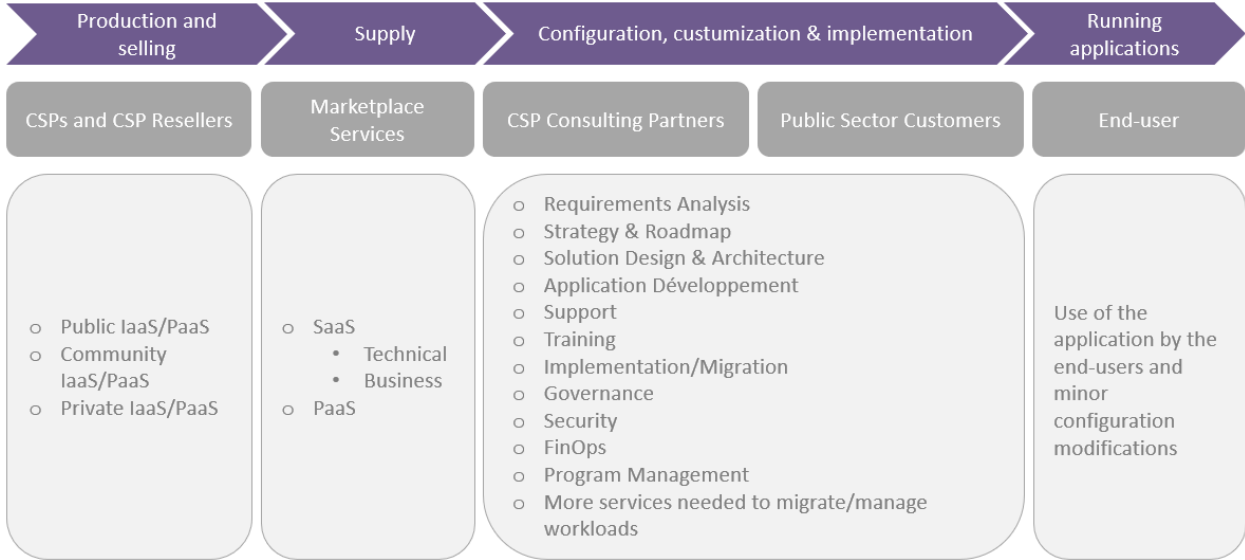


Table of content

- APPENDIX 1 – TYPE OF “CLOUD PROVIDERS” 2
- APPENDIX 2 - SECURITY AUDITS 3
- APPENDIX 3 - MAIN PITFALLS 4
- APPENDIX 4 – STANDARDS DETAILS..... 5
- APPENDIX 5 – MARKET-SURVEY-ACCREDITATIONS AND FRAMEWORKS PER IAAS/PAAS VENDORS 9
 - 1) IaaS providers 9
 - 2) Case studies with the public sector for IaaS providers 12
 - 3) PaaS providers 13
- APPENDIX 6 - CLOUD SERVICE PROVIDERS IN AFRICA 16
- APPENDIX 7 - MAIN SOURCE OF INFORMATION FOR DESK SURVEY 19
- APPENDIX 8 - ROLE DISTRIBUTION BETWEEN THE DIFFERENT TYPES OF PROVIDERS ON CLOUD PROJECTS..... 20
 - 1) IaaS & PaaS 20
 - 2) SaaS 21

APPENDIX 1 – TYPE OF “CLOUD PROVIDERS”



Source: CISPE (Cloud Services Providers in Europe), “Buying Cloud Services in Public Sector”, February 2022.

Cloud service provider (CSP) and Cloud service provider Resellers are companies developing and selling cloud computing solutions such as IaaS, PaaS, and SaaS.

Marketplace services are SaaS or PaaS services such as Accounting, HR, CRM, Design, BI, Mapping, etc.

CSP consulting partners are the cloud market players that bridge the gap between cloud service providers and customers seeking a cloud solution. They gather customer requirements, configure, and integrate solutions into the customer's IT environment.

The public customers can decide to be involved in the implementation of the cloud solution. They can decide to delegate to an integrator such as a consulting firm, a systems integrator, or a managed services provider.

