Community Clouds

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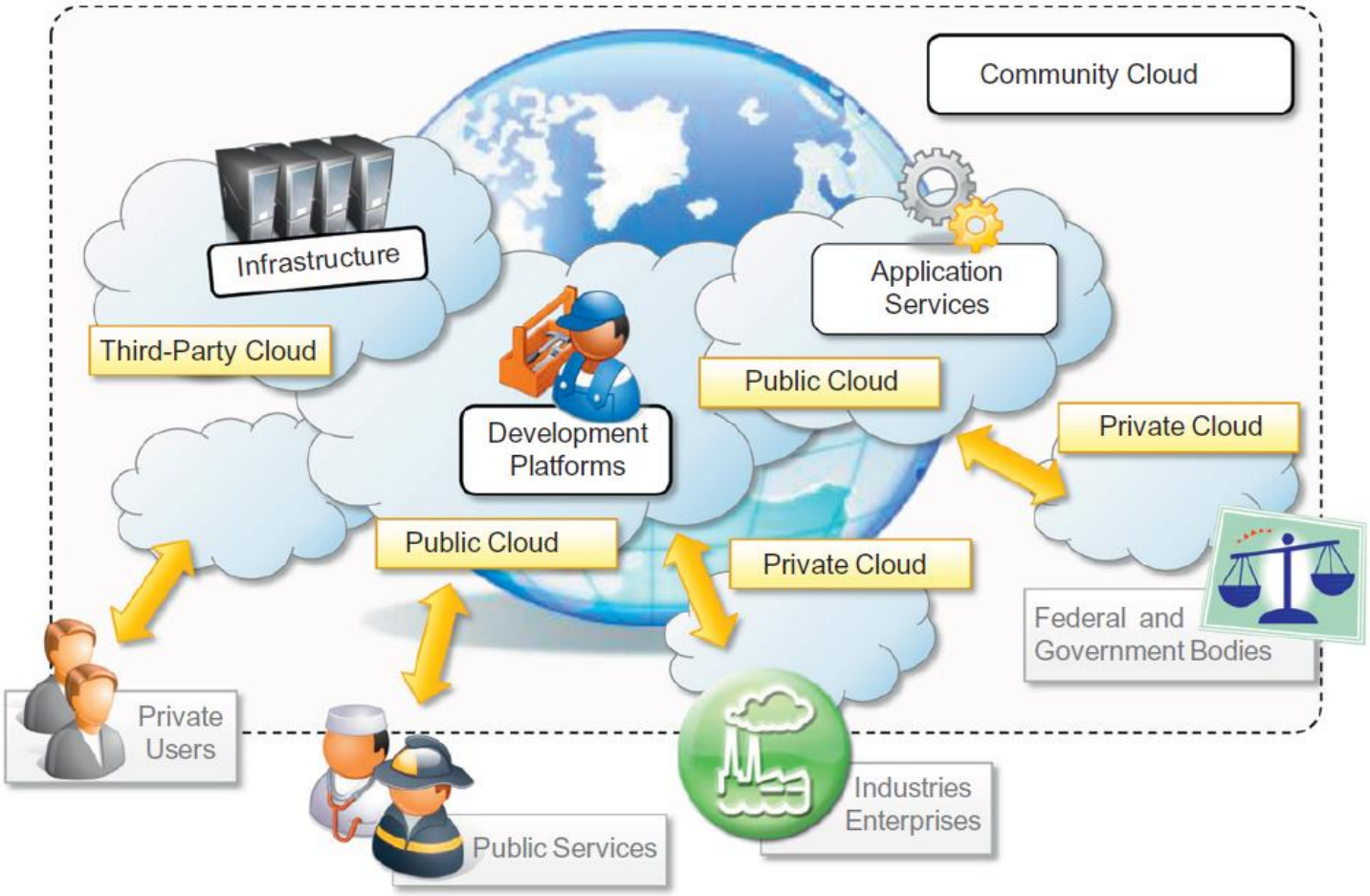
Community Clouds

- Community clouds are distributed systems created by integrating the services of different clouds to address the specific needs of an industry, a community, or a business sector
- The National Institute of Standards and Technologies (NIST) characterizes community clouds as follows:
  - *The infrastructure is shared by several organizations and supports a specific community that has shared concerns (e.g., mission, security requirements, policy, and compliance considerations). It may be managed by the organizations or a third party and may exist on premise or off premise.*
- The users of a specific community cloud fall into a well-identified community, sharing the same concerns or needs; they can be government bodies, industries, or even simple users, but all of them focus on the same issues for their interaction with the cloud

Community Clouds



Community Clouds

- This is a different scenario than public clouds, which serve a multitude of users with different needs
- Community clouds are also different from private clouds, where the services are generally delivered within the institution that owns the cloud
- From an architectural point of view, a community cloud is most likely implemented over multiple administrative domains
- This means that different organizations such as government bodies, private enterprises, research organizations, and even public virtual infrastructure providers contribute with their resources to build the cloud infrastructure

Candidate Sectors for Community Clouds

- *Media industry:* In the media industry, companies are looking for low-cost, agile, and simple solutions to improve the efficiency of content production. Most media productions involve an extended ecosystem of partners
- The creation of digital content is the outcome of a collaborative process that includes movement of large data, massive compute-intensive rendering tasks, and complex workflow executions
- Community clouds can provide a shared environment where services can facilitate business-to-business collaboration and offer the horsepower in terms of aggregate bandwidth, CPU, and storage required to efficiently support media production

Candidate Sectors for Community Clouds

- *Healthcare industry*: In the healthcare industry, there are different scenarios in which community clouds could be of use
- In particular, community clouds can provide a global platform on which to share information and knowledge without revealing sensitive data maintained within the private infrastructure. The naturally hybrid deployment model of community clouds can easily support the storing of patient-related data in a private cloud while using the shared infrastructure for noncritical services and automating processes within hospitals
- *Energy and other core industries*: In these sectors, community clouds can bundle the comprehensive set of solutions that together vertically address management, deployment, and orchestration of services and operations. Since these industries involve different providers, vendors, and organizations, a community cloud can provide the right type of infrastructure to create an open and fair market

Candidate Sectors for Community Clouds

- *Public sector:* Legal and political restrictions in the public sector can limit the adoption of public cloud offerings
- Governmental processes involve several institutions and agencies and are aimed at providing strategic solutions at local, national, and international administrative levels. They involve business-to-administration, citizen-to-administration, and possibly business-to-business processes. Some examples include invoice approval, infrastructure planning, and public hearings
- A community cloud can constitute the optimal venue to provide a distributed environment in which to create a communication platform for performing such operations
- *Scientific research:* Science clouds are an interesting example of community clouds. In this case, the common interest driving different organizations sharing a large distributed infrastructure is scientific computing

Benefits of Community Clouds

- **Openness:** By removing the dependency on cloud vendors, community clouds are open systems in which fair competition between different solutions can happen
- **Community:** Being based on a collective that provides resources and services, the infrastructure turns out to be more scalable because the system can grow simply by expanding its user base
- **Graceful failures:** Since there is no single provider or vendor in control of the infrastructure, there is no single point of failure
- **Convenience and control:** Within a community cloud there is no conflict between convenience and control because the cloud is shared and owned by the community, which makes all the decisions through a collective democratic process

Benefits of Community Clouds

- **Environmental sustainability:** The community cloud is supposed to have a smaller carbon footprint because it harnesses underutilized resources.
- Moreover, these clouds tend to be more organic by growing and shrinking in a symbiotic relationship to support the demand of the community, which in turn sustains it