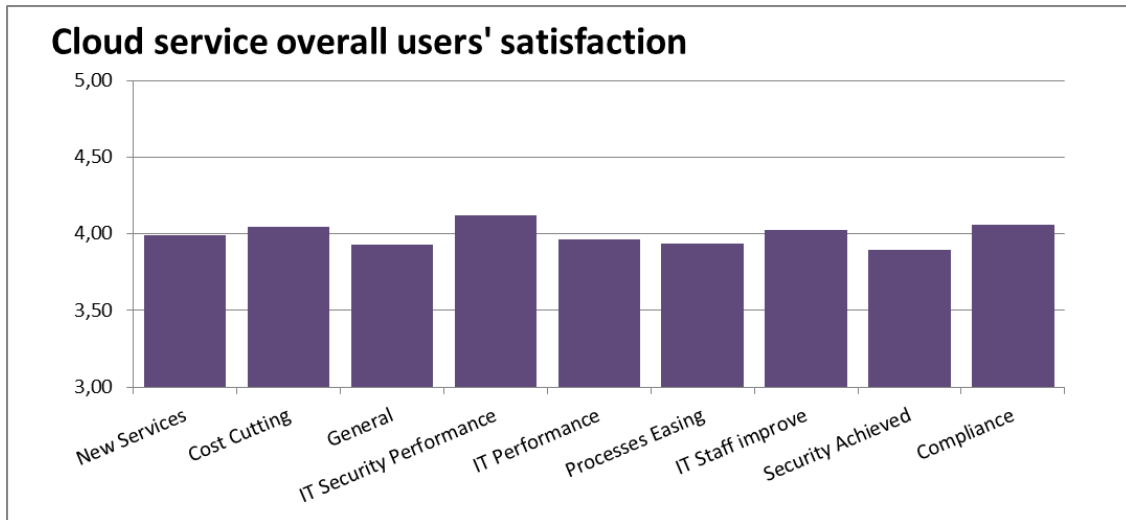
As showed in figure 3 (green bars on top show variations over time), CSPs’ geographical location has lost more than 0.5 points over time in terms of relevancy. In contrast, attributes such as the presence of disaster recovery plans, SLA, CSPs’ certifications, auditing rights, and security checks integration are increasingly demanded.



3.- Relevancy of security attributes on CSPs’ selection decision (period 2013-2015)

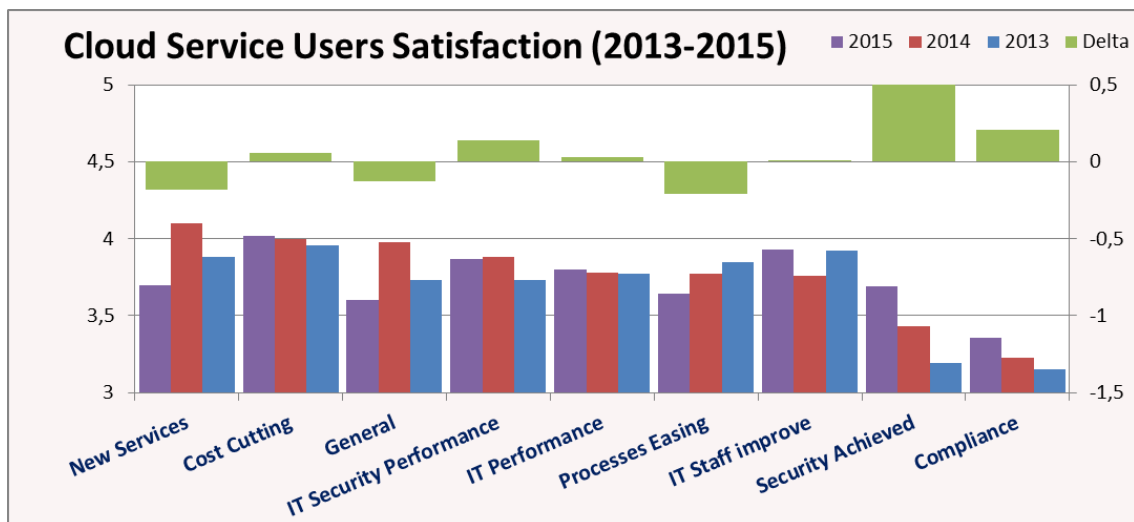
Users' satisfaction

Once we have clarified users' expectations, we can move one and analyse users' satisfactions with the service. As showed in figure 4, in the majority of cases the level of satisfaction is 4 over 5.