APPENDIX 2 - SECURITY AUDITS

<p>Code audit</p>	<ul style="list-style-type: none"> ▪ The goal of this activity is to detect any flaws in the code of the application. To perform this kind of activity, some dynamic analysis tools like (Checkmarx, Veracode, SonarQube...) may be used for a preliminary check. After this automated check, the auditor will manually review the code, checking if it contains some deprecated functions or any other basic issue. This check is the first security fence.
<p>Organizational audit</p>	<ul style="list-style-type: none"> ▪ Does the software developer update on a regular basis the security processes? The only way to check this dimension is to perform an organizational audit. It consists in identifying weaknesses linked to security management process. Many topics are checked during this audit including security policy, human resources, asset management, integration of security into the lifecycle of cloud systems and network security.
<p>Architecture and configuration audit</p>	<ul style="list-style-type: none"> ▪ This audit analyzes precisely the architecture deployed within the SaaS solution to check if the hardening of each component is up to date and all security parameters are enforced.
<p>Intrusion tests</p>	<ul style="list-style-type: none"> ▪ Is it possible for non-authorized people to gain some access to the e-GP system? Is it possible for this kind of people to exploit some vulnerabilities and have “root” privileges? The only way to make sure they cannot it to go for an intrusion test to confirm that defenses are holding up as intended. ▪ Several modes could be used during this activity such as Black-Box mode (intrusion tests without any knowledge of the target), Grey-Box mode (intrusion tests with an access to some unprivileged account to check the possibility to have a privilege escalation on the system) and White-Box mode (intrusion tests with complete knowledge of the target and with an access to the source code).

**According to Veracode’s State of Software Security report, 83% of the 85,000 applications they tested had at least one security flaw². The OWASP (Open Web Application Security Project) Top 10 represents a broad consensus of the most-critical web application security flaws as shown in the figure below (Appendix 3)*

APPENDIX 3 - MAIN PITFALLS

Main pitfalls	Explanations	Occurrence per cloud services		
		IaaS	PaaS	SaaS
<ul style="list-style-type: none"> Excessive requirements for server localization 	<ul style="list-style-type: none"> Is an in-country location absolutely required for our project? 	+	++	++
<ul style="list-style-type: none"> being too prescriptive from a technical perspective often leads to a limitation on the number of responses or simply the absence of responses. Temptation to copy and paste technical requirements that have been implemented on projects carried out in a "classic" way. 	<ul style="list-style-type: none"> The government risks imposing a component that is obsolete and/or difficult to maintain, and/or does not correspond to the tactical choices of certain suppliers. The government must understand that it is outsourcing the maintenance of technological components and must focus on formalizing the expected performance levels. 	++	++	+
<ul style="list-style-type: none"> Excessive requirements for the localization of technical teams Requiring too high a level of technical qualification. 	<ul style="list-style-type: none"> The resources involved are certified on the technology chosen but do not necessarily have an IT background. They use configuration tools predeveloped in the solution without having to work on the code. 	+	++	+++
<ul style="list-style-type: none"> Service availability rate that is out of line with the best market standards 		+	++	+++
<ul style="list-style-type: none"> Deterrent liability clauses that do not consider the principle of shared responsibility for data exploitation in particular (see Chapter X) 		++	++	+++
<ul style="list-style-type: none"> Missing information in the documents and the answers to the questions asked do not allow the suppliers to quote 	<ul style="list-style-type: none"> There is a relative diversity of pricing models. To ensure quality competition, governments must be able to include in the tender documents as many metrics as possible to enable all suppliers to produce a reliable costing 	+ (1)	+ (1)	+++

The table above indicates the frequency of the main pitfalls for IaaS, PaaS and SaaS:

- + : the pitfall may happen for XaaS
- ++ : the pitfall happens frequently for XaaS
- +++ : the pitfall is commonplace for XaaS .

(1) This pitfall is especially true for SaaS. For IaaS and PaaS, vendors tend to hand over their standard pricing grids that buyers must evaluate against the technical assumptions they have made.

