

THE 10 COMMANDMENTS OF THE CLOUD ACCORDING TO OUTSCALE

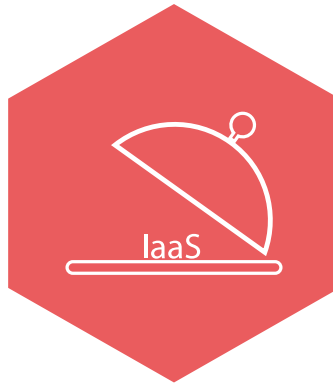
INTRODUCTION

Everyone has heard of the Cloud, but who really knows what it means? For several years now, the famous cloud has been everywhere yet elusive. And for good reasons: all the definitions of the Cloud that you can find in books, newspapers or online are either incomplete or obsolete - often both at once. We won't even try to define it ourselves, for we know all too well that any definition will only be temporary.

Nevertheless, we can, without fear of programmed editorial obsolescence, single out one characteristic and nine essential attributes to verify if a service claiming to be from the Cloud is genuine.

Taken together, this characteristic, these attributes and the interactions between them allow us to define our ten commandments of the Cloud.





COMMANDEMENT #1 : THOU SHALT BE A SERVICE

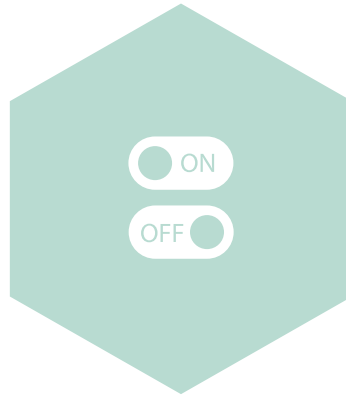
With the acronym 'aaS' ('as a service') cropping up pretty much everywhere, it's hard to avoid this fundamental characteristic of the Cloud.

Fundamental to notions of SaaS, PaaS and all the rest, this characteristic is also crucial to the notion of IaaS (let us remember that, in all cases, an IaaS provider such as Outscale makes a proportion of its physical infrastructure available to its customers, making it a hardware provider in the first instance).

But what is a service? A service is the provision of a technical or intellectual capacity. In contrast to industrial or sales activity, a service cannot solely be described in terms of tangible assets acquired by the customer. Its value stems from multiple criteria, foremost of which is the perception of benefits provided by this service in relation to a customer's needs and expectations.

As such, a Cloud provider is a service provider (by providing customers with a technical capacity), and as a result, the Cloud must be considered as a service. QED.





COMMANDEMENT #2 : THOU SHALT ADAPT TO DEMAND

The term 'on-demand' is used a great deal in English-speaking countries, attached to an increasing number of activities: fashion (made on-demand), publishing (print on-demand), audiovisual (television on-demand, video on-demand) and IT.

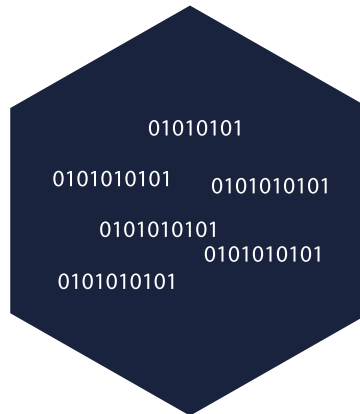
'On-demand' is a means of consuming a service. The idea is simple: you need a resource, whatever the capacity, you request it and you obtain it – and you can stop it when you wish, of course. It's a paradigm shift in the process of using IT resources. To summarize: you, the customer, become master of you own usage, deciding what you need and when.

'On-demand' naturally goes hand-in-hand with self-service. The old paradigm has changed: you need a resource, you help yourself, you pay for it. For example, for a product launch, a software publisher can use his account management interface to create new virtual machines and storage and/or network capacity according to their estimated requirements. No more, no less. And if they later become aware that these resources require adjustment, positively or negatively, this can be arranged using the same procedure.

