



Cloud Computing

5-4-3 Principles of Cloud computing

برنگ احمدی
امیرکبیر
میر

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5-4-3 Principles of Cloud computing

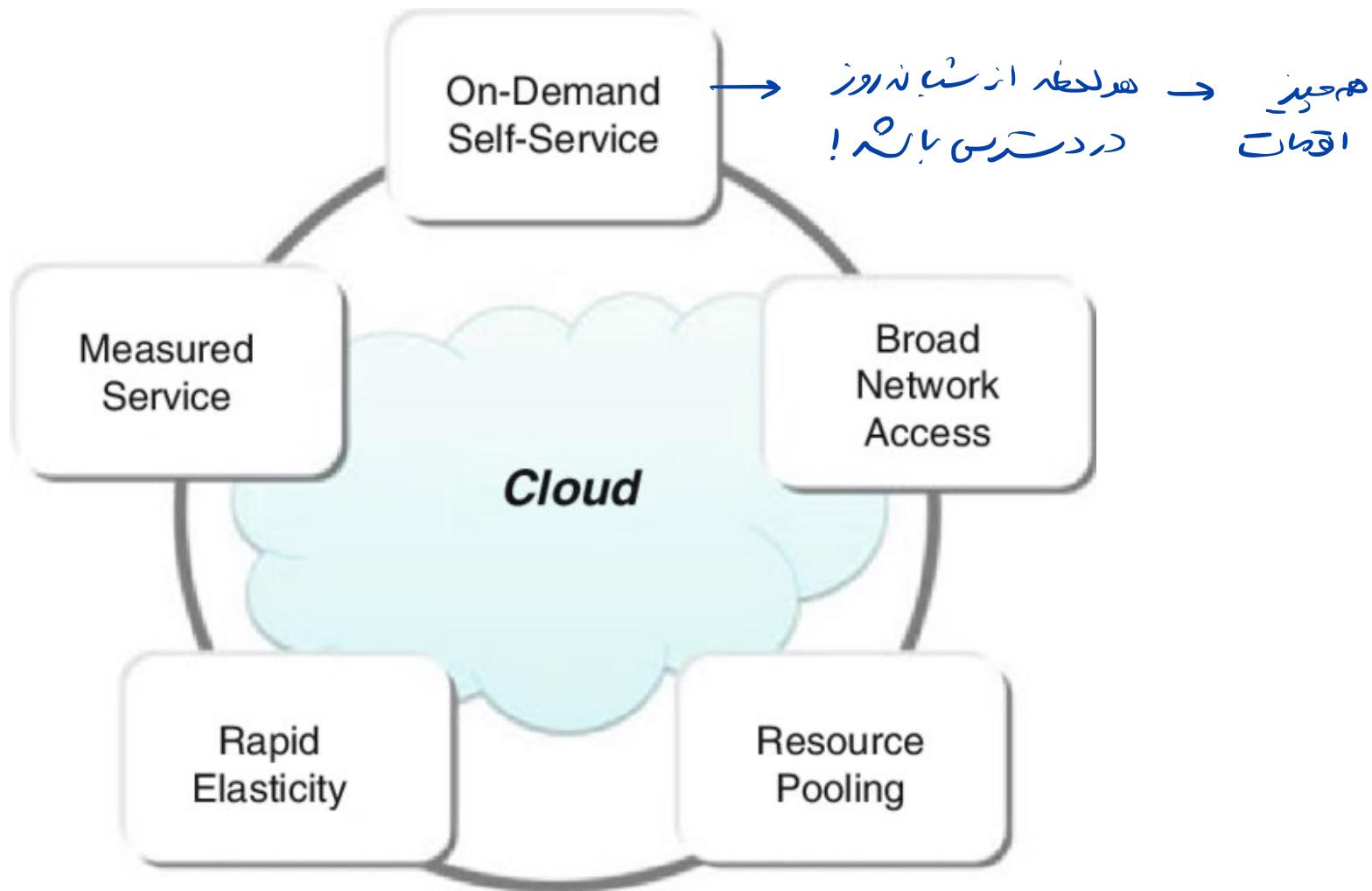
➤ The 5-4-3 principles put forth by NIST describe:

- The five essential characteristic features
- The four deployment models
- The three important and basic service offering models

<https://medium.com/@angelinmaryjohn/cloud-computing-what-exactly-is-it-ec218cb71a93>



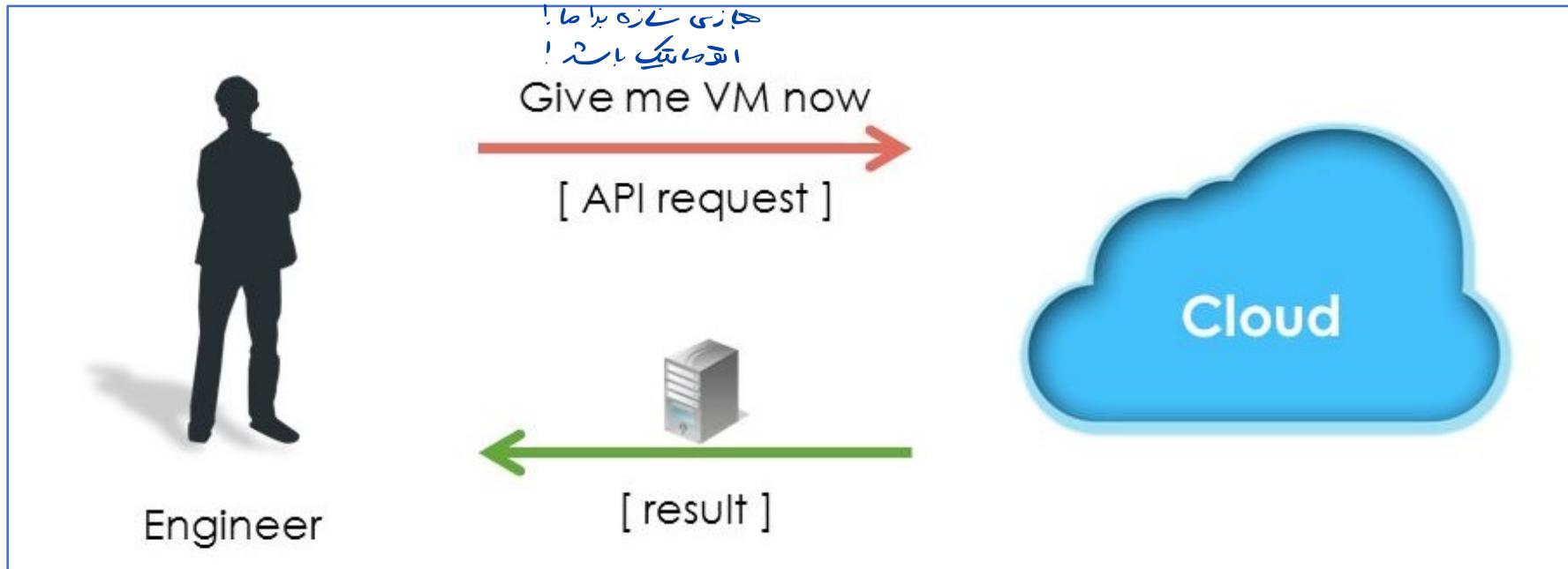
Five Essential Characteristics



On-demand self-service

- Capabilities can be provisioned automatically without requiring human interaction with service providers.