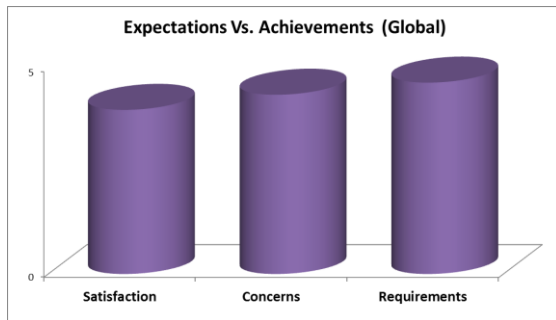
4.- Overall user satisfaction with acquired cloud services

In terms of the way user satisfaction with CSPs has changed over time, it is worth noticing that Spanish users are significantly more satisfied with the security and compliance attributed offered by providers in 2015 than they were in the past (0.5 rise). With regards to all other aspects users seem not to have radically changed their perceptions.

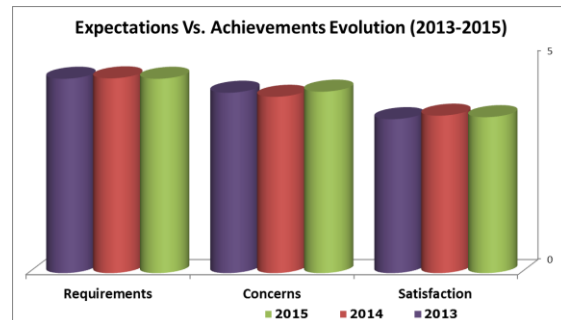


5.- User satisfaction (period 2013-2015)

Overall, users' satisfaction increases over time between 2013 and 2015 as showed in figure 6 and 7. Nonetheless, providers still do not fully meet neither users' expectations (4.66 over 5.00), nor attributes' relevancy expectations (4.37 over 5.00 in 2015). However, we must admit that CSPs are aiming at a moving target as users expectations are also evolving and users become more knowledgeable and demanding over time.

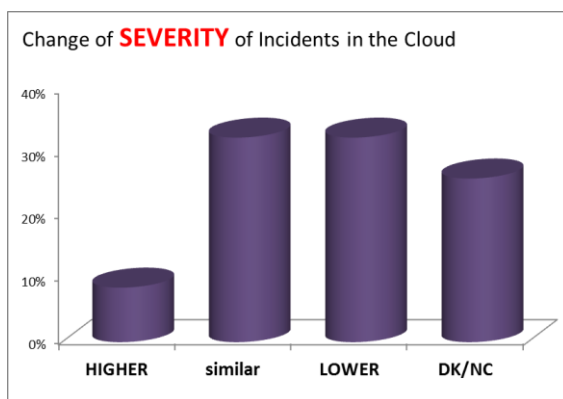


6.- Overall expectation fulfilment

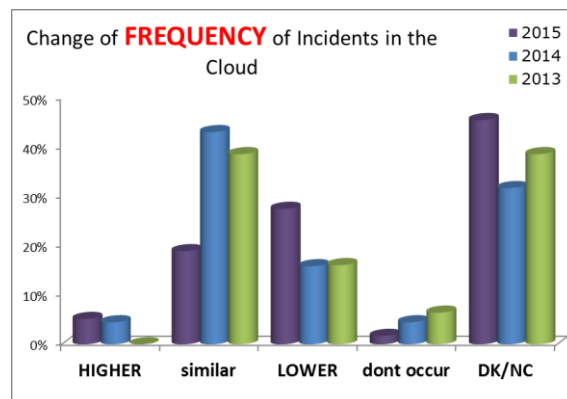


7.- Expectation fulfilment (period 2013-2015)

CSPs tend to declare that their services offer better security checks and guarantees as they take advantage of economies of scale and resources to tackle this issue. Are users aware of these advantages? The answer seems to be yes. As showed in figure 8 and 9, clients declare that they are suffering less incidents and that incidents are less critical than they used to be.