On-demand has the dual advantage of providing both the flexibility required and immediacy of usage and consumption of Cloud services.

However, 'on-demand', which expresses the customer's autonomy in relation to their provider for the provision and freedom of resources, should not be confused with 'scalability' and 'elasticity', which in turn refer to the Cloud's capacity to adapt, automatically or not, to peaks of activity.





COMMANDEMENT #3 : THOU SHALT VIRTUALIZE ABSOLUTELY EVERYTHING

With the Cloud, a company can easily adjust their IT resources at any time. A few clicks on the management interface are enough to deploy or remove a virtual machine. Virtualization doesn't just concern the Cloud's 'computing' functions; it can also be applied to storage, networking and all the other IT resources available in the Cloud!

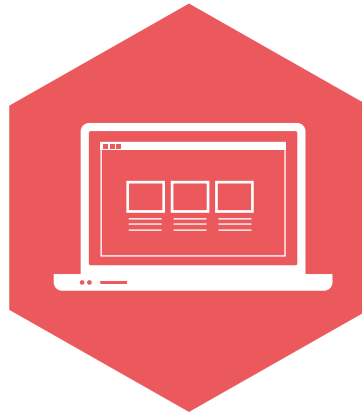
This comprehensive virtualization of infrastructure is made possible through the concept of Software Defined Anything (SDx) - sometimes known as Software Defined Everything. It includes technologies such as Software Defined Network (SDN), Software Defined Security, Software Defined Storage (SDS) and even the Software Defined Data Center (SDDC).

The concept is the result of researches at UC Berkley and Stanford University, looking to centralize and rationalize the management of their numerous network components (routers, switches, etc.). Rather than integrating X control panels into a single interface, researchers have developed a software layer that allows them to orchestrate and optimize the operation of all their components at once and also individually. This gave rise to the Software Defined Network.

More recently, SDS has eliminated the different storage formats (discs, SSD, tape, etc) in order to facilitate the reproduction and distribution (on-demand, of course) of resources.

Outscale's architecture respects the principles of Software Defined Anything with its TINA OS orchestration software: using the maximum amount of virtualization, automation and orchestration at all levels of Cloud infrastructure to simplify management. In this fashion, provision of storage or network capacity can be achieved as rapidly and easily as deploying a VM.





COMMANDEMENT #4 : THOU SHALT TAME THE INTERFACE

By definition, the Cloud should be accessible through standard web channels. Capacities should be controllable from the network using simple and varied platforms (a smartphone, a tablet, a laptop computer or workstation, for example).

The interface is the essential component that is located between the customer and the service itself. It allows simple, on-demand access to Cloud services.

In the specific case of IaaS (Infrastructure as a Service), the user does not control Cloud infrastructure but the interface allows them to control the deployment, automatic dimensioning and management of the network. In the ongoing Cloud development process, it is useful to underline the effort being made to standardize the field in the sector, especially in terms of interface. The Open Grid Forum, which groups together a number of providers, developers, and other users, has given rise to the OCCl (Open Cloud Computing Interface). This standard defines the protocols and interfaces that enable the broad range of Cloud management activities.

The direct consequence of these efforts towards standardization is very simple: subscribing to a Cloud service or migrating from one service to another is now easier than ever! Just a few clicks in the management interface are required. The other advantage lies in the use of APIs (Application Programming Interfaces). In Cloud systems, these are usually based on REST architecture. Their purpose? They extend the interaction between users and computers to interaction between computers themselves. Pretty useful, wouldn't you say ?