APPENDIX 4 – STANDARDS DETAILS

Certification	ISO 27001	ISO 27002
Scope	International	International
Last version	2013 Last reviewed in 2018	2022
Title	Information Security management	Information security, cybersecurity, and privacy protection — Information security controls
Summary	<ul style="list-style-type: none"> - Most widespread information security certification - It is the central framework of the 27000 series. - It sets out the compliance requirements for an ISMS (information security management system). 	<ul style="list-style-type: none"> - ISO 27002 goes into more detail than ISO 27001. - It contains guidelines that explain how each control of the ISMS works. - It is harder to obtain than ISO 27001.
Description	<p>The ISO/IEC 27001 is the most famous certification of the 27000 family in which there are a dozen of other certifications. ISO 27001 is the international standard for information security.</p> <p>It sets out the specification for an information security management system (ISMS). ISMS is a documented management system consisting of a set of security controls that protect the confidentiality, availability, and integrity of assets from threats and vulnerabilities. By designing, implementing, managing, and maintaining an ISMS, organizations can protect their confidential, personal, and sensitive data from being compromised.</p> <p>This certification is known worldwide and indicates that your ISMS is aligned with information security best practices.</p>	<p>ISO 27002 is a guidance document used as reference for selecting, implementing, and managing controls for both, organizations with an information security management system (ISMS) based on ISO/IEC 27001 and for any organization with information security best practices in place, wishing to implement commonly accepted information security controls.</p> <p>It provides a reference set of generic information security controls and guidance on their implementation. It's a supplementary guide to ISO/IEC 27001 that helps users to identify and implement the information security controls that are most appropriate to their organization's needs and which in turn can help strengthen the way in which information is protected. ISO 27002 is more precise and more difficult to comply with than ISO 27001. ISO 27001 is focus on what should be done to protect information while ISO 27002 describes how.</p>

Certification	ISO 27017	ISO 27018
Scope	International	International
Last version	2015 Last reviewed in 2021	2019
Title	Information technology — Security techniques — Code of practice for information security controls based on ISO/IEC 27002 for cloud services	Information technology — Security techniques — Code of practice for protection of personally identifiable information (PII) in public clouds acting as PII processors
Summary	<ul style="list-style-type: none"> - Based on ISO 27001 but focus on cloud services - Additional guidance for controls specified in ISO 27002 - Additional controls with implementation guidance that relate to cloud services - ISO 27017 is primarily concerned with the relationship between providers and their customers. 	<ul style="list-style-type: none"> - Based on ISO 27001 but focus on cloud services - ISO 27018 specifically addresses the requirements of data protection law
Description	<p>ISO/IEC 27017 is a security standard developed for cloud service providers and users to make a safer cloud-based environment and reduce the risk of security problems. It gives guidelines for information security controls applicable to the provision and use of cloud services by providing:</p> <ul style="list-style-type: none"> - additional implementation guidance for relevant controls specified in ISO/IEC 27002; - additional controls with implementation guidance that specifically relate to cloud services. 	<p>ISO/IEC 27018 is a security standard part of the ISO/IEC 27000 family of standards. It helps cloud service providers who process personally identifiable information (PII) to assess risk and implement controls for protecting PII.</p> <p>The objective of this document, when used in conjunction with the information security objectives and controls in ISO/IEC 27002, is to create a common set of security categories and controls that can be implemented by a public cloud computing service provider acting as a PII processor.</p>

Certification	ISO 17789	ISO 9001
Scope	International	International
Last version	2014 Last reviewed in 2021	2015
Title	Information technology — Cloud computing — Reference architecture	Quality management systems — Requirements
Summary	<ul style="list-style-type: none"> - More technical than ISO 17788 - Describes the cloud computing reference architecture 	From ISO 9000 family which aims at establishing generic management system standards
Description	<p>ISO/IEC 17789:2014 is more technical than ISO/IEC 17788:2014 and specifies the cloud computing reference architecture (CCRA).</p> <p>The reference architecture includes the cloud computing roles, cloud computing activities, and the cloud computing functional components and their relationships.</p>	<p>ISO 9001 specifies generic requirements for a quality management system. It addresses the following topics:</p> <ul style="list-style-type: none"> -The expectations of the organization such as customer satisfaction, supplier management, reduction of non-quality costs ... -The involvement of the management and other actors -Risk management -Documentation and resource management (knowledge management) -Continuous improvement of production processes. PDCA (Plan, Do, Check, Act) remains the central tool for planning, implementing, evaluating, and correcting processes.