پیش از این ممکن است باید این مرا درست کرد!



<https://www.hitechmv.com/cloud-computing-the-characteristics-part-2/>

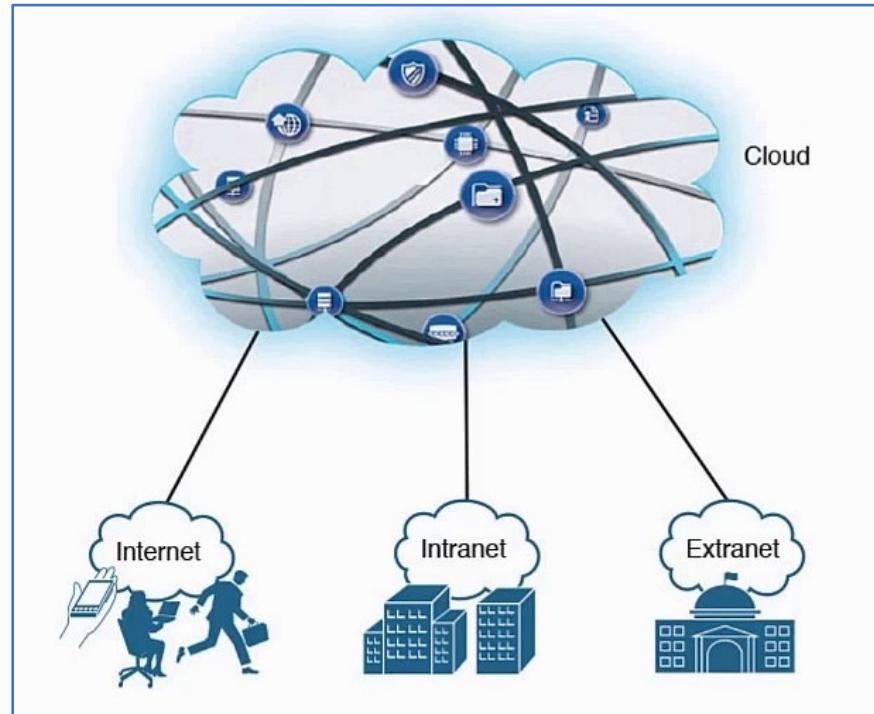
Broad network access

- Capabilities are available over the network and accessed through standard mechanisms.

سرچایی نه درستی نه اینترنت
دارید باید بتویند نه اینچاکم درستی داشته باشید

... < FTP < UDP < TCP

نمود از این دستگاه که استفاده می‌کنند
انفع و اسهام روش هاداره باید
و تعداده اینست (بروگرایی مختلف و ...)



<https://www.hitechmv.com/cloud-computing-the-characteristics-part-2/>

Elastic resource pooling

منابع حاسوبی (Computing, Storage, Networking)

مکانیزم استریچنگ (reconfigurable)

- The provider's computing resources are pooled to serve multiple

consumers using a **multitenant model.**

لے اب حینہ تا مسٹا جو دار ہے ہاں! میں کی آرٹیکن کو ھنڈل کر

کے منبع آپ بُنڈر ویو

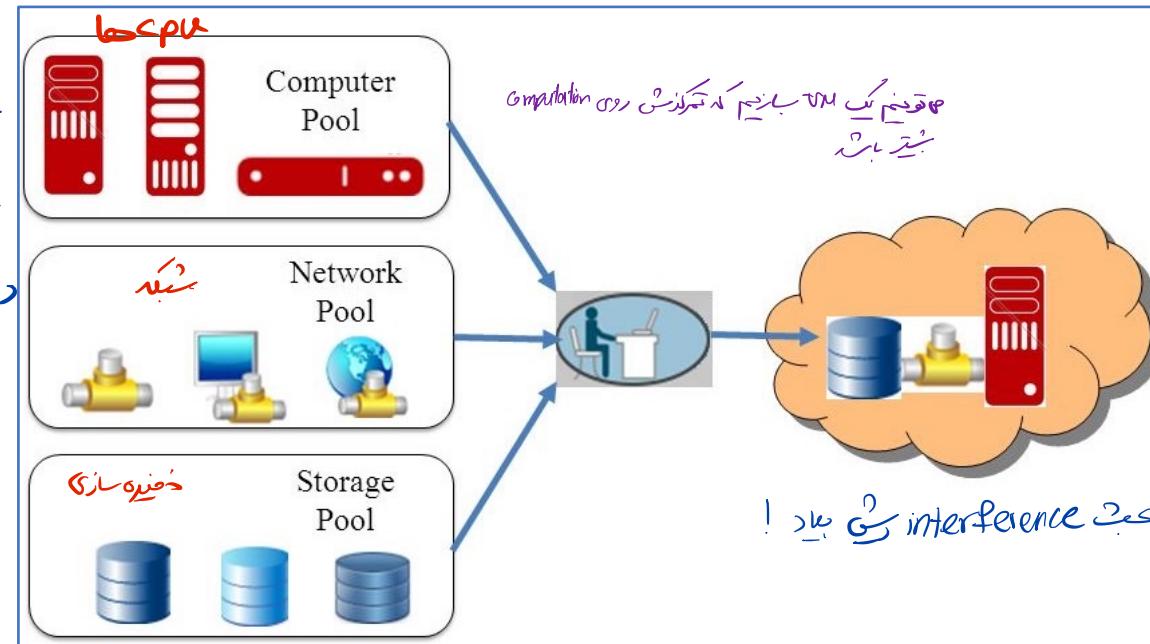
اے عادہ صکن۔ پیغام

اپنے کے نیز خاتم رو رہ

اعتناء کی قدر نہیں،

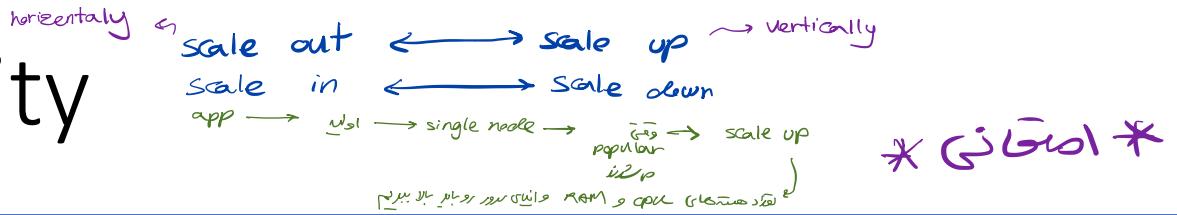
در احتیاط صیغہ نہیں بلکہ!

