SLA Management in Cloud

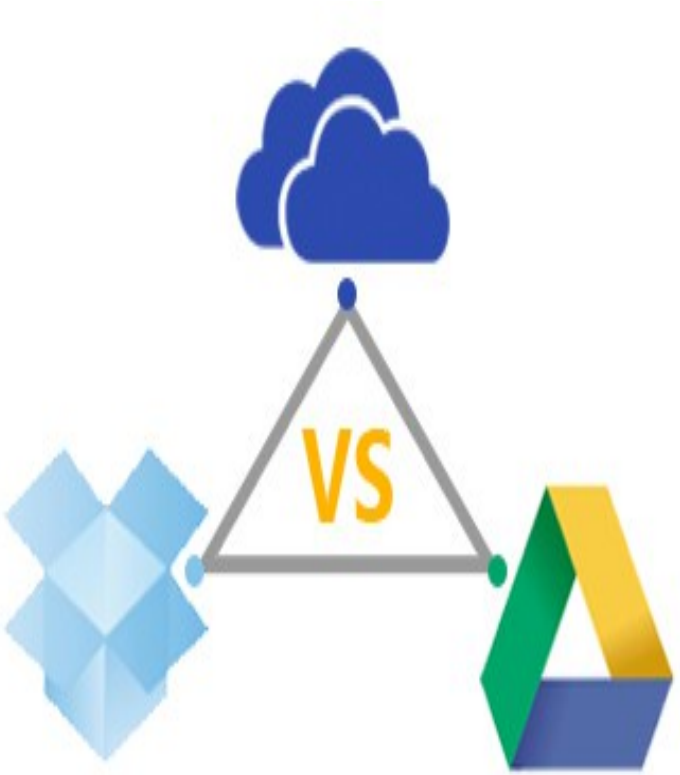
IQBAL AHMED
MD. MOHAIMENUL HOSSAIN

Motivation

- In a competitive business like Cloud Service, it is very difficult for user to choose the right service provider.

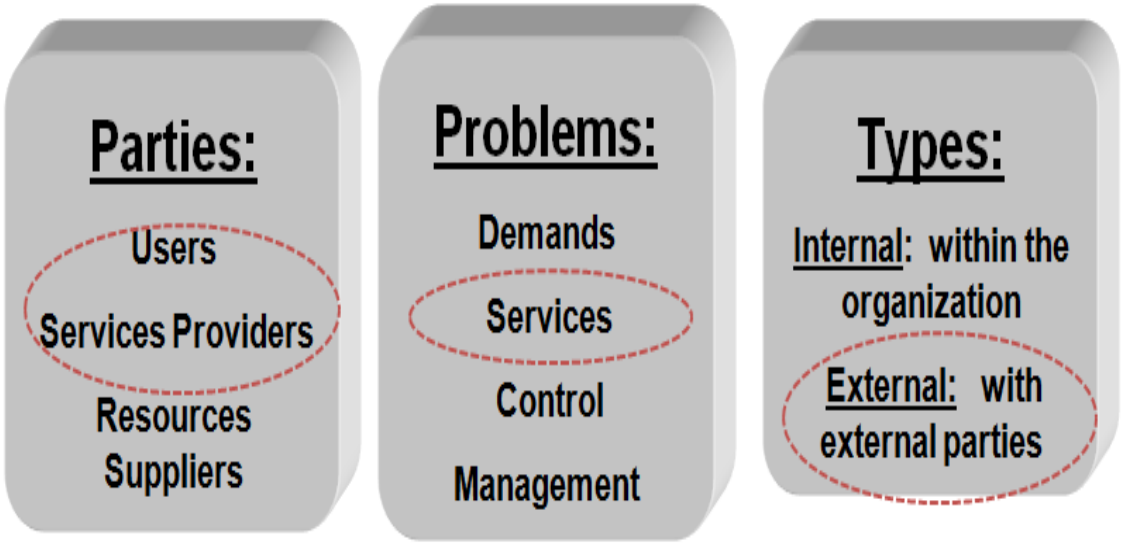
- SLA provides the complete picture of the services to the user

- It could be determining factor for user to choose the appropriate cloud service providers according to their needs.