8.- Incident gravity



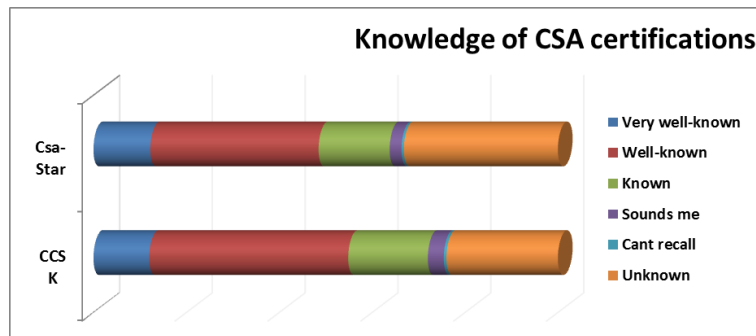
9.- Incident frequency (period 2013-2015)

Factors determining users' satisfactions with cloud service

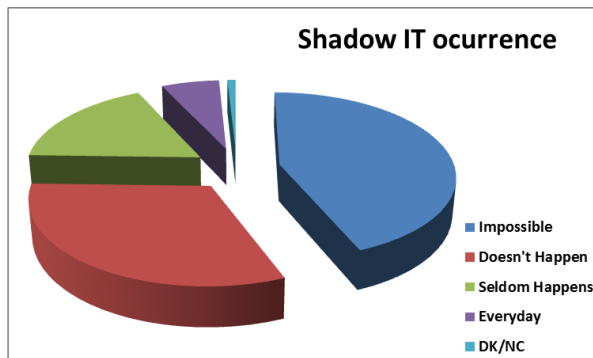
This study also explores the level of awareness and acceptance of CSA certifications, both professional (CCSK), and CSPs' security certifications (CSA-STAR)³.

³ The CCSP professional certification has not been taken into consideration because it has been available only for shorter period of time.

Both certifications are very well known; more than 50% of participants say to know well or very well these programmes. In contrast, more than 20% of participants say they do not know CCSK; and 40% of respondents do not know CSA-Star.