خوبی کو چھوڑے!



<https://www.hitechmv.com/cloud-computing-the-characteristics-part-2/>

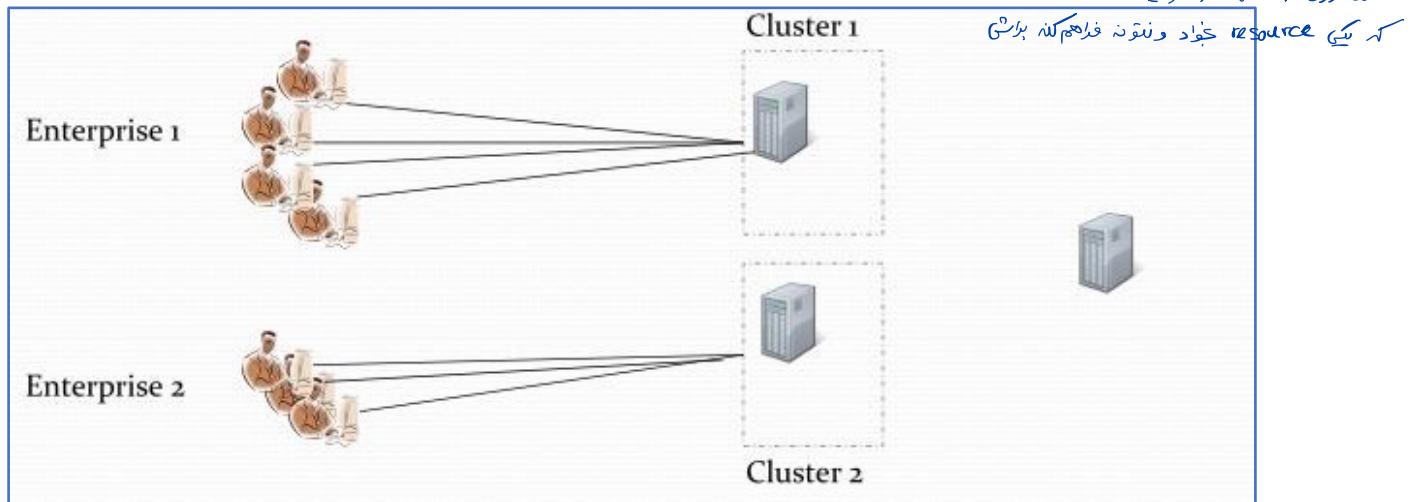
Rapid elasticity



- Capabilities can be rapidly and elastically provisioned to quickly

scale out and rapidly released to quickly ***scale in***.

- To consumers, the capabilities often appear to be unlimited and can be purchased in any quantity at any time.



<https://www.hitechmv.com/cloud-computing-the-characteristics-part-2/>



Measured service

- Cloud systems automatically control and optimize resource use.
- Using metering capability at some level of abstraction appropriate to the type of service.
 - e.g., storage, processing, bandwidth, and active user accounts.

