



**Ayaz Ahmed Uqaili - Science & IT Department**

# **Cloud Computing**

**The Digital Infrastructure Shift**





## Get to Know - Live Responses

Join at [menti.com](https://menti.com) | use code 4116 0575

 Mentimeter

**How would you describe your participation today?**

Join at [menti.com](https://menti.com) | use code 4116 0575

 Mentimeter

**Do you know about the Cloud?**

Join at [menti.com](https://menti.com) | use code 4116 0575

 Mentimeter

**Which of the following option represents the concept of Cloud Computing?**



# Digital Era – People look online

## Physical Office



Physical Office



Your website  
is your digital  
office – serving  
citizens  
around the clock.

## Digital Office



Digital Office



# Datacenter – We Need

**Applications**

**Data**

**Middleware/APIs**

**O/S**

**Virtualization**

**Servers**

**Storage**

**Internet**

**Networking**

**Electricity**

**Space**

**Human Resource**



Sir Genertaor nahi chal  
raha

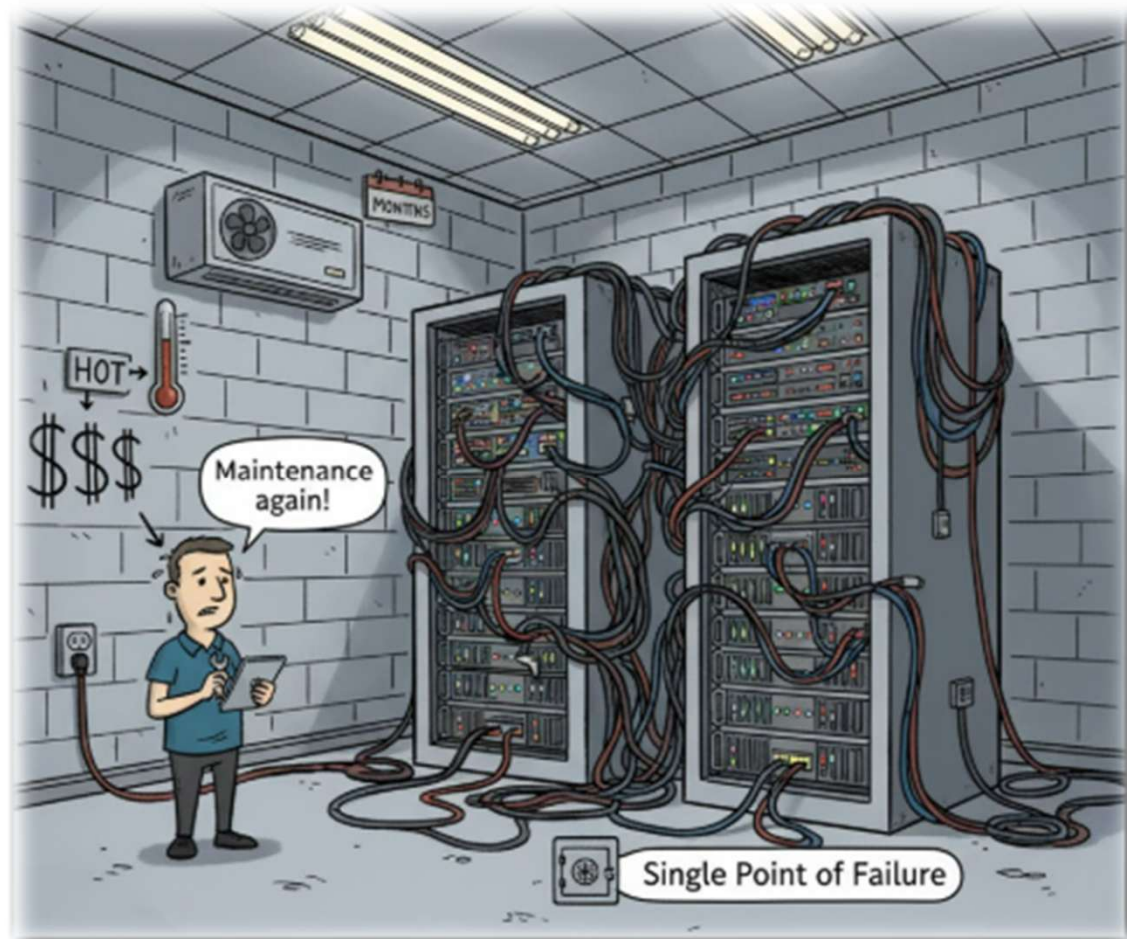
Sir petrol key paise

Yeh Safai kun nahi hui

Sir server purnay hoo  
gae hain

Sir internet ka bill dena  
hai

Sir OS ki subscription  
please





Sir Switch khrab  
ho gaya hai

Sir staff bemaar  
hai

Sir short cicuit ho  
gaya hai

Sir application  
nahi chal rahi

Sir hard disk  
kharab ho gai hai

Sir contract  
renew nahi hoo  
raha

So many such  
issues





## THE NEW WAY: Cloud Computing





## **Datacenter**

Space  
Physical Security  
Power  
Cooling  
Dust free  
Internet  
Servers  
Storage  
Network Devices  
Security Devices  
Everything with backups

## **Cloud**

**Datacenters**  
of 3<sup>rd</sup> Party

### **Collocated**

Own Servers and other  
hardware in 3<sup>rd</sup> party  
**Datacenter** with Power,  
Cooling, Physical Security  
and Internet

### **On-Premises**

**Datacenter** in  
Our Building



# Cloud Computing is the on-demand delivery of IT resources over the Internet

Instead of buying and maintaining your own servers, you rent them from a cloud provider. You have a massive menu of services computing power, storage, databases, even artificial intelligence and you pay only for what you consume