COMMANDEMENT #5 : THOU SHALT ACCEPT THE PROGRAMMATIC

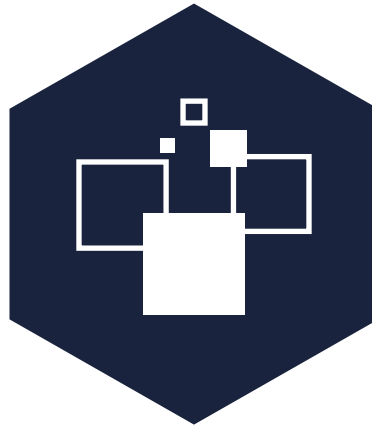
The Cloud is a promise of freedom. With IaaS, this freedom also includes relieving the user of certain basic restrictions. This means, for example, allowing machines to communicate between themselves, once the user has defined their requirements. It is one of the characteristics of Cloud IaaS to allow the robotics, the hardware, and the interface to communicate between themselves.

A Cloud solution must be interoperable with third party information systems. As we have seen, the interface facilitates the interaction between humans and computers. But it is also possible to free the user from the most repetitive tasks by allowing the machines to communicate with each other. We, therefore, talk about programmatic interfaces.

Programmatic interfaces are both an essential characteristic of the Cloud and one of its most obvious advantages. The use of APIs involves accessibility to software that allows machines to interact with Cloud software.

The development or use of certain recognized programming interfaces is left open to the user. But with programmatic interfaces, users will be able to define the precise rules or act according to their needs, thus freeing up necessary resources.





COMMANDEMENT #6 : THOU SHALT ACCEPT THE ABSTRACT

If art can be abstract, then the Cloud is an abstraction. Abstraction is a key notion in IT, and in relation to the Cloud, it is an essential element. But in contrast to art, abstraction in the Cloud does not just relate to deconstruction or taking a step back from reality.

Abstraction in the Cloud is very real. So real that it forms the link between the operating system and the physical elements of an IT system. To define this intermediary, we therefore refer to a material abstraction layer. English speakers use the abbreviation HAL, for Hardware Abstraction Layer, which evokes the same principle.

In the end, the abstraction that defines the Cloud has another less abstract consequence for users: the abstraction of a whole series of restrictions!

As a user of Cloud services, you no longer have to worry about questions linked to hardware and network maintenance or energy consumption... not even the physical security of the machines. Everything is externalized!

The final abstraction, far from insignificant, involves certain costs. The wide range of testimonials concerning virtualization confirm the economic promise of the Cloud, with companies using it as an important lever for their activities.





COMMANDEMENT #7 : THOU SHALT RECEIVE SUPPORT

Moving over to the Cloud is often the result of a company changing strategy. In the majority of cases, this new strategy is part of a digital transformation. As a result, Cloud solution users require guidance. Such support is so important that it forms part of the very definition of Cloud Computing.

Digital transformation is a change that is as promising as it is daunting, and it is, therefore, fundamental not to enter into it alone and unsupported. Support is even more important when the move is being made to a Cloud IaaS system.

Whatever the company's aims - improving time-to-market, reducing application costs, storing sensitive data - Cloud solution users need to make the right choice of service provider. It is the service provider who can give the best advice and who will also offer guarantees of data confidentiality, and who will finally provide a sufficient level of training and expertise in the tools they are making available.

Ultimately, quality support is the key to successful digital transformation and a smooth transition to the Cloud.





COMMANDEMENT #8 : THOU SHALT LEARN ELASTICITY

Translation sometimes has its limits. Although 'Cloud' is a word that can, where required, be replaced by 'nuage' in French, this isn't always the case for all of its constituent parts. One aspect is particularly hard to convey in French: scalability.

And yet, it is not only an essential element of any Cloud but also one of the characteristics that best defines the Cloud. This is the term used to define the Cloud service's capacity to adapt to the user-customer's requirements for resources. As a result, the more a service is scalable, the more it can adapt to demands, automatically, in a manner that means the resources supplied always meet the customer's peaks of activity. We, therefore, need to maintain the same level of functionality and performance, or more simply to scale the capacities of the Cloud according to the needs of the user.

In France, certain Cloud specialists distinguish between scalability and elasticity. Although these two terms cover the same principle for English speakers, elasticity is sometimes used in France to describe moderate scalability. An example would be auto-resizing that only deploys additional VMs.