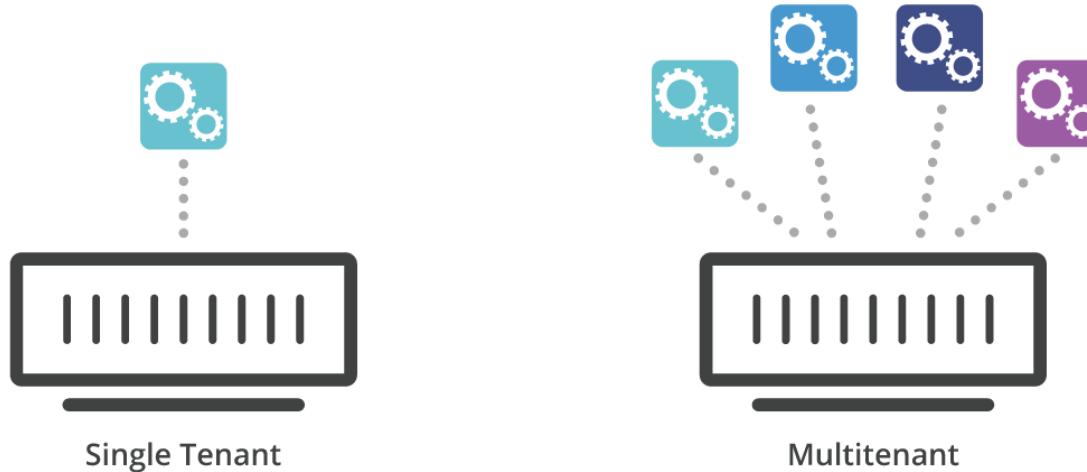


<https://www.hitechmv.com/cloud-computing-the-characteristics-part-2/>

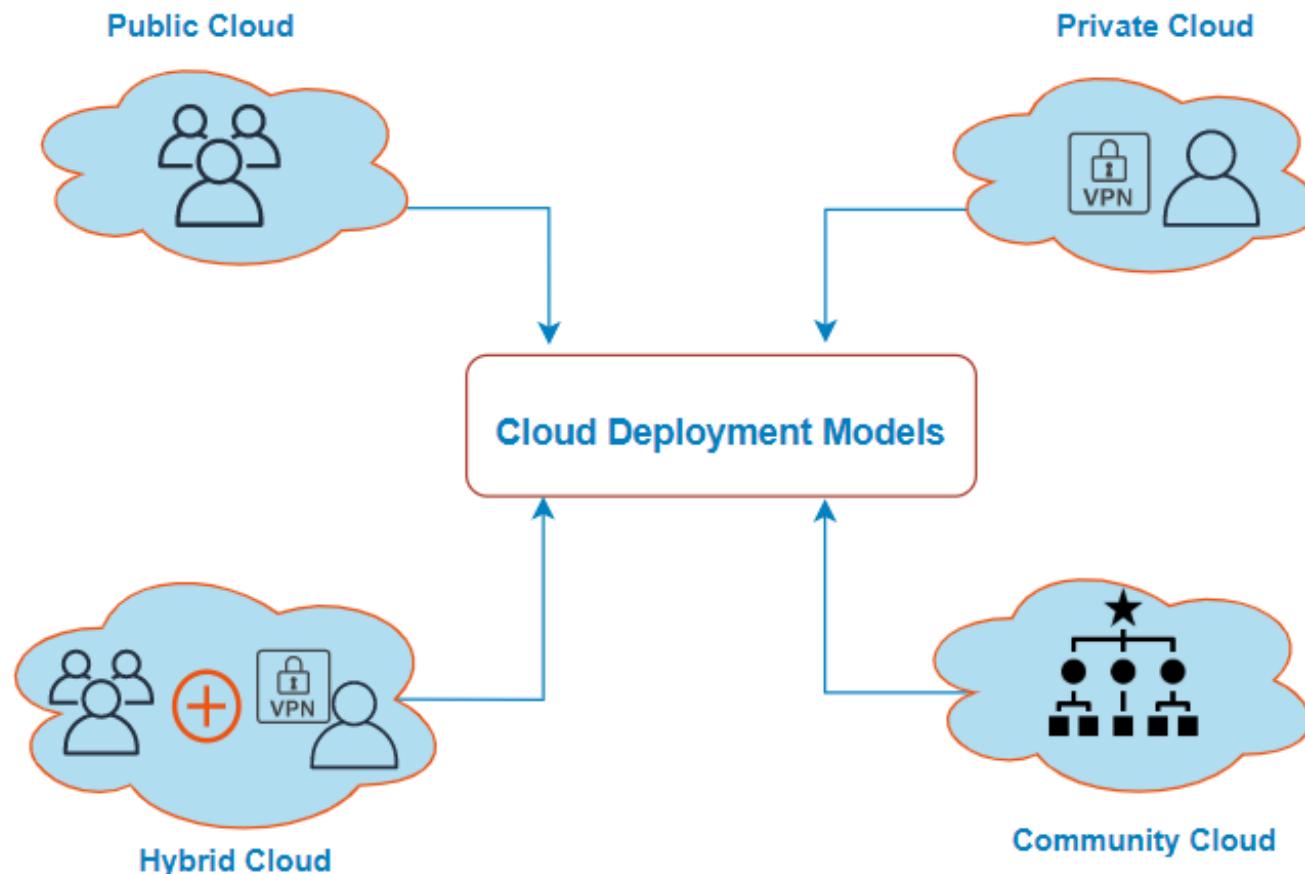
Another Important Characteristic

➤ Multitenancy

- Cloud computing is ***a shared resource*** that draws on ***resource pooling*** as an important feature.
- Use of same resources ***by multiple consumers***, so called ***tenants***.



Four Cloud Deployment Models



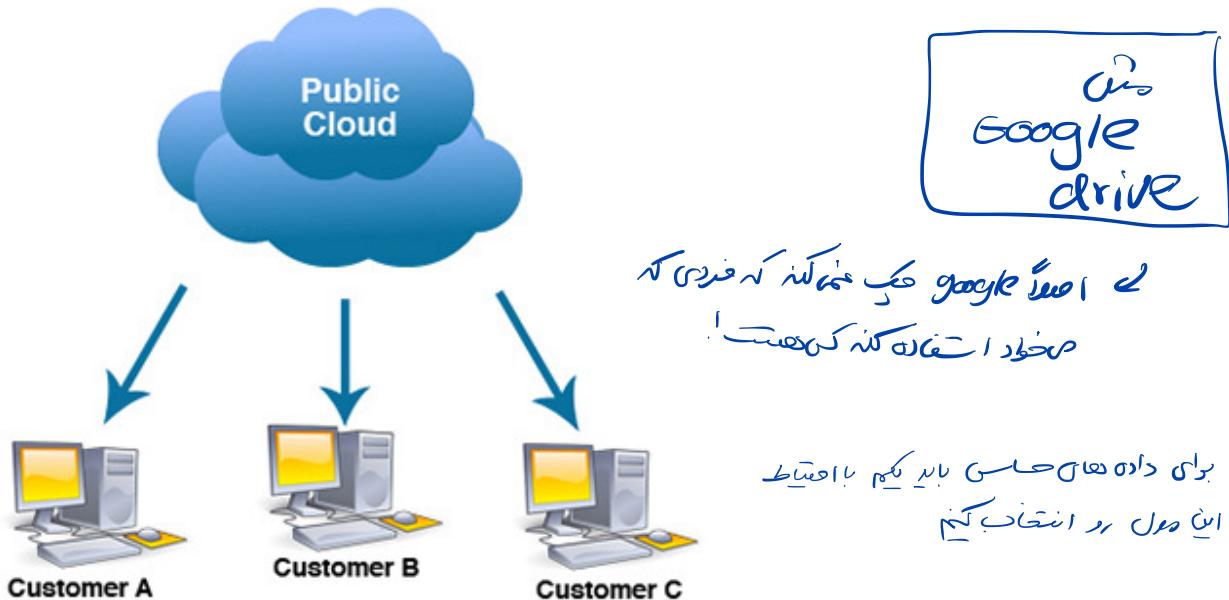
<https://claudiofy.com/types-of-cloud-computing/>

Public cloud

محبوب کنید! 
لینک داده می‌شوند! 
دارند پیغام تراویز از اینجا می‌خواهند 
دانشگاهی ها 
جوان طبقه‌های خاص 
دانشگاهی ها 