# Cloud Computing Benefits

**Cost Efficiency**

**Pay only for what you use**

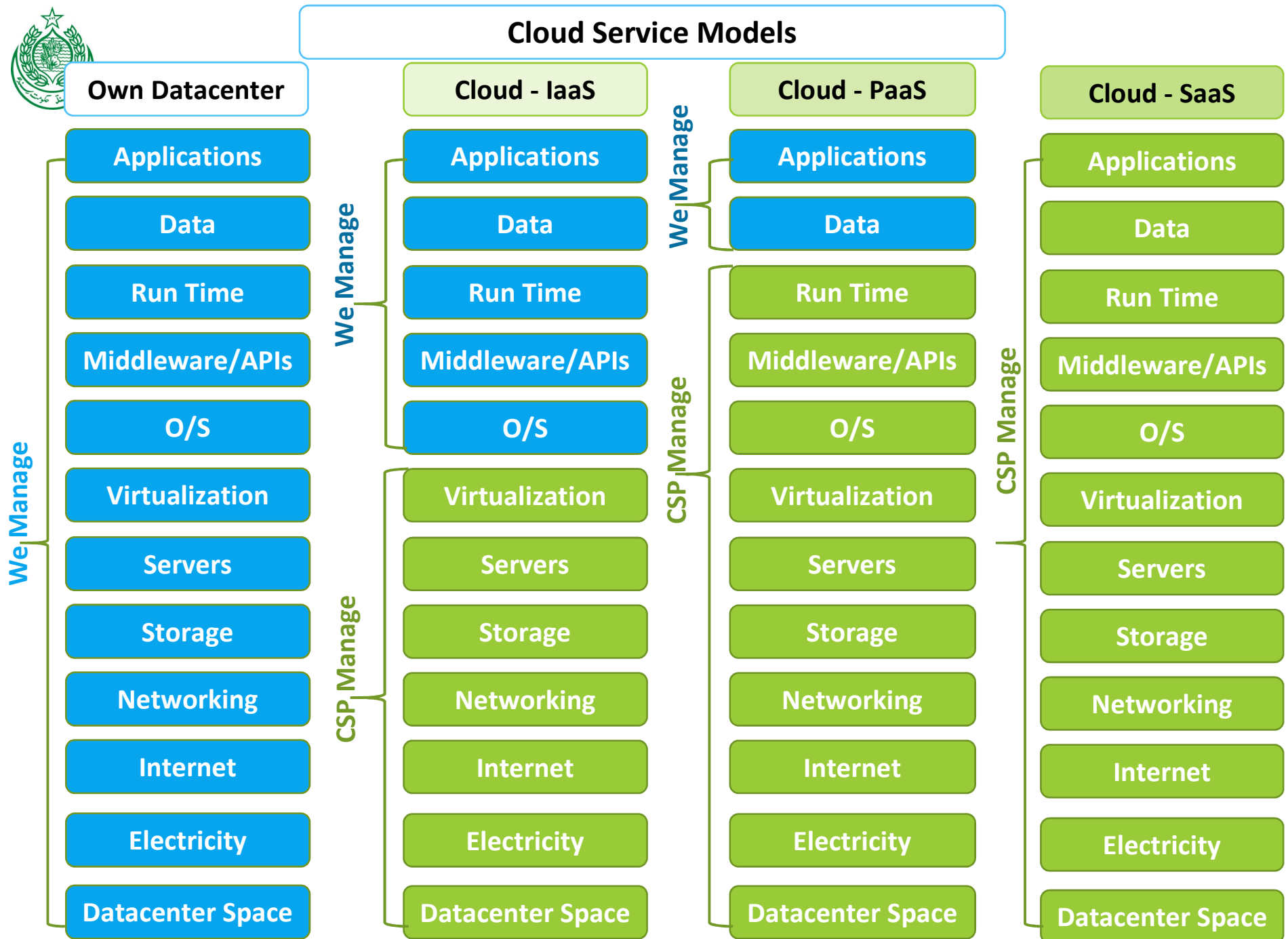
**Scalability**

**Access to Innovation**

**Security & Compliance with Standardized controls**

**Accessibility**

**Sustainability**





# Deployment Models

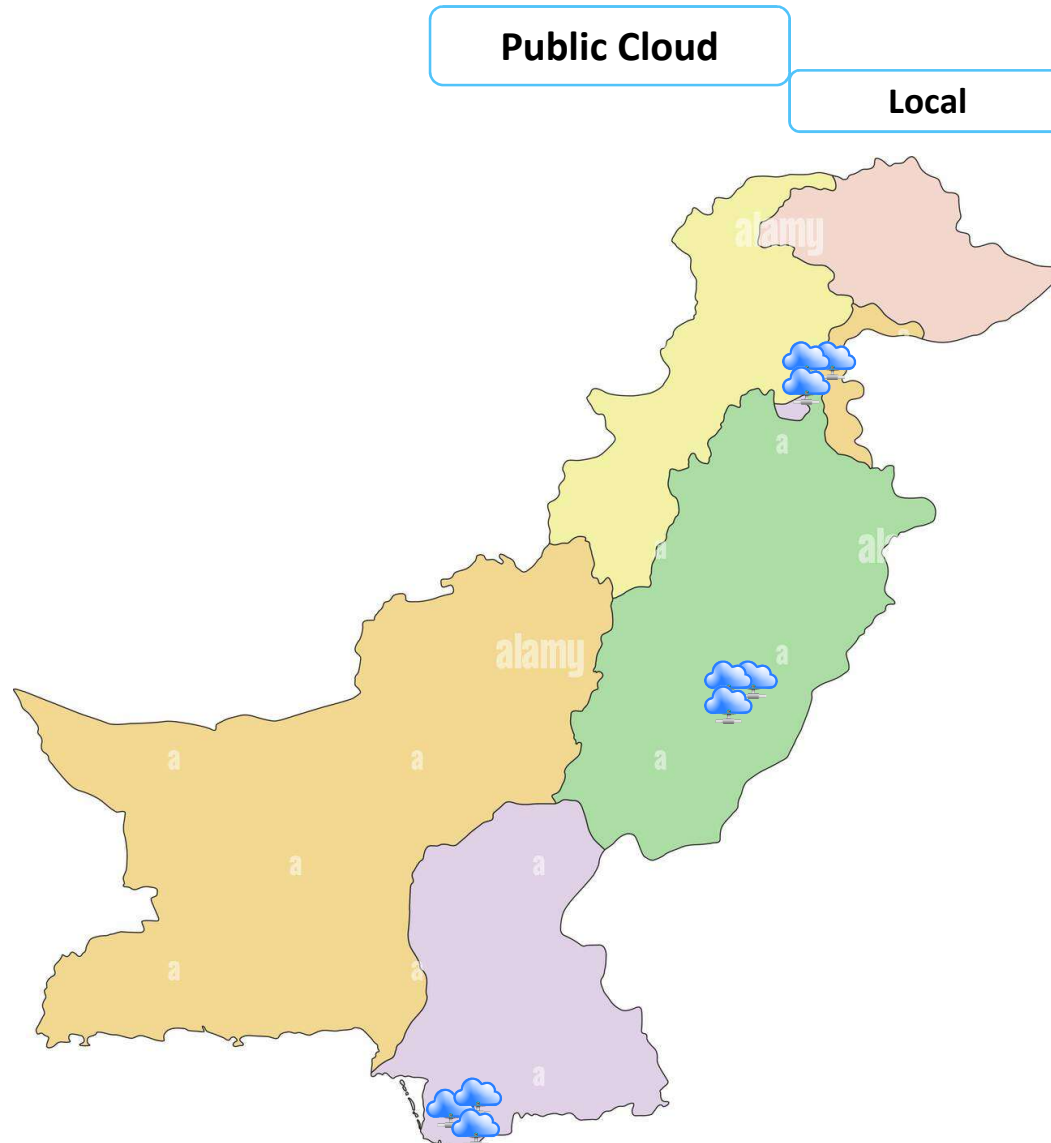