Certification	ISO 27701	ISAE 3402
Scope	International	International
Last version	2019	
Title	Security techniques — Extension to ISO/IEC 27001 and ISO/IEC 27002 for privacy information management — Requirements and guidelines	
Summary	Extension of ISO 27001/2 for privacy information	<ul style="list-style-type: none"> - 3 levels of certification "SOC" - SOC 1 is focused on the internal controls affecting financial reports - SOC 2/3 is focused on the control and protection of the client's data kept by the company
Description	<p>ISO/IEC 27701 is a data privacy extension to ISO 27001. It assists organizations to establish systems to support compliance with the European Union General Data Protection Regulation (GDPR) and other data privacy requirements but as a global standard it is not GDPR specific.</p> <p>While the privacy and protection of personal data is part of ISO 27001, the newer standard ISO 27701 extends the scope to include the "protection of privacy as potentially affected by the processing of PII".</p>	<p>It was developed by International Auditing and Assurance Standards Board (IAASB).</p> <p>SOC level can have 2 types: type 1 is documenting a snapshot of the organization's controls and type 2 is documenting a period of time (12 months)</p>

Certification	Cloud STAR	ISO 17788
Scope	International	International
Last version		2014 Last reviewed in 2021
Title		Information technology — Cloud computing — Overview and vocabulary
Summary	<ul style="list-style-type: none"> - Based on ISO 27001 - ISO 27001 is mandatory to be CSA STAR certified - CSA STAR is evaluating the ISMS throughout the CCM (Cloud Control Matrix) and not the ISO 27002 	<ul style="list-style-type: none"> - Set of terms and definitions about cloud computing
Description	Certification given by Cloud Security Alliance	ISO/IEC 17788:2014 provides definitions of common cloud computing terms, including those for cloud service categories such as Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS).

APPENDIX 5 – MARKET-SURVEY-ACCREDITATIONS AND FRAMEWORKS PER IAAS/PAAS VENDORS

1) IaaS providers

Company	Headquarters	Certifications	Website	More information
Amazon Web Services	USA	ISO 27001 ISO 27017 ISO 27018 ISO 27701 ISO 9001 CSA STAR CCM v3.0.1	https://aws.amazon.com/fr/?nc2=h_lg	Leading provider of public cloud computing
Microsoft Azure	USA	ISO 27001 ISO 27017 ISO 27018 ISO 27701 ISO 9001 SOC 1, SOC 2, SOC3 CSA Star	https://azure.microsoft.com/fr-fr/	World's second largest cloud provider. It is the obvious choice for hosting Microsoft-based systems on the cloud and is a common choice for government agencies. It also runs an increasing number of non-Microsoft workloads, including Linux, HPC, and SAP systems. Azure is winning more and more market share of the years Commercial cloud is a roll-up of multiple services from Microsoft. Most of their cloud computing revenues is coming from SaaS solutions
Google Cloud Platform	USA	ISO 27001 ISO 27017 ISO 27018 ISO 27701 ISO 9001 SOC 1,2,3 CSA Star	https://cloud.google.com/	
IBM Cloud	USA	ISO 27001 ISO 27017 ISO 27018 ISO 9001 CSA STAR SOC 1, SOC 2, SOC 3	https://www.ibm.com/fr-fr	Hybrid/Multicloud actor Aims to become the glue between multicloud deployments Microsoft made the acquisition of Red Hat, a multicloud enabler

Company	Headquarters	Certifications	Website	More information
Tencent	China	ISO 27001 ISO 27017 ISO 29151 ISO 9001 CSA STAR SOC 1,2,3	https://intl.cloud.tencent.com/	
Digital Ocean	USA	SOC 1 Type II SOC 2 Type II SOC 3 Type II CSA STAR Level 1 ISO/IEC 27001	https://www.digitalocean.com/	DigitalOcean's user interface is minimalistic in comparison to other IaaS providers Simplicity doesn't affect the effectiveness of the solution.
Oracle Cloud	USA	ISO/IEC 27001 ISO/IEC 27017 ISO/IEC 27018 ISO/IEC 27701 SOC 1, SOC 2, SOC 3 ISO 9001 CSA STAR	https://www.oracle.com/fr/cloud/	Mostly a SaaS provider
Alibaba Cloud	China	ISO 27001 ISO 27017 ISO 27018 ISO 27701 ISO 9001 ISO 29151 CSA STAR gold medal SOC 1 Type II SOC 2 Type II SOC 3	https://www.alibabacloud.com/fr	the leading cloud provider in China, which is forging alliances to become a key player across Asia. First ever company with CSA STAR gold medal certification Flies under the radar of customers that are primarily focused on EU and US