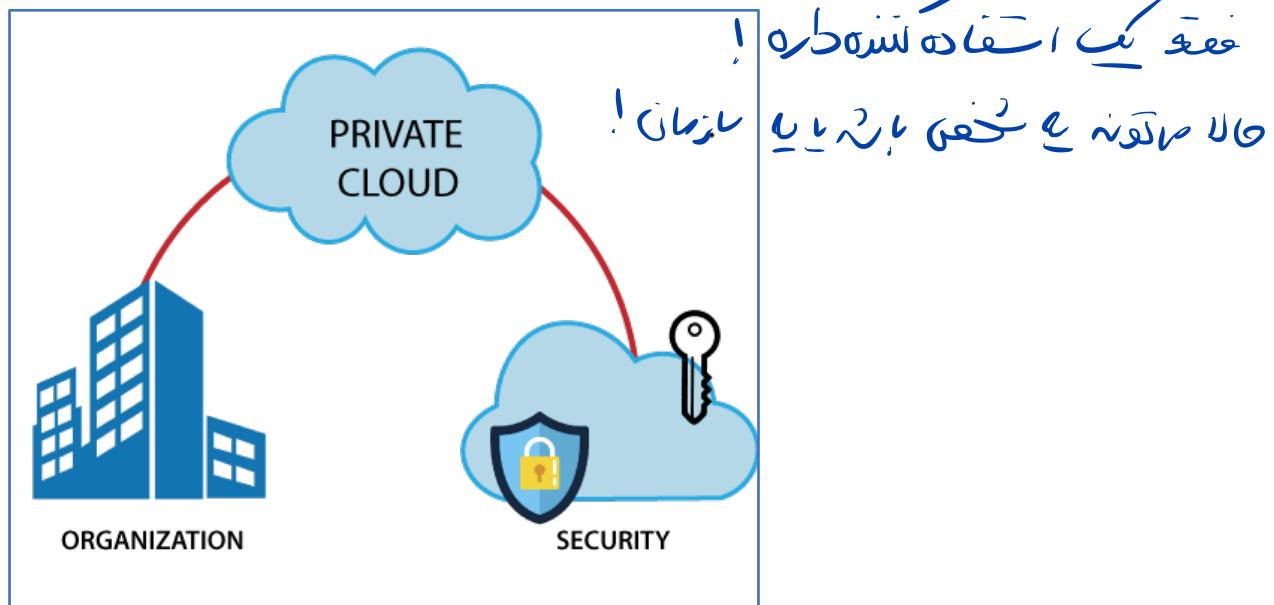
و WFRUN و SQL و Azure و ...
کاربرها اینجا هستند! 
کاربر داده دارد! 
SQL Server و process

- Cloud infrastructure is provisioned for **open use by the general public.**
- It may be owned, managed, and operated by a business, academic, or government organization, or some combination of them.



Private cloud

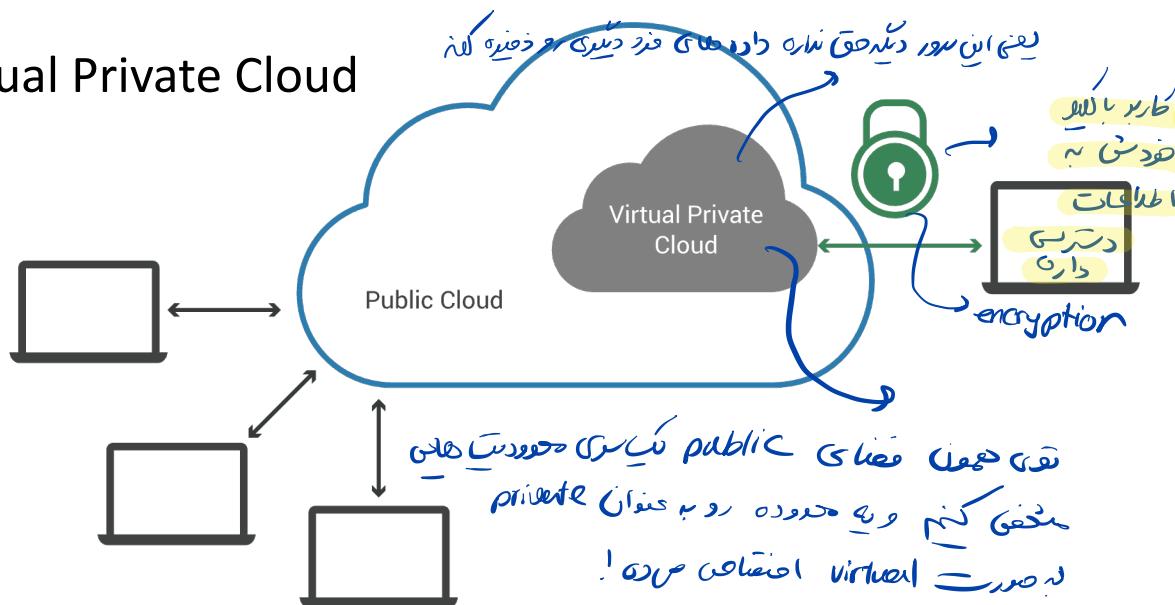
- احصاري
- The cloud infrastructure is provisioned for exclusive use by a single organization comprising multiple consumers. معنی فقط برای
کسی سایر نباشد! فقط چون سازمان صرفاً ازش استفاده کند
 - It may be owned, managed, and operated by the organization, a third party, or some combination of them.



Private cloud (cont.)

➤ Virtual Private cloud

- IS a segment of a public cloud, designated for a user **with additional provisions and features** for meeting that user's specific **security and compliance requirements**.
- Example: Amazon's Virtual Private Cloud

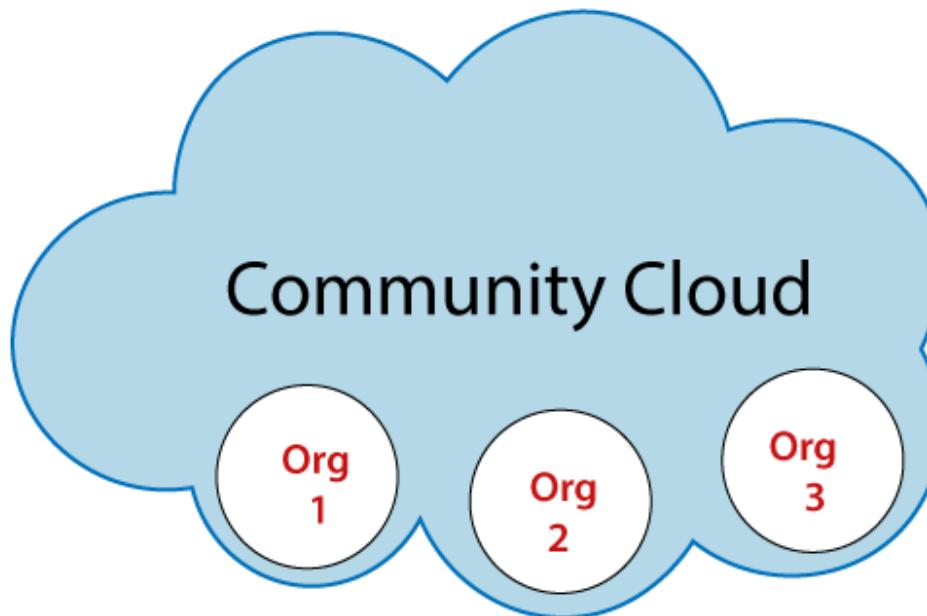


<https://www.cloudflare.com/fr-fr/learning/cloud/what-is-a-virtual-private-cloud/>