Therefore scalability becomes the capacity to adapt the application to an increasing number of users.

In the end, the definition used does not change anything. Because for the Cloud, the basic notion is always the same: the service should adapt to the needs of its users.





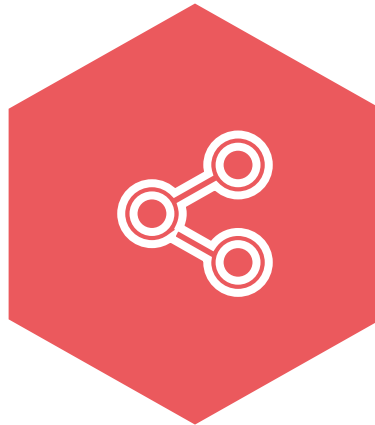
COMMANDEMENT #9 : THOU SHALT PAY ACCORDING TO USAGE

The Cloud is, by definition, on-demand and adjustable according to user needs (scalable), therefore it needs to have a suitable invoicing system. As a result, all respectable Cloud services are pay-per-use.

Pay-per-use is primarily helpful in reducing implementation costs. Then, the user-customer asks for an amount of computing, storage, software or other resources from the supplier and sets the duration. The main advantage of this method of invoicing: you only pay for the IT resources that you have actually used. As such, the user benefits from the flexibility required to meet their peaks of activity. And with good reason, the service is scalable!

Pay-per-use has repercussions that go as far as the business model of the company using the Cloud service. It allows a move from a CAPEX (capital expenditure) model to an OPEX (operational expenditure) model. The explanation: since they don't require any investment expenditure, companies that use the service have reduced start-up costs as well as operating costs that can be planned over the long term. Ultimately, the initial investment is replaced by operating expenditure that is streamlined over time and controlled.





COMMANDEMENT #10 : THOU SHALT ADOPT SHARING

Strength in numbers. This adage is also relevant to the Cloud. Pooling and sharing are at the heart of the Cloud. And for good reason, they form part of its definition. The nature of a Cloud IaaS product like that offered by Outscale is to offer its customers an extensive set of resources that they will be able to use as they require.

A Cloud service includes an enormous capacity for IT resources. The fact that they have been digitized makes them accessible to all users. They are shared. This pooling avoids the need for each user-customer to invest in hardware or resources that will be under-used in periods of reduced activity. Since Cloud services are on-demand and paid for according to usage, they offer the most efficient solution for business management.

As a result, choosing the Cloud means guaranteeing that you always have sufficient resources to meet your needs. This guarantee, worth its weight in gold, is not the only advantage in sharing resources. Pooling is twice as efficient because it also enables a phenomenal reduction in costs (energy, rental charges, human resources, etc). Indeed, to achieve comparable performance from hardware alone would require millions of euros in investment. Obviously, costs are considerably reduced when you use an IaaS operator.

Ultimately, it is through sharing and pooling that the Cloud can become more efficient.



CONCLUSION

Our attempt to define the Cloud has come to an end. Over these nine sections, we have singled out all of the attributes and characteristics that collectively allow us to define what the Cloud is. If any of these attributes are missing, then we are not talking about the Cloud.

But let's get back to the facts:

The Cloud is an IT model presented as a **service**. It gives simple, **on-demand** access through the Internet to a group of **virtualized** IT resources.

Access to Cloud services is achieved using a programming **interface** or an API. In such cases, it is **programmatic**. In all cases, it is **the abstraction** that gives the Cloud value.

This forms part of a company's process of **digital transformation**. As part of this development, the customer must be supported and informed.

As a service, the Cloud should be able to adapt automatically to the needs of its users, both to their peaks in demand and their periods of reduced activity. It must be **scalable**. As it meets a specific demand, the Cloud integrates a **pay-per-use** system: the user only pays for what they use.

This sharing and pooling of resources is what makes the Cloud such an efficient service and what guarantees its users a consistent quality of service at all times.

