



SINDH CLOUD **FIRST POLICY**



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Glossary

CAO	Cloud Acquisition Office
CSP	Cloud Service Provider
ICT	Information Communication Technology
PCFP	Pakistan Cloud First Policy
PSE	Public Sector Entity

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1 Background

There are number of benefits of cloud adoption in public sector, and governments around the world are moving towards cloud computing. The government of Pakistan approved its first Pakistan Cloud First Policy (PCFP) in February 2022. The policy outlines the scope and implementation of cloud computing in the public sector of Pakistan.

The real benefits of cloud computing can only be realized when there is an aggregate demand for clouds services throughout the country and in the provinces as well. ICT infrastructure is currently available in clusters across Pakistan. The absence of a cloud first policy compelled public sector organizations to work in silos for their ICT needs. These small clusters are highly inefficient in their resource utilization and do not offer the level of security that public sector data requires. Moreover, the reliance on on-premises hardware presents an impediment in the delivery of citizen centric services and internal operations of the Public Sector Entity. In contrast, cloud computing provides an agile approach to procurement, development, deployment and operations. A close liaison between the provinces and the federation is important to achieve efficiency and optimization and for the generation of an aggregate demand by the public sector in Pakistan. This will also be beneficial in reducing the cost of ICT spending by the federal and provincial governments.

Cloud first approach is fully recognized by the province of Sindh in its digital strategies. Sindh's upcoming digital policy includes cloud computing as a digital strategy incorporated with allied concepts and terms to carry forward the concept of "pay as use". This shows that the provinces and the federation are already aligned in their goal to utilize cloud computing in order to attain the potential and benefits of cloud computing in public sector. Considering the numerous advantages brought about by cloud first strategy in public sector, the province of Sindh issues this cloud first policy in continuation of approved Pakistan Cloud First Policy by the federal government.

2 Scope and Adoption

This Sindh Cloud First policy applies to all Public Sector Entities under the provincial government of Sindh intending to make new ICT investment(s) and ventures. The policy will also serve as useful guidance to all administrative & attached departments, regulated sectors and private sector organizations as they continue to undertake digital transformation.

3 Cloud First Approach

A coherent approach is required to be adopted in respect of Cloud First Policy to create synchronization in lieu of cloud services among the federation and the provinces. The focused approach of cloud first policy is mentioned below:

- a. Economies of scale
With the aggregate demand for cloud computing throughout Sindh, CSP will be able to achieve economies of scale. This will bring down the cost of ICT expenditure and attract investment.
- b. Collaboration between provinces
A coherent approach to cloud computing throughout the public sector of Pakistan will provide increased opportunities for collaboration among provinces on their ICT initiatives. Extension of already developed solutions deployed on cloud can easily be replicated among the provinces.

c. Standardization

The development of a cloud ecosystem with inherent interoperability capabilities will result in adoption of standardized mechanisms for the development of citizen centric solutions.

d. Adoption of emerging tools and technologies

Cloud adoption across the country/provinces will facilitate the adoption of latest tools and technologies for implementation of ICT initiatives. The traditional approach to software development by injecting billions of rupees in ICT infrastructure development will be replaced by the latest cloud native methodologies. This will also result in the development of a cloud enabled workforce particularly in Sindh and generally across Pakistan.

4 Policy Deliverables

4.1 Nomination of a representative for Committee on Provincial Cloud First Policy

In line with the published policy PCFP, the provincial government of Sindh will nominate a representative for the National Cloud Board as outlined in PCFP. The province's representative will not only represent the province on the federal cloud board but will also be helpful in staying abreast of the cloud adoption across Pakistan.

4.2 Sindh Provincial Cloud Acquisition Office

In line with the published policy PCFP, a Cloud Acquisition Office (CAO) will be established in the province of Sindh to support Public Sector Entity in their transition to cloud. CAO will facilitate PSE in designing, architecting, procuring, building, migrating, and managing their workloads and applications on the cloud.

4.2.1 The Sindh Cloud First policy will ensure compliance in respect of Cloud Service Provider accreditation which is reproduced below:

“Only CSP accredited by the National Cloud Office will be eligible to take part in the competition. CSP with the most advantageous offering will be selected. SLA will be signed between the CSP and PSE accordingly. Any breach of the SLA between PSE and CSP will be reported to CAO by the PSE. CAO will report continued serious non-compliance of SLA by CSP to the National Cloud Office.”

The Sindh Cloud Acquisition Office will have a close liaison with the federal Cloud Office to communicate the cloud needs of provincial PSE. To reduce operational overhead, coherence of policies and to benefit from the advantages of aggregate demand, only CSP accredited by the National Cloud Office will be considered for the needs of PSE. The provincial CAO will work together with the provincial procurement regulator (SPPRA) to develop and adopt a procurement methodology that best fits the cloud ecosystem.