Community cloud

→ شبکه از سازمان‌ها
ابر ایجاده می‌کند

- The cloud infrastructure is shared by several organizations and supports a specific community ***that has shared concerns.***

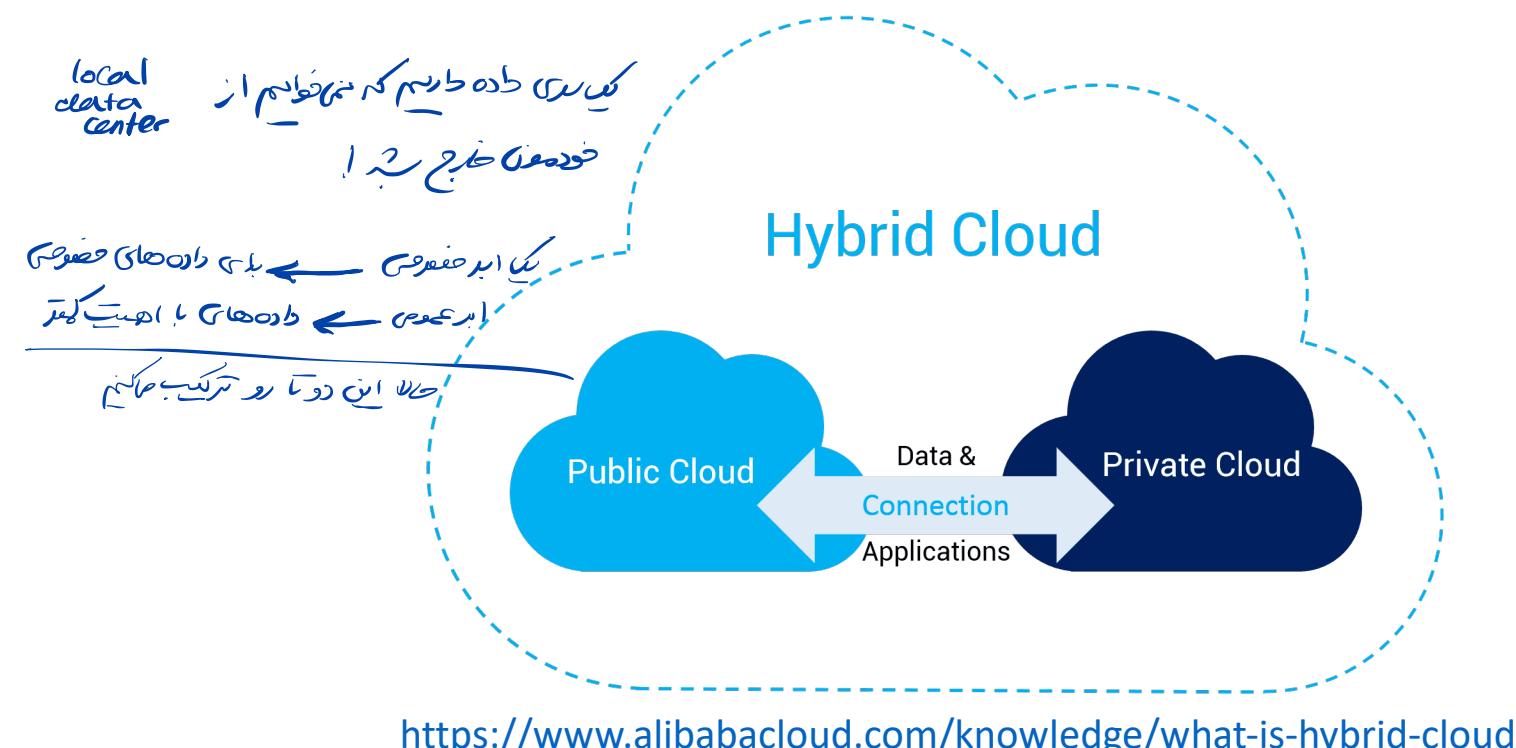


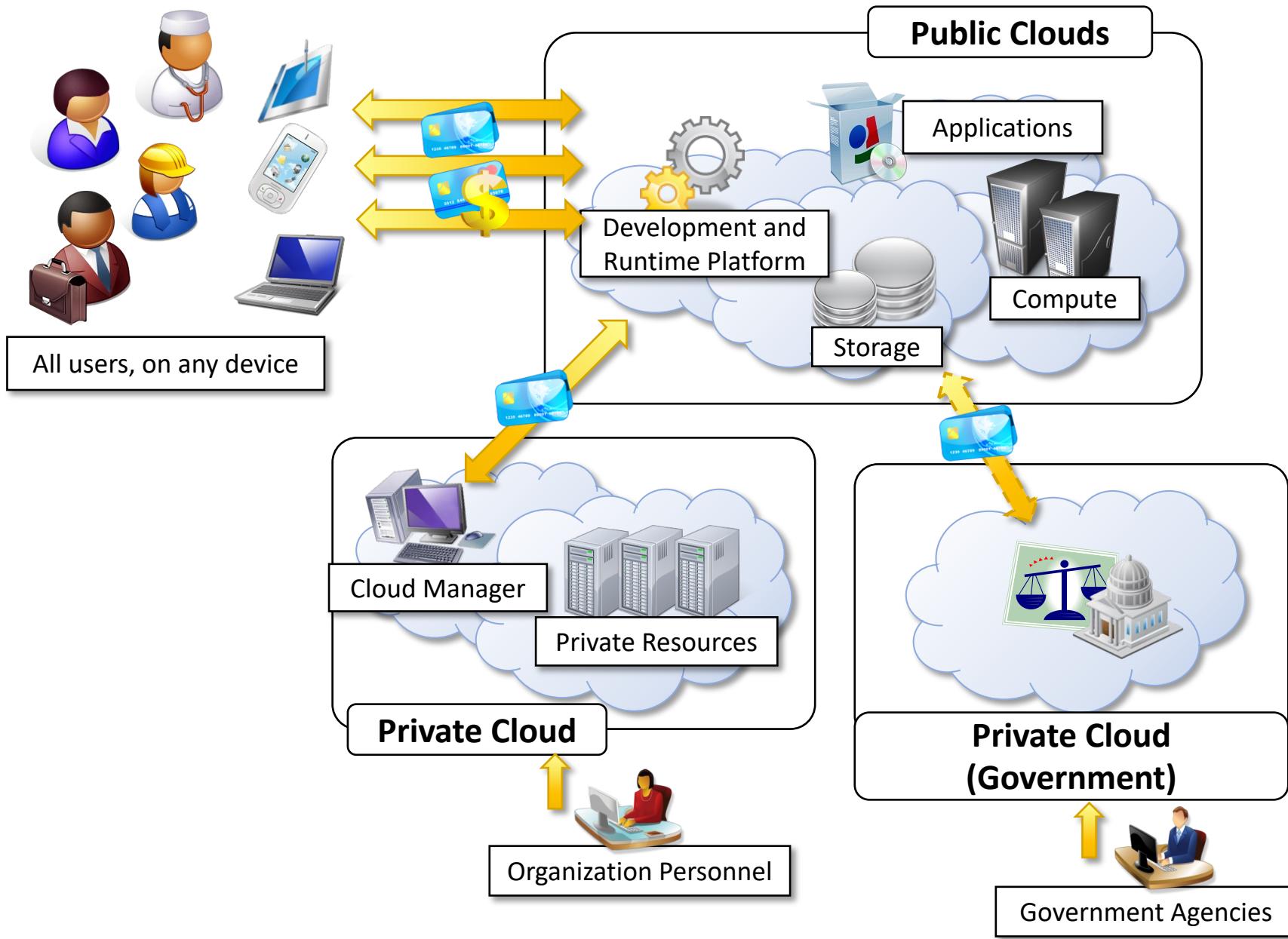
<https://www.javatpoint.com/community-cloud>

