

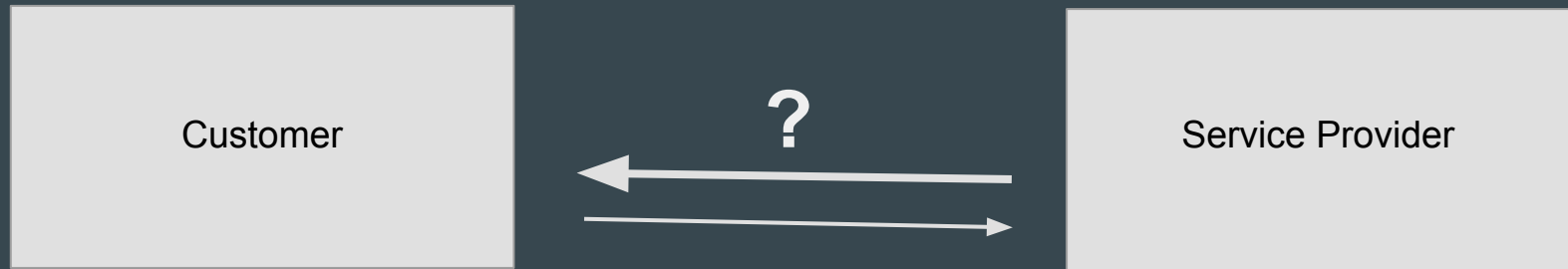
Service Level Agreements and Smart Contracts - A Feasibility Study

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Service Level Agreements - SLA

When do we need them?



Typical SLA Components

- Service name
- Service properties, Service objectives
- Compensations
- Exceptions

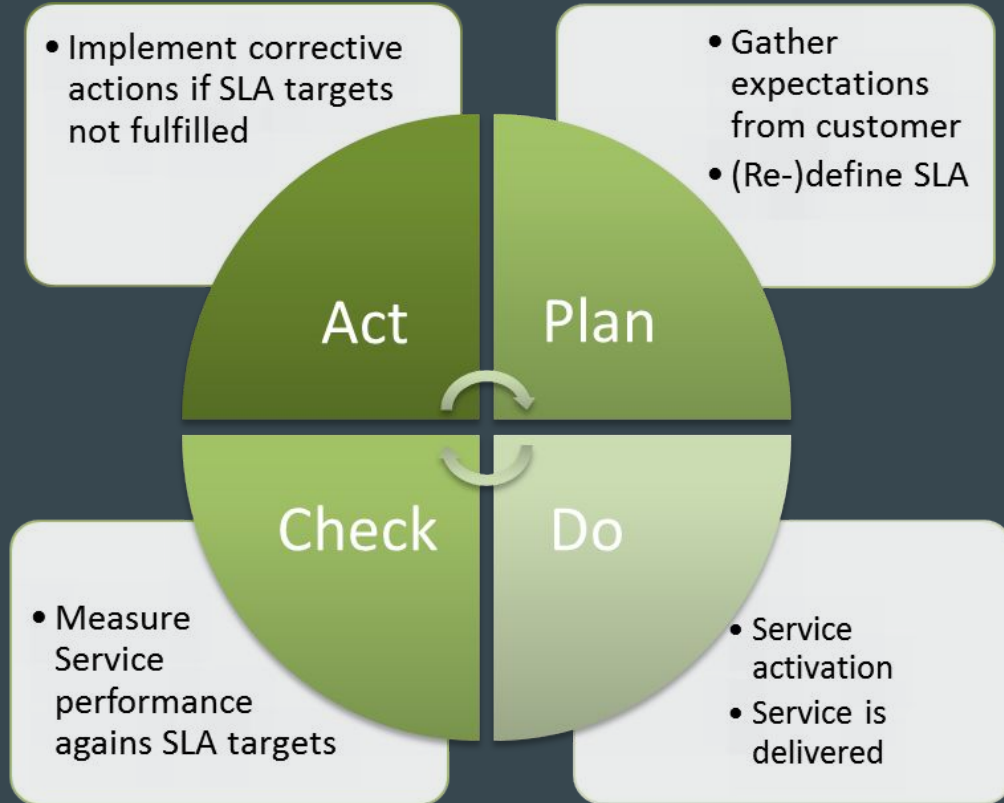
Types of Service Level Objectives in SLAs

- Availability
- Throughput
- Frequency
- Response time
- Quality

Types of Service Level Objectives in SaaS SLAs

- Level of Service (duration)
- Quality of Service (bandwidth)
- Capacity and capability of cloud service (nr of users)
- Response time (transaction processing time)

SLA Life Cycle



Amazon Compute - SLA

Monthly Uptime Percentage	Service Credit Percentage
Less than 99.95% but equal to or greater than 99.0%	10%
Less than 99.0%	30%

Microsoft Azure - SLA

MONTHLY UPTIME PERCENTAGE	SERVICE CREDIT
< 99.95%	10%
< 99%	25%

SLA management challenges

- **Expensive** and difficult to measure.
- **Expensive** to answer all requests of customers that think maybe an instance was exceeding the agreed percentage.

