# Service Oriented Architecture for Cloud Computing

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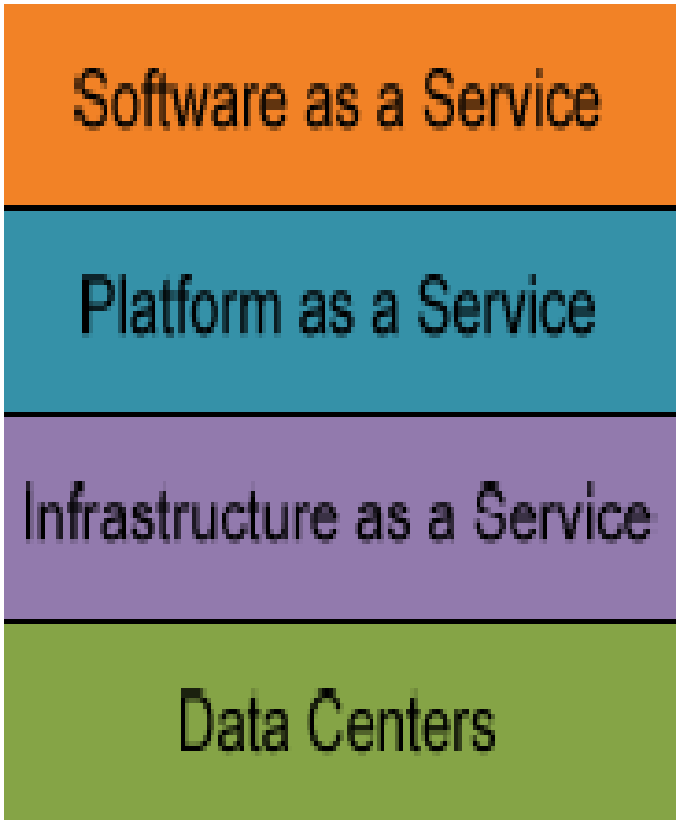
# Background