10.- Respondents' degree of knowledge of CSA certification programmes

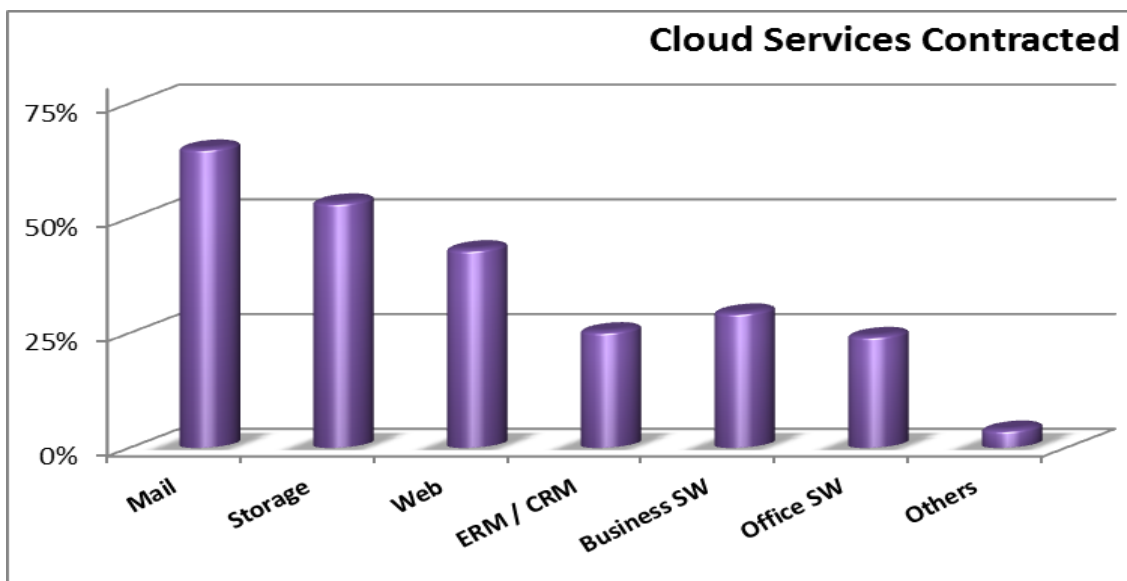


11.- Reliance on shadow-IT in cloud service acquisition

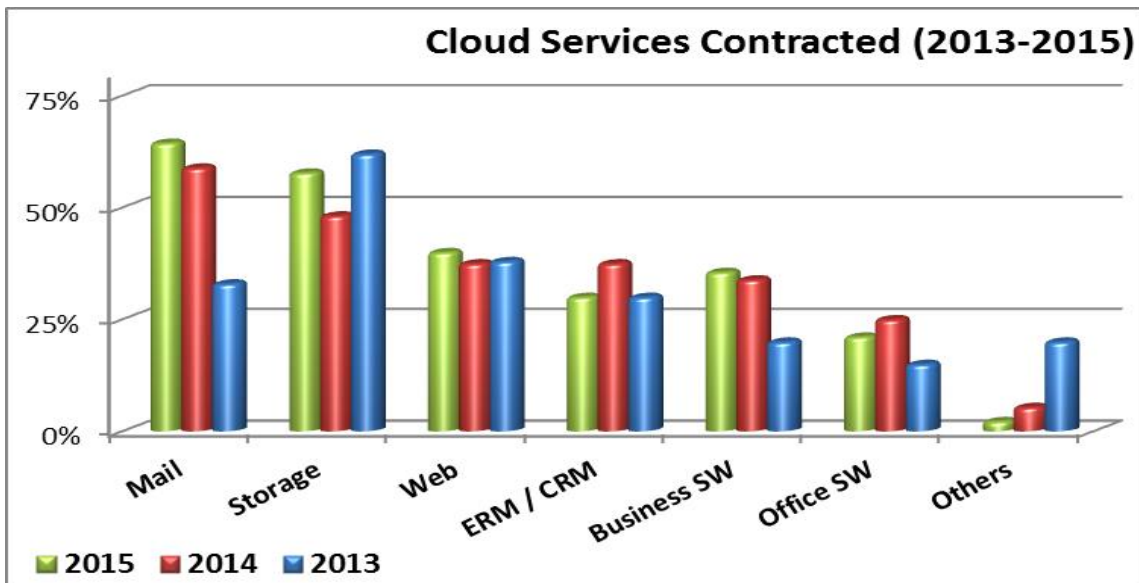
This study also explores the adoption of cloud services through Shadow-IT, which refer to the capacity of not-IT department to buy cloud services without counting on—or even hiding from—the IT department. According to study respondents, most of them (70%) consider that Shadow-IT is a practice very unfrequently adopted.

Types of cloud services offered

With regard to the kind of cloud-based services bought by users, it seems that the service more demanded is the email, followed by data storage and web services (see figure 12). The importance of these services has been steady over time (see figure 13), with a rapid increase of the demand of cloud-based email services.



12.- Could services requested

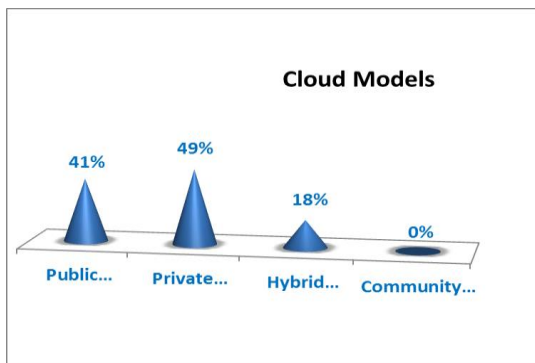


13.- Cloud services requested (period 2013-2015)

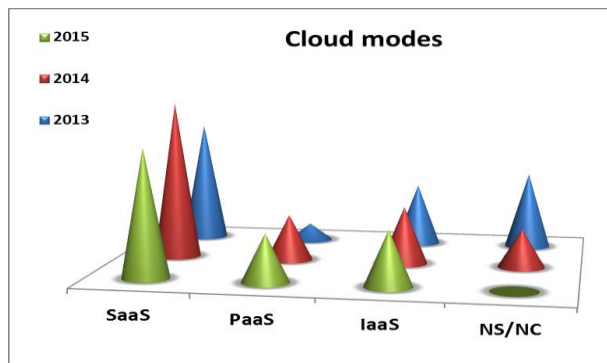
By looking at these findings more in detail, we can see that 54% of participants say that they use data storage services. 49% of public cloud users also buy data storage, while 70% of private cloud users rely on cloud-based data storage services. Users seem to not completely trust public cloud services when it comes to data storage.