Hybrid cloud

→ سیاه برای معاویتین

- The cloud infrastructure is a composition **of two or more distinct cloud infrastructures** (private, community, or public).





Three Service Offering Models

- A fundamental characteristic of cloud computing is the capability to deliver, ***on demand***, a variety of IT services that are ***quite diverse*** from each other.
- Cloud computing services categorize into three major categories:



IaaS
Infrastructure as a Service
host



PaaS
Platform as a Service
build

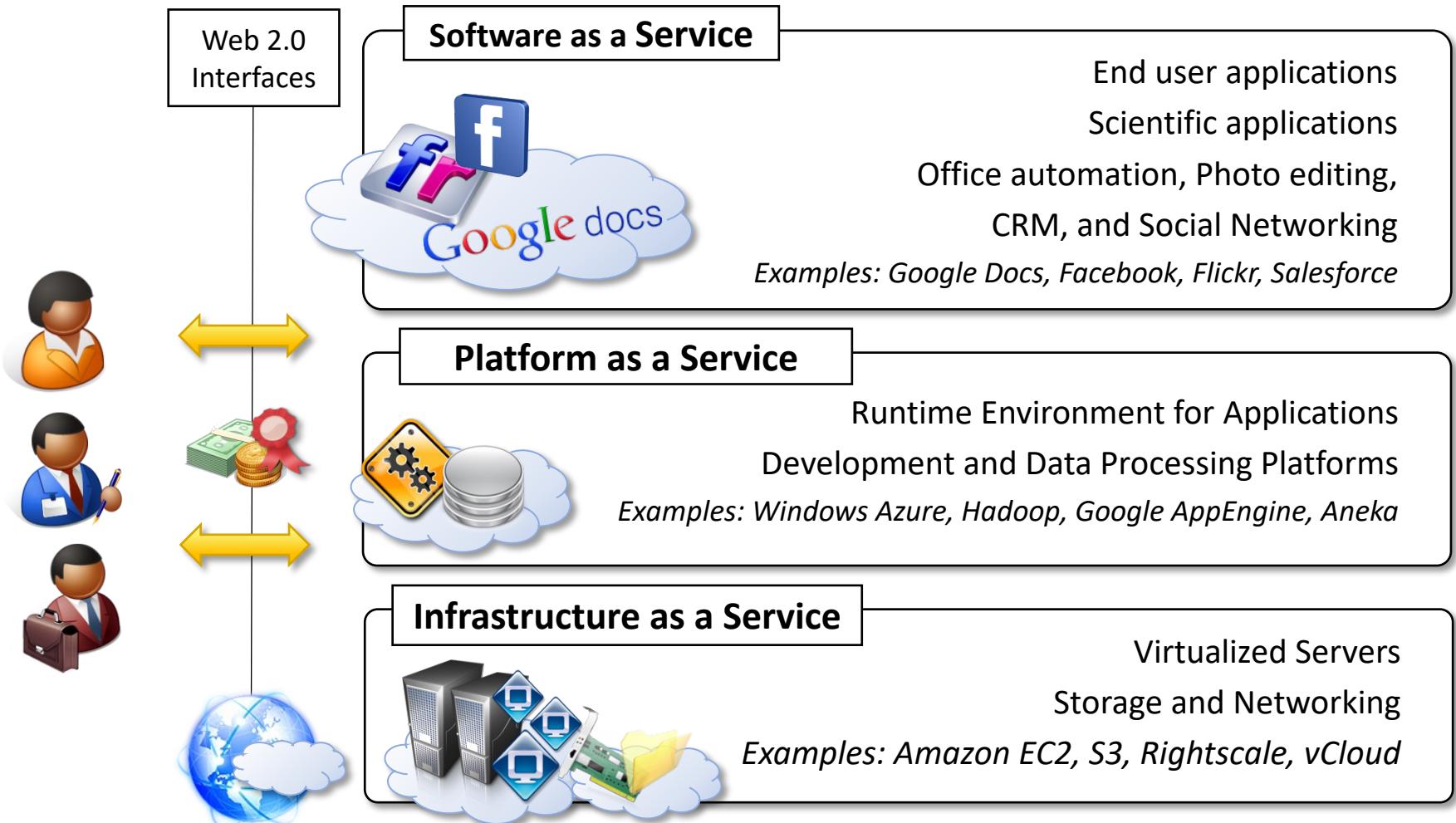


SaaS
Software as a Service
consume

<https://edge.siriuscom.com/cloud/the-top-3-cloud-computing-service-models>



Three Service Offering Models (cont.)



Software as a Service (SaaS) → ما فقط اس تاده کننده است

- An application is hosted by a cloud vendor and delivered as a service to users, primarily via the Internet.