SLA in a brief

- SLA is an agreement involving "internal / external" "parties" concerned with different "problems"

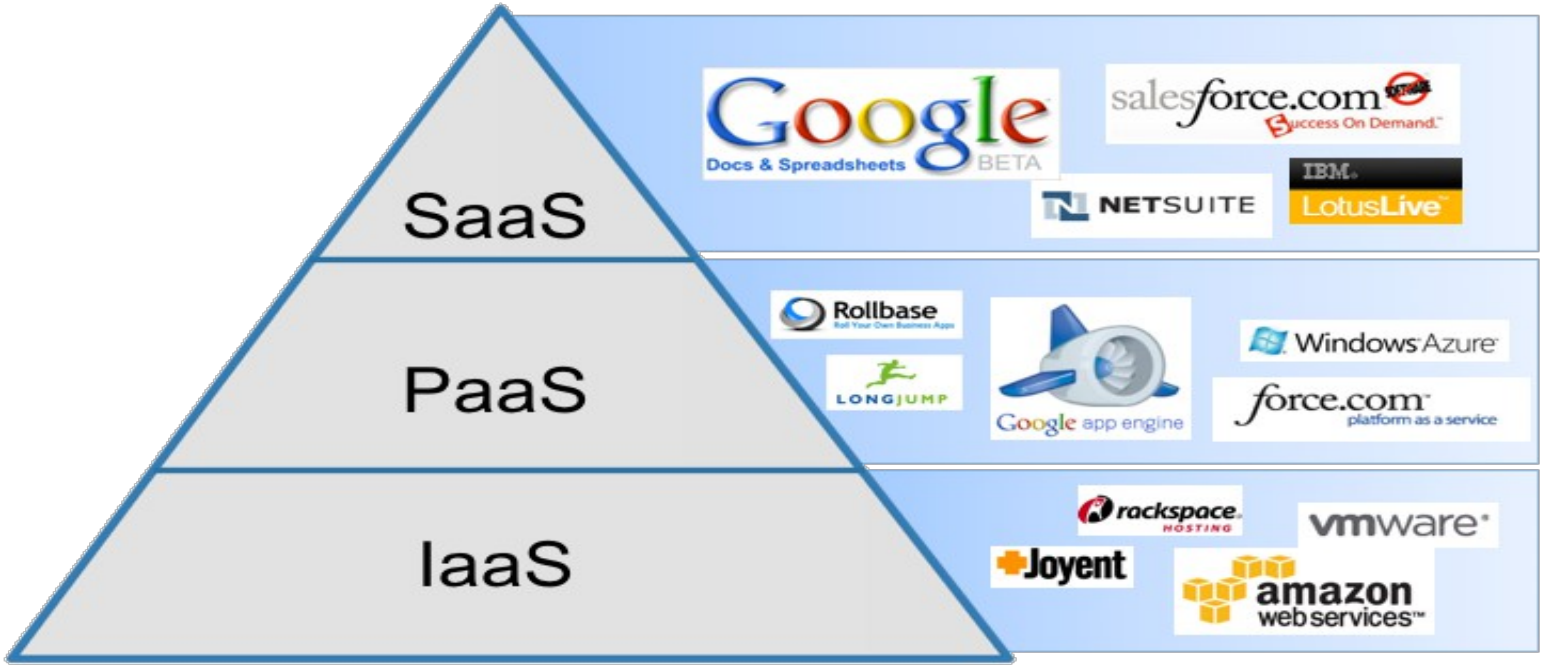


Components

- ✓Purpose
- ✓Restrictions
- ✓Validity period
- ✓Scope
- ✓Parties
- ✓Service-level objectives (SLO)
- ✓Penalties

Discover service provider

- In cloud computing environments it is important to locate resources that can satisfy consumers requirement efficiently and optimally
- Resources are owned and operated by various providers
- SLA metrics are for **IaaS, PaaS** and **SaaS** are defined and agreed between external cloud providers and users.



SLA metrics for IaaS

Parameter	Description	Unit
CPU capacity	CPU speed for VM	(cycles/sec) /Hz
Memory size	Cash memory size for VM	Bits/sec
Boot time	Time for VM to be ready for use	Seconds
Storage	storage size of data	Bits/sec
Scale up	Max of VMs for one user	Decimal Number
Scale down	Min number of VMs for one user	Decimal Number
Scale up time	Time to increase number of VMs	Seconds
Scale down time	Time to decrease number of VMs	Seconds
Availability	Uptime of service in specific time	MTBF/MTBF+MTRS