Company	Headquarters	Certifications	Website	More information
Serverspace	NL	Amsterdam Data center: SOC 1 TYPE 2 SOC 2 TYPE 2 ISO 27001 PCI DSS USA Data center: SOC 1 (SSAE18/ISAE3402); SOC 2	https://serverspace.io/	
1&1	Germany	ISO 27001	https://www.ionos.com/	
OVH	France	ISO 27001 ISO 27017 ISO 27018 ISO 27701 SOC 1,2,3 GDPR CSA Star Level 1	https://www.ovhcloud.com/en/	
NTT Global Data Centers	USA	ISO 27001 ISAE3402/SSAE16	NTT Global Data Centers	
Interxion	Netherlands	ISO27001 Uptime Institute Tier III ISO22301	Interxion - A Digital Realty Company	
Linode	USA	Depends on the Data center: https://www.linode.com/legal-security/	https://www.linode.com/	
Vultr	USA	Depends on the Data center: https://www.vultr.com/resources/faq/#datacenter_compliance	https://www.vultr.com/	

2) Case studies with the public sector for IaaS providers

Company	Case studies with the public sector
Amazon Web Services	<p>- The Royal Opera House, London, UK https://aws.amazon.com/solutions/case-studies/royal-opera-house/?nc1=h_ls : migration to AWS Cloud</p> <p>- The International Air Transport Association (IATA) https://aws.amazon.com/fr/solutions/case-studies/iata/?did=cr_card&trk=cr_card : migration from on-premises data center for its BI platform to the cloud. IATA migrated its BI platform to AWS, and runs web, application and database tiers of the solution</p> <p>- National Taiwan University https://aws.amazon.com/solutions/case-studies/national-taiwan-university/?nc1=h_ls They run programs with Amazon ELastic MapReduce.</p>
Microsoft Azure	<p>- eThekweni municipality embarks on data-driven, ‘smart city’ journey with Microsoft https://customers.microsoft.com/en-us/story/1363741523609227151-ethekweni-municipality-national-government-microsoft-365-en-south-africa Moves to Microsoft Azure environment</p> <p>Nottinghamshire County Council https://customers.microsoft.com/en-us/story/1477034973006130434-nottinghamshire-county-council-government-azure-vmware-solution Move many applications and data to the cloud with Microsoft Azure VMware Solution</p>
Google Cloud Platform	<p>- Entur https://cloud.google.com/customers/entur/ Moving from an on-premises to a cloud infrastructure powered by Google Cloud enables Entur to develop a national data platform for Norway’s public transport network.</p> <p>- OGTIC (Dominican Republic’s Government Office of Information and Communication Technology) https://cloud.google.com/customers/ogtic/ Solid and scalable cloud infrastructure to meet high demand</p>
Alibaba Cloud	https://www.alibabacloud.com/fr/customers/teman-bumil
Oracle Cloud	<p>- EMSS https://www.oracle.com/customers/east-midlands-shared-services/ East Midlands Shared Services modernizes HR and finance processes on Oracle Cloud</p>

3) PaaS providers

PaaS solution	Company	Headquarters	Certifications	Language	Case studies with the public sector
AWS Elastic Beanstalk	Amazon	USA	ISO27001 ISO27017 ISO27018 ISO27701 ISO22301 ISO9001 SOC 1, SOC 2, SOC 3 HIPAA CSA STAR CCM v3.0.1	Java, .NET, PHP, Node.js, Python, Ruby, Go et Docker	
GOOGLE APP ENGINE	Google	USA	ISO/IEC 27001 ISO 9001 ISO22301 ISO 50001 ISO/IEC 27017 ISO/IEC 27018 ISO/IEC 27701 SOC1, SOC 2, SOC 3	Node.js, Java, Ruby, C#, Go, Python, PHP.	
GOOGLE Cloud Run	Google	USA	ISO/IEC 27001 ISO 9001 ISO22301 ISO 50001 ISO/IEC 27017 ISO/IEC 27018 ISO/IEC 27701 SOC1, SOC 2, SOC 3	Node.js, Go, Java, Kotlin, Scala, Python, .Net et Docker.	- Airbus - Veolia - Spain's Social Security administration (https://cloud.google.com/customers/seguridad-social?hl=fr)