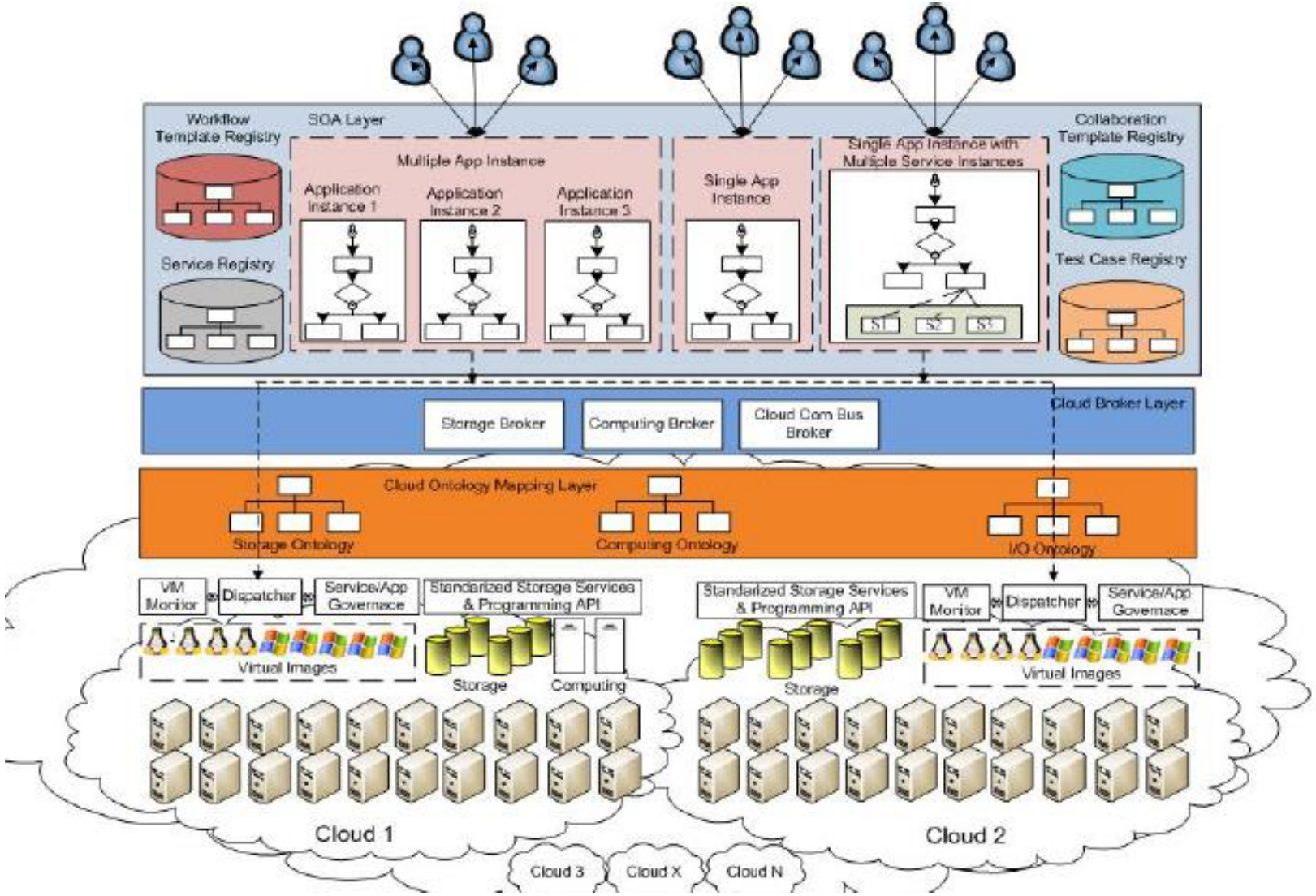
- Cloud implementations isolated from one another
- Users tied with one cloud provider
- Less flexibility
- Need for interoperability between services in different clouds

# Hierarchical View of Cloud

- Consider it as a layered architecture
- Data Centers provide hardware to run the clouds
- IaaS: virtualizes computing power, storage and network of data centers and offers as provisioned services to users
- PaaS: development platform with services to assist design, development, testing using infrastructure
- SaaS: application level services
- Not much distinction in boundaries



# Service Oriented Cloud Computing Architecture(SOCCA)



# Service Oriented Cloud Computing Architecture(SOCCA)

- Cloud Provider Layer: Cloud resources componentized into independent services: Storage Service, Computing Service. Open Standardized interfaces, use services from other platforms, cross platform virtual computer
- Cloud Ontology Mapping Layer: Mask the differences among different cloud providers, migration of application from one cloud to another
- Cloud Broke Layer: agent between cloud provider and SOA layers. Cloud Provider Info, service ranking.
- SOA Layer: Service providers no longer host the published services. Services published in deployable packages, replicated and redeployed to different cloud environments

# Preliminary Implementation

- Used Web Service Connector (WSC)Tool (salesforce.com, app engine) to generate Google App Engine compatible code in java to access web service that wraps Azure SQL.
- Implement javax.jdo files compatible with GAE Datastore Database or Azure SQL database depending on config file
- A service package deployed on one cloud can be configured to collaborate with services from other clouds.
- But service package cannot be deployed on a different cloud and instances of same service cannot live on multiple clouds

# Conclusion

- Architecture supports both SOA and cloud computing
- Coexistence
- Loosely coupled architecture
- Need for open standards for interoperability of services between different clouds

# References

[1]Wei-Tek Tsai, Xin Sun,Balasooriya, J. Service-Oriented Cloud Computing Architecture. Information Technology: New Generations (ITNG), 2010 Seventh International Conference. 684 – 689.

[2] http://www-01.ibm.com/software/solutions/soa/newsletter/nov09/article_soaandcloud.html

[3] http://www.opengroup.org/soa/source-book/socci/