Public Cloud

International





# Deployment Models

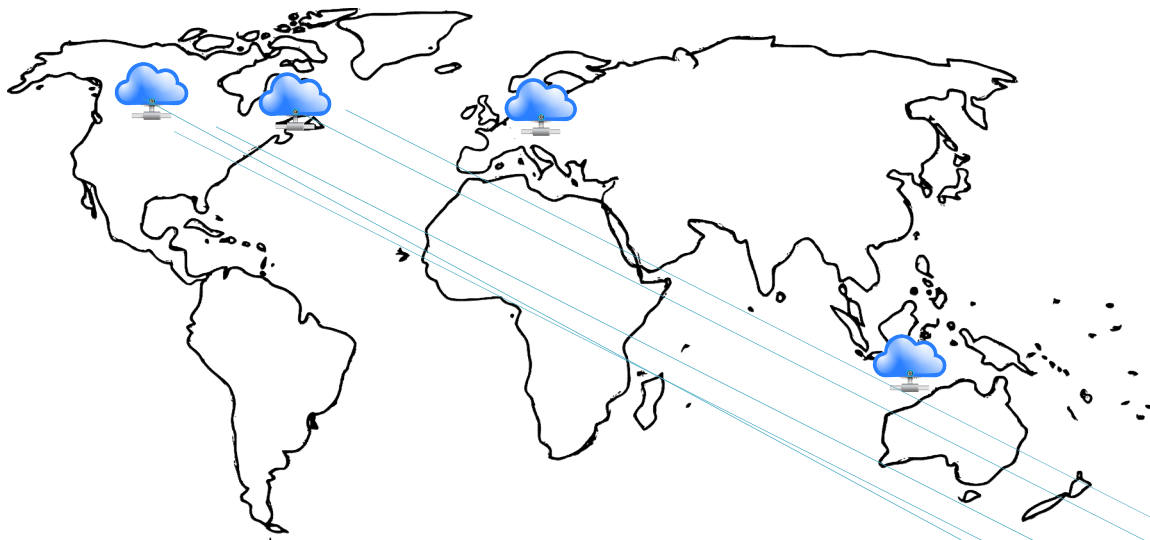




# Deployment Models

## Hybrid Cloud

### Public Cloud

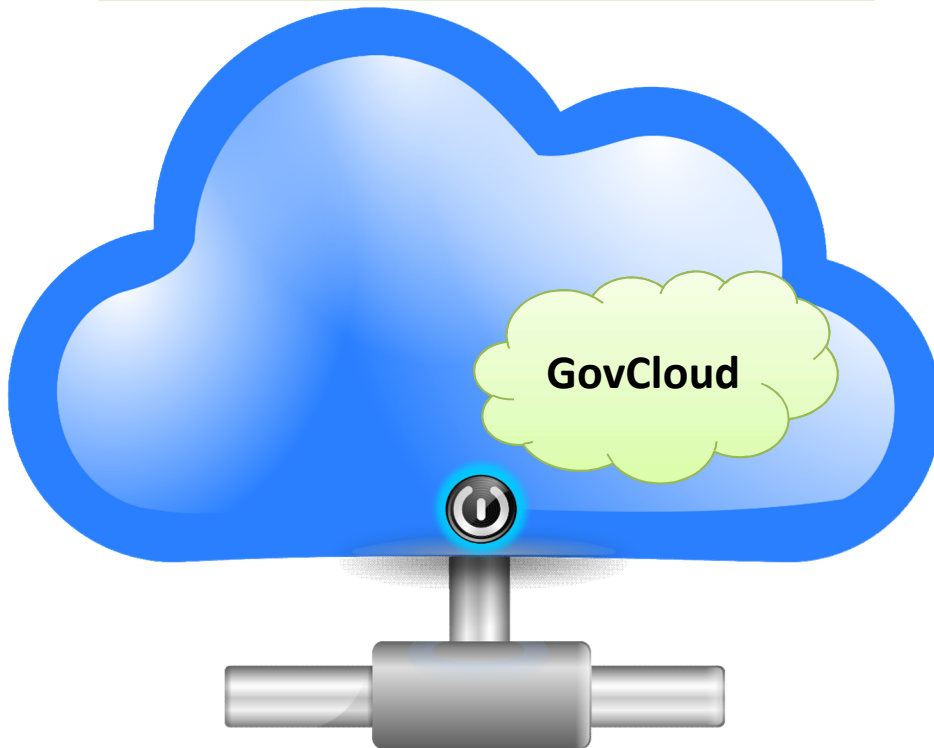


### On-Premesis Datacenter

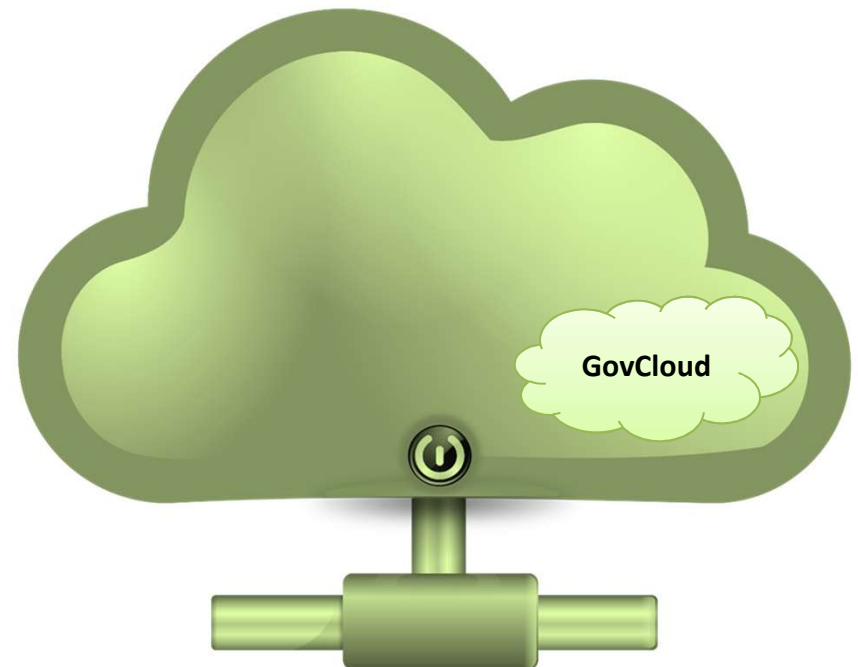