PaaS solution	Company	Headquarters	Certifications	Language	Case studies with the public sector
Azure App Service & Azure Cloud Services	Microsoft	USA	ISO 27001 ISO 27017 ISO 27018 ISO 27701 ISO 9001 SOC 1, SOC 2, SOC3 CSA Star	Java, Grails, Play, Spring, Node.js, Ruby on Rails, Sinatra, Go, Erlang, etc.	
Red Hat OpenShift	IBM	USA	HIPAA, PCI, SOC2, ISO		
OpenStack Private Cloud	Rackspace technology	USA			Purdue University (https://www.rackspace.com/customer-stories/purdue-university)
FUJITSU PaaS	Fujitsu	Japan			
FOREPaaS	FOREPaaS	France		Python, Java, and other languages	Vinci: High-Speed Train-line Monitoring and Predictive Maintenance (https://www.forepaas.com/en/customers/clients/predictive-maintenance-for-high-speed-trainline/)
Cloud Foundry	Cloud Foundry Community	USA		Java, Grails, Play, Spring, Node.js, Ruby on Rails, Sinatra, Go, Erlang, etc.	
Salesforce platform	Salesforce	USA		Langage Apex sur Force.com, Java, Ruby, Node.js, Python sur Heroku1	
Platform.sh		France	SOC 2 Type 2 GDPR compliant PC1 DSS Level 1	PHP, Java, Node.js, Python, Golang, Ruby, Drupal, WordPress, Symfony, Django, React, and Angular.	Unicef (https://platform.sh/customers/stories/unicef-switzerland-and-liechtenstein+platform.sh/) University of Missouri (https://platform.sh/customers/stories/university-of-missouri+platform.sh/)

PaaS solution	Specialization	Website	More information
AWS Elastic Beanstalk	Building API, Web backend, websites, content management, SaaS application	https://aws.amazon.com/fr/elasticbeanstalk/	Deployment steps such as capacity sizing, load balancing, automatic scaling and application status monitoring are managed by the platform.
GOOGLE APP ENGINE	Backend for mobile apps, APIs, websites	https://cloud.google.com/appengine?hl=fr	
GOOGLE Cloud Run	Websites, REST API backend, back-office administration, Data processing: light data transformation, Automation (programmed generation of documents, business workflow with webhooks)	https://cloud.google.com/run	Google Cloud Run allows up to 1,000 concurrent requests for each container instance.
Azure App Service & Azure Cloud Services		https://azure.microsoft.com/	
Red Hat OpenShift		www.ibm.com	
OpenStack Private Cloud		www.rackspace.com	
FUJITSU PaaS		www.fujitsu.com	
FOREPaaS	Data processing engine (workflow management), data manager, query builder, APIs, Apps, Machine learning manager, Infrastructure monitoring	www.forepaas.com	ForePaaS allows its client to develop end-to-end machine learning and to generate analytics. The platform is based on the IaaS services of major cloud providers (AWS, Google Cloud, Microsoft Azure, OVHcloud).
Cloud Foundry		https://www.cloudfoundry.org/	
Salesforce platform	Automation, APIs, AI services	Logiciel CRM - Gestion de la Relation Client (GRC)	Specialized in development of CRM tools.
Platform.sh		Cloud Hosting Platform Platform.sh	Platform.sh is hosted on Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform (GCP).

APPENDIX 6 - CLOUD SERVICE PROVIDERS IN AFRICA

Company	Headquarters	Certifications	Website	More information	Localization
Microsoft Azure	USA	ISO 27001 ISO 27017 ISO 27018 ISO 27701 ISO 9001 SOC 1, SOC 2, SOC3 CSA Star	https://azure.microsoft.com/fr-fr/	Microsoft has started its implantation in Africa in 2019.	Johannesburg, South Africa Cape Town, South Africa
Amazon Web Services	USA	ISO 27001 ISO 27017 ISO 27018 ISO 27701 ISO 9001 CSA STAR CCM v3.0.1	https://aws.amazon.com/fr/?nc2=h_lg	Use case with the University of Pretoria (https://www.youtube.com/watch?v=mDF3xs45vNw)	Cape Town, South Africa
Africa Data Centres	South Africa	ISO 9001 ISO 14001 ISO 22301 ISO 45001 ISO 27001 PCI DSS compliant Uptime Institute certified "Tier III - Design" Uptime Institute Certified "Tier IV - Facility" ISAE 3402, certified Type II	Home - Africa Data Centres	The certifications depend on data centers.	Johannesburg, South Africa Lagos, Nigeria Cape Town, South Africa Nairobi, Kenya

