



Evolution of Cloud Computing – Revision Notes

☑ Evolution of Cloud Computing

🌐 Reasons for Cloud Computing Evolution

- **Main Reason:** Public clouds **reduce IT costs** significantly.
- Provides **illusion of infinite capacity, rapid scaling**, and **pay-as-you-go model**.
- In contrast, private data centers require provisioning for **peak load**, causing **low average utilization (5-20%)**.

☁ Public Cloud – End User Benefits

- **High resource utilization**
- **Scalability** without hardware changes
- **No hardware procurement, power, or IT maintenance needed**
- **High SLA availability (~99%)**, with compensation for failures
- Ideal for **prototyping and testing**
- **Standardization efforts:** Cloud Interoperability Forum, Open Cloud Consortium
→ e.g., **Amazon EC2 and Eucalyptus** share API

🏠 Private Cloud – Benefits

- **Cheaper** to use one **12-core, 12 GB RAM server** than 12 separate 1-core servers.
- **Data confidentiality preserved**
- **Virtual machines (VMs):**
 - Cheaper and faster to provision than physical machines

📊 Economics of PaaS vs IaaS

- For **unpredictable web traffic:**
 - **IaaS** needs minimum servers always on (costly)
 - **PaaS** incurs **zero cost** when idle, and **scales automatically** with demand

🔗 PaaS (Platform as a Service) – Benefits

- No need for **manual scaling or load balancing**
- Provides **Web-based IDE** for app development/deployment
- Easier **code migration** from dev to production
- No need to **purchase IDE licenses**

🗣 SaaS (Software as a Service) – Benefits

- **Users subscribe** instead of buying software → e.g., **Google Docs** instead of MS Word
- Enterprises use **SaaS CRM apps** instead of installing CRM tools and databases
- Reduces **licensing and infrastructure costs**

🏢 Purpose of Cloud Computing in Organizations

- Platform for **multi-organization business processes**
- **Backup and archive data**
- Run **CRM/ERP/Supply chain apps**
- Provide **productivity tools**
- **Develop & test** software
- Store **large files (e.g., video, audio)**
- Analyze **customer/ops data**
- Run **e-business/e-government websites**

📡 Top Applications Driving Cloud Adoption

- Mail & Messaging
- Archiving
- Backup
- Storage
- Security
- Virtual Servers
- CRM
- Cross-enterprise collaboration
- Hosted PBX
- **Video Conferencing**