# Deployment Models

GovCloud within Public Cloud – Off Shore

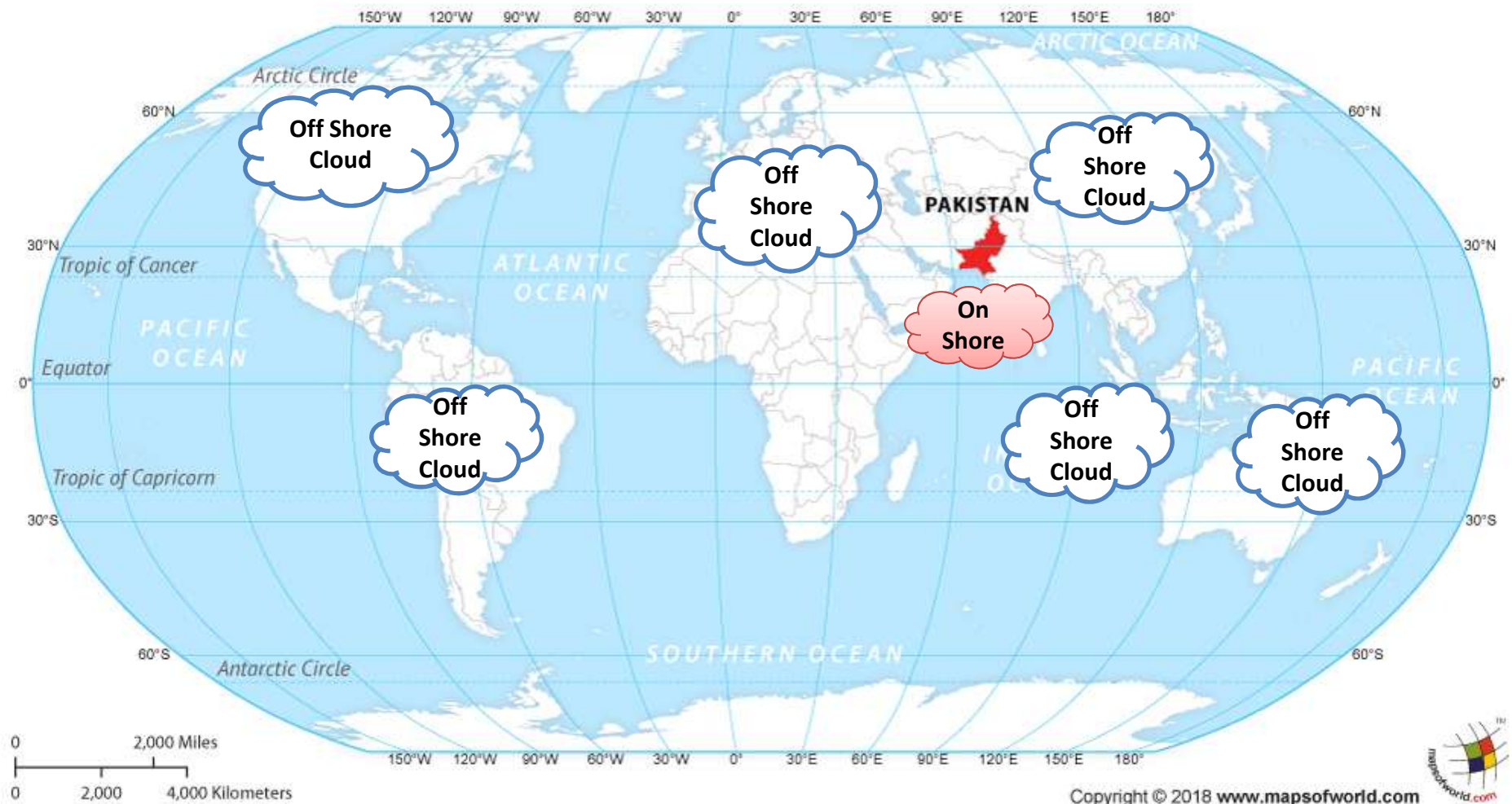


GovCloud within Public Cloud – On Shore





# International vs Local Cloud





# International vs Local Cloud

**Public data, Government working data and Government services**

## **Sovereignty**

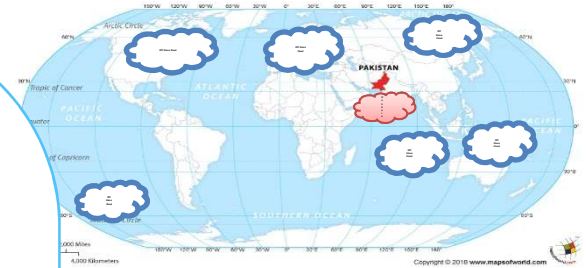
Foreign law enforcement, Legal jurisdiction of Pakistan, Access continuity & Latency, Integration with other government services

## **Compliance**

Public Auditability, any Pakistani Regulations

## **Ecosystem development**

Supporting local datacenters and cloud platforms, Job creation





## Cloud Deployment Models – Summarized

Own Datacenter  
On Premises

Public Cloud

International – Off Shore  
AWS Azure Google

International – On Shore  
AWS Azure Google  
Datacenters in Pakistan  
(None)