4.3 Restrictions on Investments in Fragmented ICT infrastructure

With the approval of this policy the government of Sindh will require all PSE to review any projects which involve setting up a data center / ICT infrastructure / Server Room and will prioritize cloud-based solutions for any future ICT investments and ventures. Same provisions will apply on any projects in the public sector implemented via a third-party or donor agency. The organizations mandated to spearhead Information Technology in the province will work together with Planning / Development and Procurement Regulators to ensure no proposed project with requirement for fragmented ICT infrastructure is approved unless recommended by the provincial cloud acquisition office.

5 Procurement

Government procurement is an important component of cloud adoption. PSE must consider cloud services for all of their new ICT procurement decisions. Any new ICT procurement decision to select services except cloud must have approval by the provincial Cloud Acquisition Office (CAO)/ Board. Likewise, PSE will also seek approval from provincial Cloud Acquisition Office / Board to host data on private cloud and will have to demonstrate the need for hosting on private cloud. Similarly, an organization intending to establish its own Private Cloud must have approval of the National Cloud Board duly recommended by provincial Cloud Acquisition Office / Board.

Upon the approval of this policy, the selection of cloud-based ICT will be prioritized in new ICT procurement. This will apply to infrastructure, hardware, software, information security, licensing, storage, and provision of data, as well as services like security, development, virtualization, databases, or any kind of technology where a cloud-based offer is essentially equivalent to or better than other kinds of technological solutions. Any decision for not using or opting for cloud solutions must be substantiated or justified by giving an evidence of the value of such decision. In this regard, the PSE must establish that the non-cloud-based ICT deployment strategy has a lower Total Cost of Ownership (TCO) with atleast the same level of security that a cloud deployment offers or it meets special requirements of the PSE that are not offered by a cloud deployment.

The selection of the appropriate cloud deployment and service model will be based on an assessment of each application, incorporating cost-benefit analysis and achieving value for money over the life of the investment. Procurement practices should reflect purchasing practices and contract terms that allow cloud platforms to be scalable, cost-effective, and innovative. The provincial CAO will facilitate PSE in their selection of the appropriate cloud service and deployment model, architecting, procuring, building, migrating, and managing their workloads and applications on the cloud. The provincial CAO will hold competitions for the selection of accredited CSP.

The following aspects will be considered when procuring cloud services:

- a. Value for money-to fulfil the intended purpose of the service;
- b. Transitioning from capital budgets to operational expenditure;
- c. Short, medium, and long terms impact on finances, governance, technology, relevance, suitability;
- d. The suitability of Service Level Agreements in relation to PSE needs; and
- e. Information on data security guidelines and compliance with national and provincial policies/ legislation and international standards on data privacy and cyber security;

In general, cloud services are provisioned on a “pay as you use”. However, the provincial CAO may opt for usage of cloud services on package / lump sum charges basis. The organizations requiring ICT services do not have to purchase equipment to obtain services. This is a shift from the traditional way of procuring ICT in public sector in Pakistan which is based on purchasing equipment and incurring a

capital expenditure. In order to achieve the goals, set out in this policy, a new perspective for purchasing and operating ICT will be considered. The “Pay As You Use”, “Self Service” and “Package / lump sum charges” approaches permit scaling of services and is useful as the data and compute needs of an agency fluctuate.