SLA monitoring trust issues

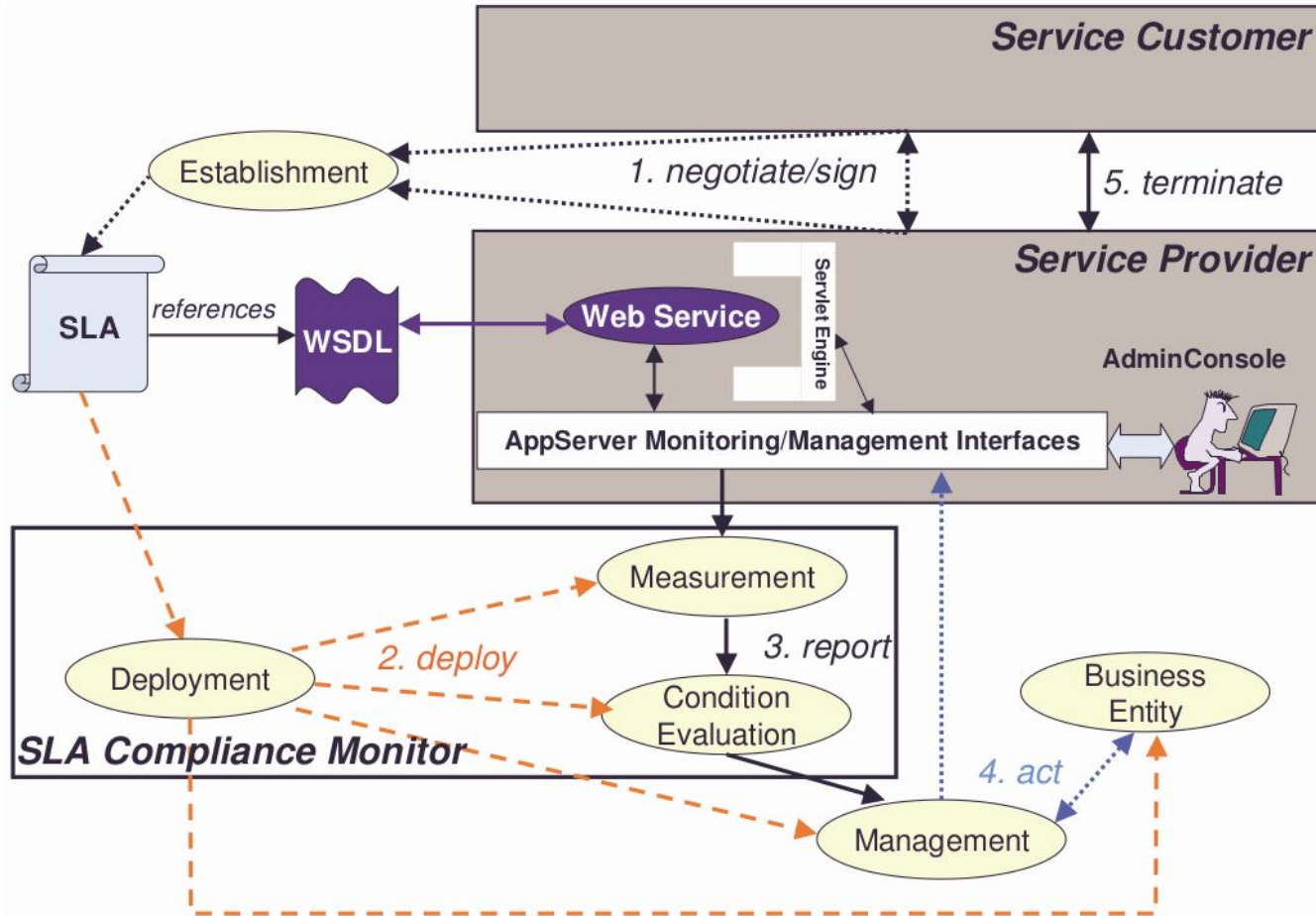
Amazon:

- Amazon is responsible for monitoring the SLA and reporting breaches
- SLA breaches are not favourable for amazon

How to ensure that SLA is
Monitored
Enforced
Compensated
correctly?

Through a third party?

For example the WSLA (Web SLA) Framework



Blockchain

- List of Blocks
- Secured with Cryptography
- Decentralized

Smart Contracts

- Pieces of code
- Defining all actions
- Nobody can change them

General advantages of Smart Contracts

- Global currency
- No access key protection needed
- No centralized server that could be abused
- No human biases or incentives

Smart Contracts for SLA management?

- Why this idea?
- Why only the management and enforcement step of the lifecycle?

Benefits

- No trust in service provider or third party needed
- Automated measuring
- Cost efficient
- Automated enforcement

Concretely..

For example with Ethereum

Ethereum

- Decentralized publishing platform
- Crowdfunded
- Turing-complete programming language

Solidity

- Turing-complete
- High-level
- Similar to javascript

Questions?

Discussion

Does anybody have any experience with blockchains?

Can someone see possible pitfalls of an SLA smart contract implementation?

Is there something that should be handled with special care?

Where are the limits? Are there limits?

Why don't we implement the full SLA lifecycle with smart contracts?