Both private and public cloud are largely used, while hybrid cloud is less frequently used (figure 15).

Regarding delivery options, SaaS is certainly the most common one. This trend remains constant over time (figure 14).



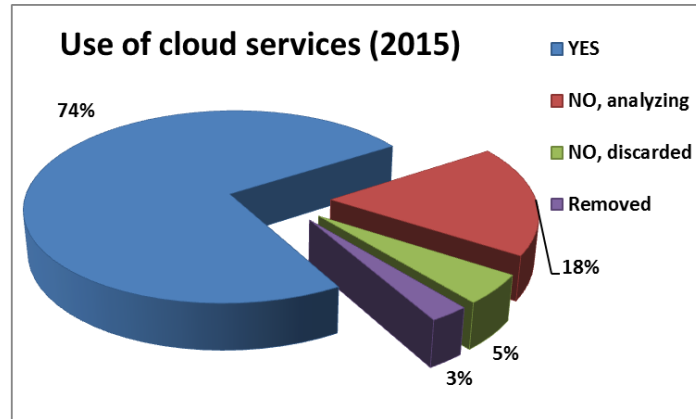
14.- Cloud models



15.- Cloud delivery options

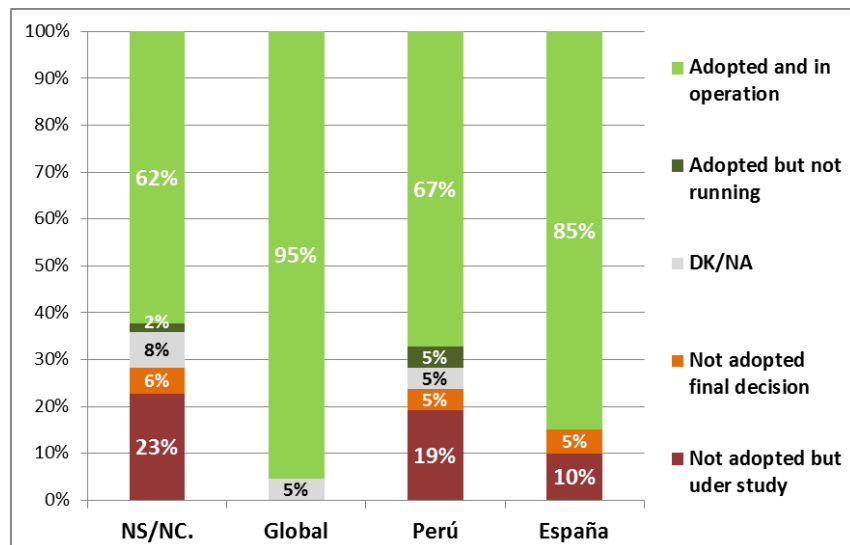
The strange case of who left the cloud

The last aspect we would like to mention refers to those organisations which have decided to stop relying on cloud services after testing them (figure 16). This is the first time we detect this kind of trend. These users are mostly based in Peru and seem to demand high security assurance (especially regarding information integrity and legal compliance). They have been relying equally on public and private cloud models, and equally on Saas or PaaS.



16.- Use of cloud services in 2015

To conclude, it is interesting to see how the scale of firm operation influences the adoption of cloud services (see figure 17). Multinational corporations operating globally heavily rely on cloud services (95%).



17.- Number of countries in which a Company operates by level of adoption of cloud services

Methodological disclaimer

Study findings are based on responses given by professionals by means of an electronic survey which was administered between the 2nd and the 28th of September 2015. In total 205 professionals participated in the study.

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