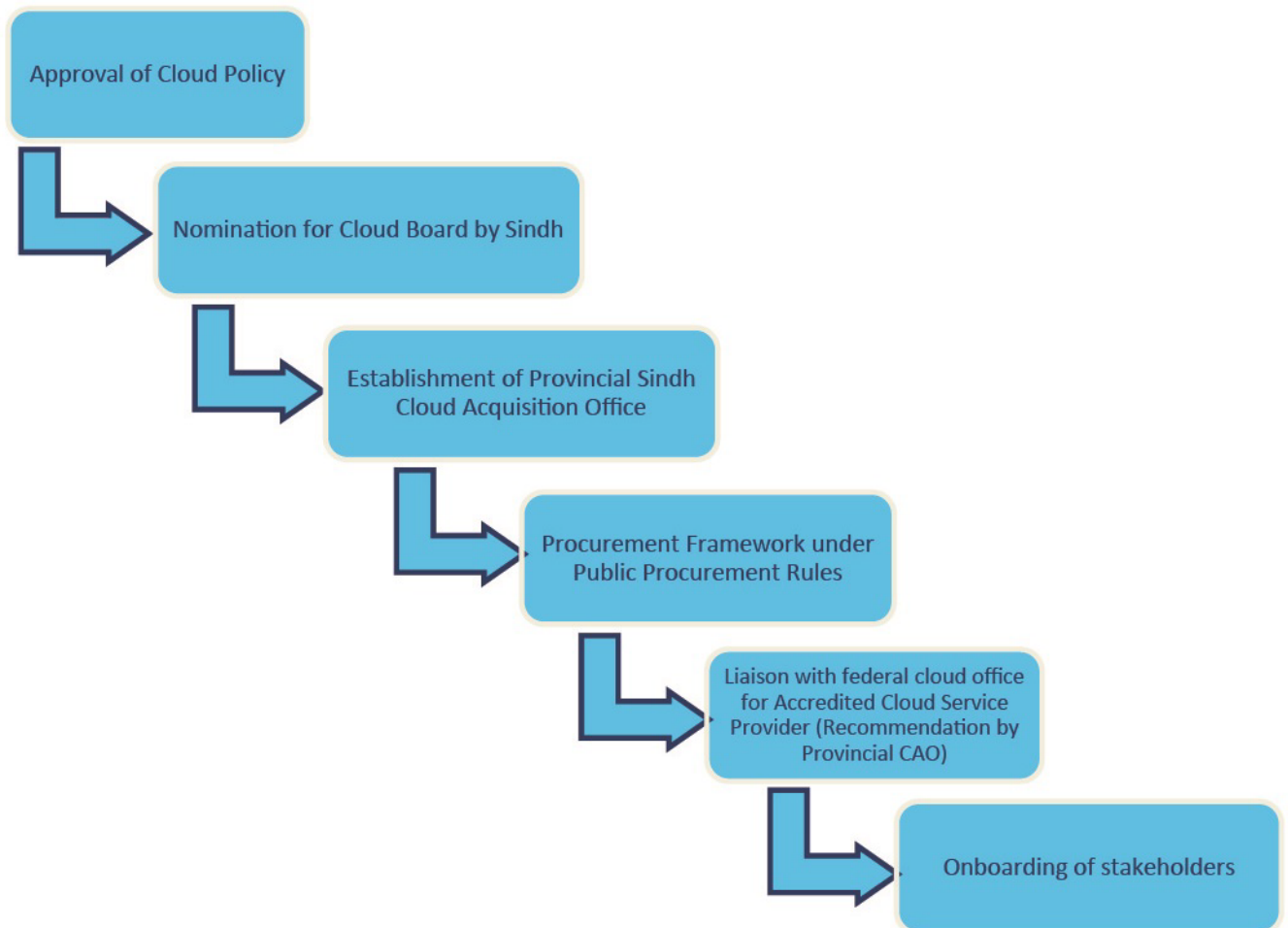
After the approval of this policy, the Sindh Digital Technology Board (in case of non-functionality of the Board), the IS&T Department, Government of Sindh together with the provincial procurement regulator and other relevant authorities, shall devise mechanisms to move away from the conservative approach of Capital Expenditure to Operational Expenditure, which is more relevant for cloud service provisioning. Furthermore, guidance will be provided to PSE on the aforementioned aspects concerning procurement of cloud services.

The true benefits of cloud computing can be realized by providing facilitation to PSE for their cloud procurement needs. This provides convenience, efficiency, reduced costs and a simplified ordering process. Aggregate demand for common cloud technologies by PSE results in the best possible offerings from CSP. Provincial CAO will be the dedicated office for ICT procurements of all PSE. CAO will have the visibility of the aggregate demand of PSE which will result in better cost and service offerings by CSP.

6 Date of Application and Validity

This policy becomes effective by the date it is accorded approval by the competent authority. The policy is subject to holistic review as and when required

Annex – I CLOUD ONBOARDING



IMPORTANT CLOUD TERMS

IAAS	<i>Infrastructure-as-a-Service</i> (means a cloud service provider who manages the infrastructure such as the actual servers, network, virtualization, and data storage through an internet connection)
PAAS	<i>Platform-as-a-Service</i> (means the hardware and an application-software platform are provided and managed by an outside cloud service provider, but the user handles the apps running on top of the platform and the data the app relies on)
SAAS	<i>Software-as-a-Service</i> (means that delivers a software application—which the cloud service provider manages—to its users. Typically, SaaS apps are web applications or mobile apps that users can access via web browser)
Public Cloud	Public clouds are cloud environments typically created from IT infrastructure not owned by the end user. Some of the largest public cloud providers include Alibaba Cloud, Amazon Web Services (AWS), Google Cloud, IBM Cloud, and Microsoft Azure
Private Cloud	Private clouds are loosely defined as cloud environments solely dedicated to a single end user or group, where the environment usually runs behind that user or group's firewall.
Hybrid Cloud	A hybrid cloud is a seemingly single IT environment created from multiple environments connected through local area networks (LANs), wide area networks (WANs), virtual private networks (VPNs), and/or APIs (Application programming interface) For example, a hybrid cloud may need to include: At least 1 private cloud and at least 1 public cloud, (e.g. 2 or more private clouds, or more public clouds)
Multi Cloud	Multi clouds are a cloud approach made up of more than 1 cloud service, from more than 1 cloud vendor—public or private. All hybrid clouds are multi clouds, but not all multi clouds are hybrid clouds.



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