Local – On Shore  
Rapid Compute, Garaj,  
PTCL, ZONG, Khazana

GovCloud

Hybrid Cloud

Private Cloud

Community Cloud



# Sindh Cloud First Policy



## **SINDH CLOUD FIRST POLICY**



Formulated by IS&T Department, GoS

22<sup>nd</sup> JULY, 2022

**Planning to build or upgrade data center ?**

**First... must consider cloud service**

**Clarity in need, workload and system requirement sizing, TCO & ROI, Accessibility, Data Privacy, Audit provision, Pakistani Industry Support**

**Provides convenient, reliable, sustainable, optimal utilization approach of procurement, deployment and operations for hosting digital solutions**

**Only CSP accredited by the National Cloud Office ? No Accreditation !  
Procure cloud services as per the template cloud RFP by PPRA and SPPRA**

**If after all the consideration and justification still need to build or upgrade datacenter with private cloud then seek approval from the Provincial Cloud Acquisition Office**

**Cloud payment based on Pay-As-You-Go. Pay Advance, As per Usage, Make Adjustment/Credits. Pakistan based CSPs can be negotiated with for pricing model of minimal fixed and variable resources**



# Total Cost of Ownership (TCO) Comparison

Assume we have to host

## SindhGov Employee Profile and Transfer Posting System

With assumed scale of 50,000 employees, with high concurrent usage during transfer seasons. Analysis period of 5 Years

| Metric                     | In-House Data Center (PKR)                 | Local Cloud Service                  | Financial Advantage                         |
|----------------------------|--------------------------------------------|--------------------------------------|---------------------------------------------|
| Total 5-Year Cost          | PKR 148.6 Million                          | PKR 36.3 Million                     | Cloud saves PKR 112.3 Million (76%)         |
| Year 1 Cost                | PKR 56.7 Million                           | PKR 6.9 Million                      | Cloud saves PKR 49.8 Million in Year 1      |
| Upfront Investment (CapEx) | PKR 41.5 Million                           | ~PKR 0                               | Cloud eliminates massive upfront cost       |
| Infrastructure Resilience  | Single data center (High risk of downtime) | Built-in redundancy, DR and Backups. | Cloud provides superior business continuity |

Component and unit rates wise details in the sheet



# Strategic Direction

| Hosting Model                   | Strategic Recommendation                                                                                                                                                                                                                                    |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Owned Data Center               | Rationalize and Retire. Use only for systems where a compelling, justified requirement exists (extreme sovereignty, legacy technical debt).<br><b><i>(Note: Till Government build professional class Datacenter with Public Cloud level facilities)</i></b> |
| On-Shore Cloud Service Provider | The Default Choice. The preferred platform for all new digital public service initiatives and legacy migration projects. <i>(May Choose Off-Shore CSP in certain cases)</i>                                                                                 |
| Hybrid Model                    | The Pragmatic Reality. Plan for a managed, secure integration between on-shore CSPs and remaining government data centers as a transitional architecture.                                                                                                   |



# Group Activity

## Digital Service Hosting Committee

Team of two in 15 minutes

You will design a new digital service and decide how to host it

You have received

Proposal Form

Component Cost Sheet



# Group Activity

## Digital Service Hosting Committee

Once done, you need to share

- Brief of the digital service
- 10-year cost comparison
- Hosting decision with financial & non-financial reasons



**Should acquire IT Infrastructure like a  
Utility using Cloud hosting**

**scalable, secure, and consumption  
based**

**So Departments can focus on  
delivering public services through  
digital platforms (Web & Mobile applications)**



# Thank You

## Digital Literacy

1. Search information
2. Use Messaging - SMS  
WhatsApp
3. Browse and Watch  
Videos – Youtube
4. Social Media – Facebook,  
TikTok, Snapchat,  
Instagram, X(twitter)
5. Use OTP, PIN Code
6. Send Receive money
7. Use Maps app
8. Use of Generative AI  
(ChatGPT, Deepseek)



AI created image with <https://picsart.com>

## Digital Literacy is the ability to use mobile phones & computers

**Even the Non-Literate people can be the Digital Literate**