Software as a Service (SaaS)

- It eliminates the need to install and run the application locally.
 - No need for hardware and software maintenance and upgrades.
- Typical applications: Customer Relationship Management (CRM), business intelligence analytics, and online accounting software.

google docs ↗
↑

- Examples: SalesForce, Office 365, Google Apps

Platform as a Service (PaaS)

SaaS
... این سرویس برای کاربر اند-این-کار است

برای توسعه اپلیکیشن
برای نمایش ، بارگذاری کردن اپلیکیشن

- The platform and tools for application development and middleware systems are hosted by a vendor and offered to application developers.



Platform as a Service (PaaS)

- Developers simply code and deploy without directly interacting with the underlying infrastructure .
- Service provider are responsible to provide *scalability and to manage fault tolerance.*
 - Users instead ***focus on the logic of the application*** while leveraging the provider's APIs and libraries.
- Examples: Google App Engine, Microsoft Azure Services.

Infrastructure as a Service (IaaS)

چه کنیت کامپیوٹینگ می خواهد →
چیزیں بخواهد کیا کیا خواهد
کوئی نہیں کیا کیا خواهد
کوئی نہیں کیا کیا خواهد

- Provisioning **processing**, **storage**, **networks** (and etc.) on a pay-per-use basis enabling users to deploy and run arbitrary ↗ دلخواه software, which can *include operating systems and applications.*



Infrastructure as a Service (IaaS)

کامپیوٹینگ سرورز کا ڈیماؤنیشن

rack server

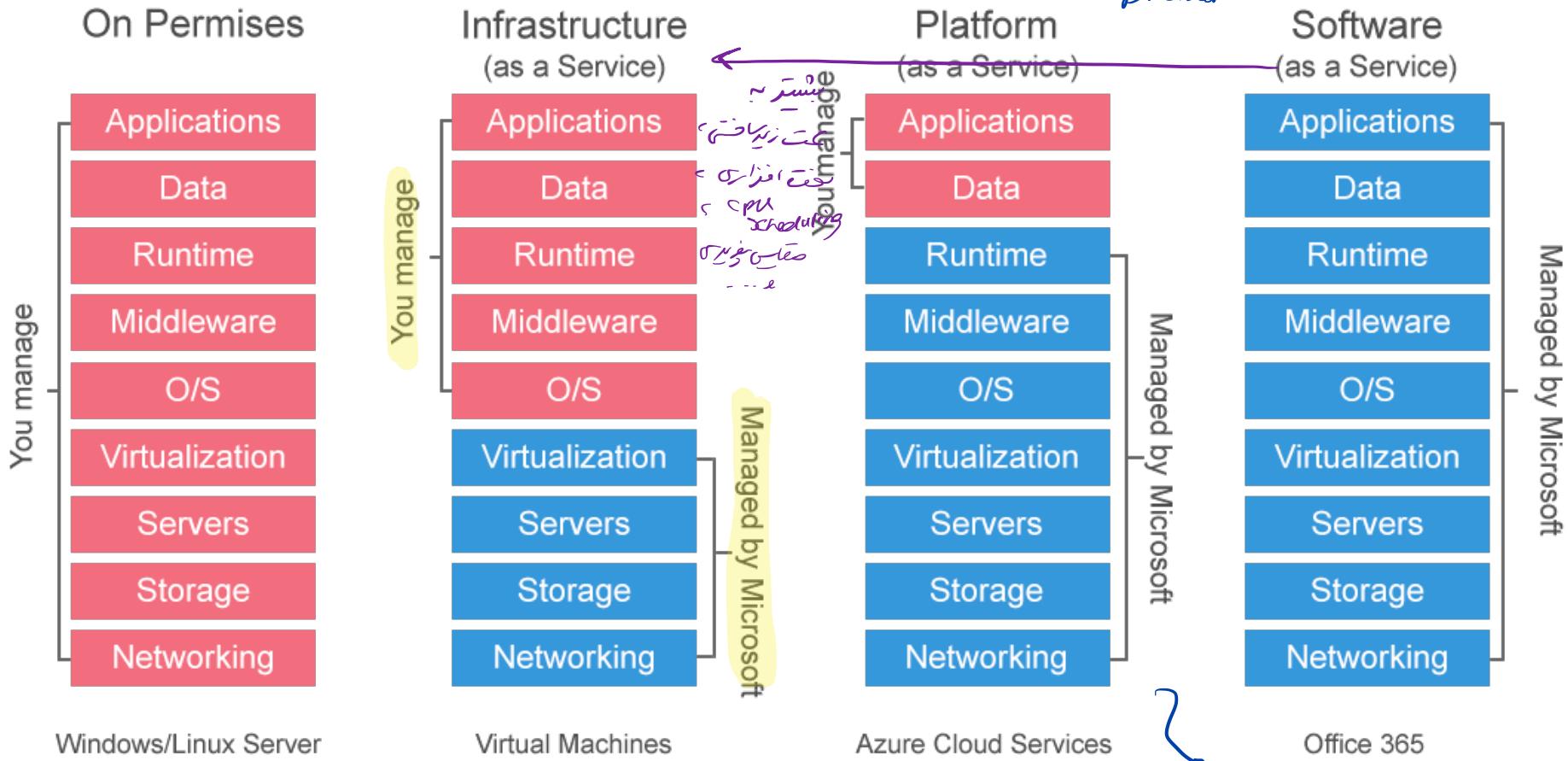
- Virtual hardware is utilized to provide **compute on demand** in the form of **virtual machine instances**.
- **Virtual storage** is delivered in the form of **raw disk space or object store**.
- Example: Amazon Elastic Compute Cloud (EC2), GoGrid, and **FlexiScale**.

VM
ماشین مجازی

The Three Delivery Models of Cloud Computing

هر چیز را که manage نمی‌کنید بازتره و لذت‌بخش‌تر خواهد بود!

ولا صریح در اینجا مذکور نیست بلکه بر اساس مفهوم این کلمه در دیگر مکالماتیکی‌تر و دقیق‌تر مذکور شده است.



لینک اینجا رو اخراج می کنم و هر چیزی می سازم !



Anything as a Service (XaaS)

- Anything as a service, or XaaS, refers to the growing diversity of services available over the Internet via cloud computing.
- There are many services like
 - Desktop as a Service or Data as a Service (DaaS)
 - Communication as a Service (CaaS)
 - Monitoring as a Service (MaaS)
 - Testing as a Service (TaaS)
 - Security as a Service (SecaaS)
 - Analytics as a Service (AaaS)
 - **Function as a Service (FaaS)**
 - **Artificial Intelligence as a Service (AlaaS)**