Company	Headquarters	Certifications	Website	More information	Localization
Onix Data Center	UK	Uptime Institute Tier IV ISO 27001 PCI-DSS	https://www.onixdc.com/		Accra, Ghana
NTT Global Data Centers	USA	ISO 27001 ISAE3402/SSAE16	Johannesburg 1 Data Center Global Data Centers		Johannesburg, South Africa
MainOne, an Equinix company	Nigeria	Uptime Institute Tier III "Design" SOC 2 PCI-DSS ISO 27001 ISO 9001	West Africa's leading connectivity and data centre service provider MainOne	Equinix, Inc. (Nasdaq: EQIX), announced on April 5, 2022, it has completed its deal to acquire West African data center and connectivity solutions provider MainOne. MainOne has an extensive submarine network extending 7,000 kilometers from Portugal to Lagos, Accra and along the West African coast.	Lekki, Nigeria Lagos, Nigeria Accra, Ghana Appolonia City, Ghana Abidjian, Côte d'Ivoire VITIB, Côte d'Ivoire
Interxion	Netherland	ISO27001 Uptime Institute Tier III ISO22301	Interxion - A Digital Realty Company		Mombasa, Kenya Nairobi, Kenya
Cloud Africa	UK	No info	https://www.cloudafrica.net/		
Host Africa	South Africa	No info	https://www.hostafrica.co.za/		
Teraco Data Environments	South Africa	ISO 27001 ISO 9001 ISAE 3402 type II	https://www.teraco.co.za/	Africa's largest data center services	7 data centers across : Johannesburg, South Africa Cape Town, South Africa Durban, South Africa

Company	Headquarters	Certifications	Website	More information	Localization
Rack Centre	Nigeria	ISO 27001 ISO 22301 ISO 9001 Uptime Institute Tier III "Facility"	https://rack-centre.com/	Carrier-neutral Tier III data center facility	1 Carrier neutral Data Centre: Nigeria
Raxio Group	USA	Uptime Institute Tier III "Design"	Data Centres in Africa: Tier III, Carrier & Cloud Neutral (raxiogroup.com)	Carrier-neutral Tier III data center facility	Uganda Ethiopia (in 2022) Democratic Republic of the Congo (in 2023) Côte d'Ivoire (in 2023) Mozambique (in 2023) Tanzania (in 2023)
Sonatel	Senegal	ISO 9001	https://sonatel.sn/		Senegal
TelOne	Zimbabwe	No info	https://www.telone.co.zw/		Zimbabwe