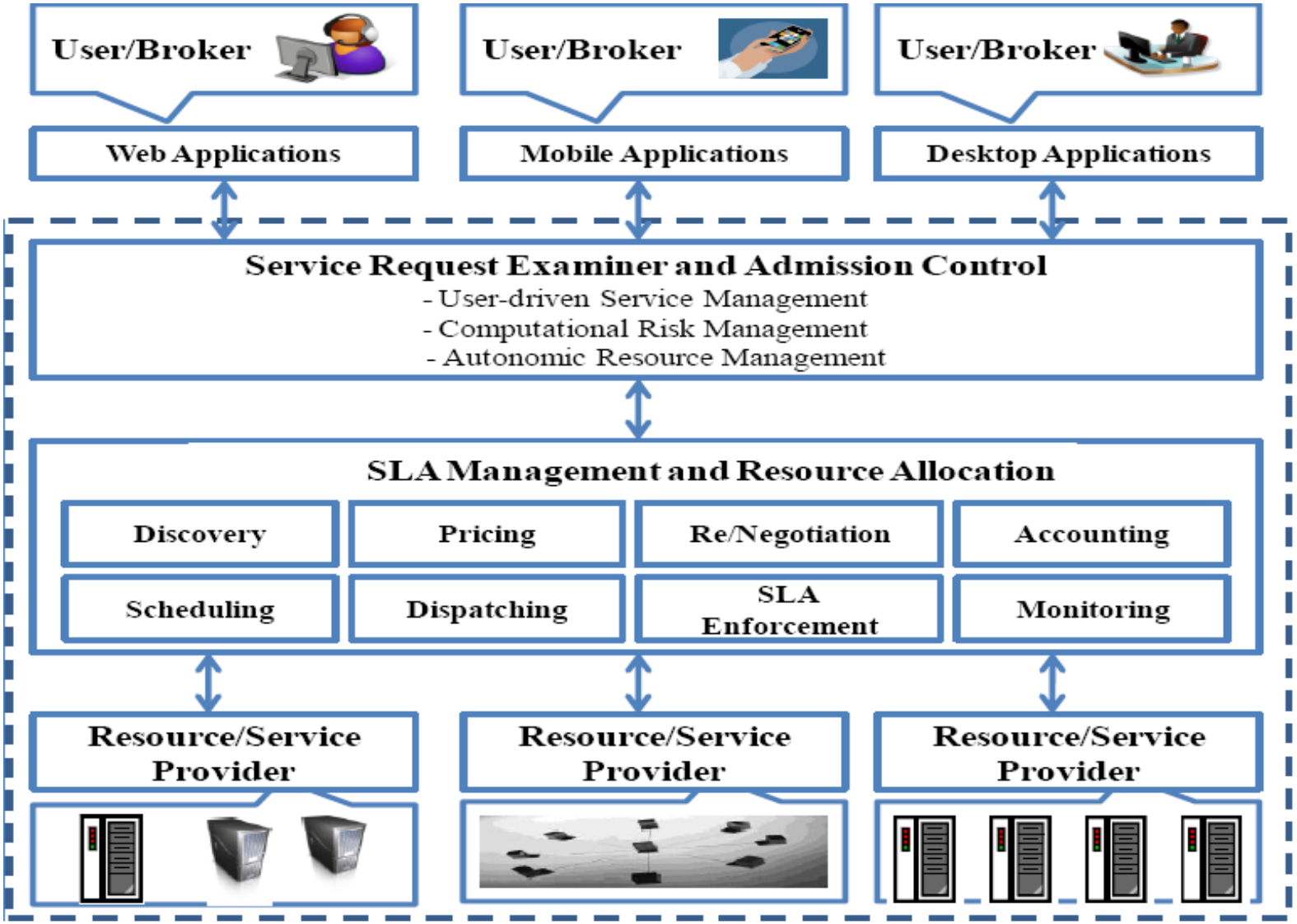
SLA metrics for PaaS

Parameter	Description	Unit
Scalability	Degree of use with large number of online users	Not mentioned in some SLAs
Pay as you go billing	Charging based on resources or time of service	Usually in Dollars
Servers	Congestions of servers	NOS/NOS+NOF
Browsers	Firefox , IExplorer ,…	Time

SLA metrics for SaaS

Parameter	Description	Unit
Scalability	Using with individual or large organizations	Not mentioned in some SLAs
Availability	Uptime of software for users in specific time	MTBF/MTBF+MTRS
Customizability	Flexible to use with different types of users	Not yet defined

SLA-Oriented Architecture



Adapted from L.Wu *et. al* , 2010

Conclusion

- Service level agreement is the key to ensure a service provider delivers the agreed terms of services

- Nowadays cloud service providers just think about traditional parameter in their SLA , but introducing Green SLA (GSLA) could be more promising for them in competitive Business environment

- Still, lot of metrics and their representations are not defined for SLA monitoring and evaluation ; there is no standard

- SLA monitoring and violation could be monitored by third parties; it simplifies the architecture as well as increases the some risks

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THANK YOU