APPENDIX 7 - MAIN SOURCE OF INFORMATION FOR DESK SURVEY

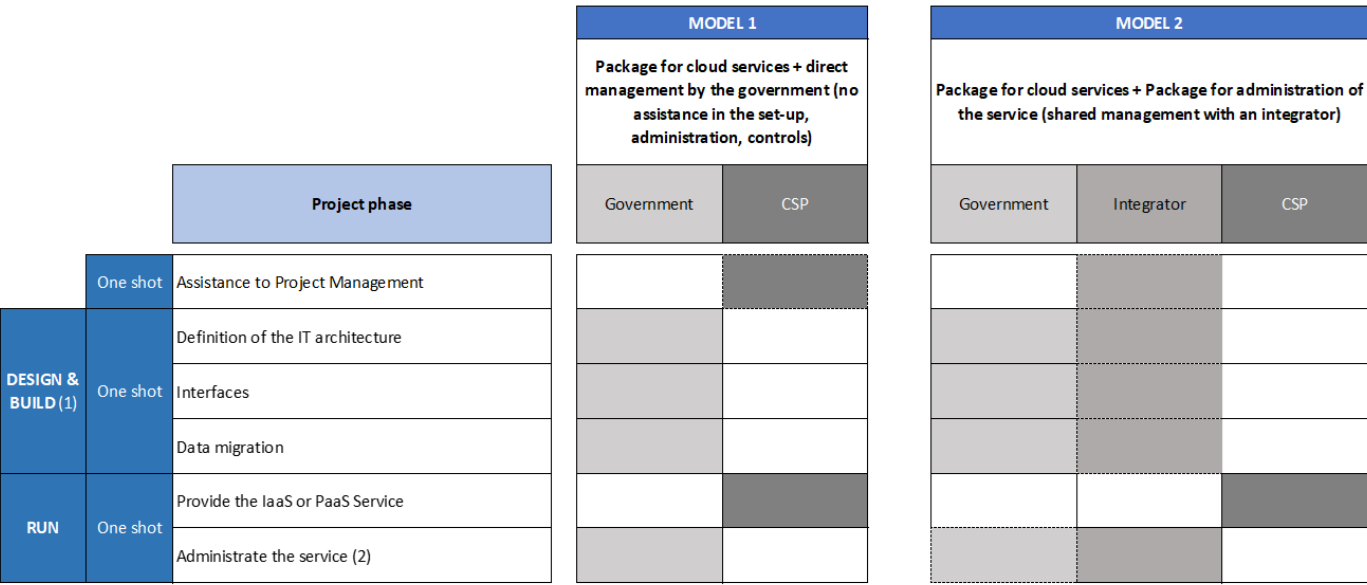
A desk-survey crossing several types of sources allows a first level of information as shown in the table below:

Source	Examples	Comments
Private market analysis institutes	Gartner, Forrester, Xerfi, Statista	
Provider websites	AWS, Google Cloud, Microsoft, IBM	The major providers in the market such as AWS, Google Cloud, Microsoft and IBM are developing a wide range of services with custom pricing. Their websites present service variations and customer feedbacks.
Open-source market research	EY, Deloitte	Large consulting and auditing firms often conduct market research, published and freely available on the Internet.
Industry association	CISPE (Cloud Infrastructure Services Providers in Europe)	High quality documents, but they are often a high-level overview of the market trend and less a comparative study of the market players.
Research centers	NIST (National Institute of Standards and Technology)	
World Bank case studies		

APPENDIX 8 - ROLE DISTRIBUTION BETWEEN THE DIFFERENT TYPES OF PROVIDERS ON CLOUD PROJECTS

1) IaaS & PaaS

Two different models can be considered, depending on whether the government is accompanied by an integrator while implementing the services. In all cases, the cloud services provider (CSP) is not involved in the design/build phase. It provides "standard" services that have been specified upstream by the customer/and or its integrator.



(1) In most cases, Design & Build is managed by the client's technical teams before the consultation is launched.

Non-systematic intervention

(2) Many customers require a cloud provider for their infrastructure, and outsource "hands on keyboard" planning, migration, and management work to a Systems Integrator (SI) or managed services provider. Intervention of internal resources is often required for the service administration.

2) SaaS

SaaS services are often adapted to better match customer expectations. To this end, they require a much larger and longer design and build phase. There are two models of distributing service packages: a model where the software developer takes charge of all the phases of the project and a model where an integrator is responsible for the implementation and maintenance phases of the solution.

			MODEL 1		MODEL 2						
			One full support package for a turn key project (Design, Build and run operations) + 1 package for consulting services (optional)					1 package for software + 1 package for integration services + 1 package for consulting (optional)			
			Software developer (1)	Consulting firm	Software developer	Integrator	Consulting firm				
Project phase											
	One shot	Assistance to Project Management (optional but recommended)									
DESIGN	One shot	Conception									
	BUILD	One shot	Solution Configuration and/or Customization								
One shot		Testing and final preparation									
One shot		Data migration									
One shot		Go live preparation									
One shot		Training plan and change management (2)									
One shot		Post implementation enhanced support (Hypercare)									
RUN		Recurring costs	Annual Subscription fees, including hosting and (corrective and evolutive) maintenance of the solution								
	Recurring costs	Annual costs for the maintenance of configuration and interfaces									
	Recurring costs	Help-desk									
	One shot	Evolution of the configuration									

(1) or its certified reseller. The software reseller might subcontract the integration services to a certified reseller/integrator (or form a Joint-Venture for the RFP)

(2) These services can be transferred to the package "Assistance to Project management"