GLCS

Service Level Agreement

Lionel Touseau
ADELE team, Grenoble University
lionel.touseau@imag.fr

Outline

- Definition & concepts

- Content

- Negotiation

- Service Level Management

- State of the Art

- Open issues

General definition & main concepts

- **Agreement**
  - ❖ Legal contract

- **Parties**
  - ❖ Service provider
  - ❖ Service requester

- **Service**
  - ❖ Specification
  - ❖ Qualitative properties (QoS)

Other concepts

- **SLA**
  - ❖ Service Level Agreement

- **SLM**
  - ❖ Service Level Management

- **SLS**
  - ❖ Service Level Specification

- **SLO**
  - ❖ Service Level Objectives

Traditional SLA

- Network QoS
  - Autonomous system
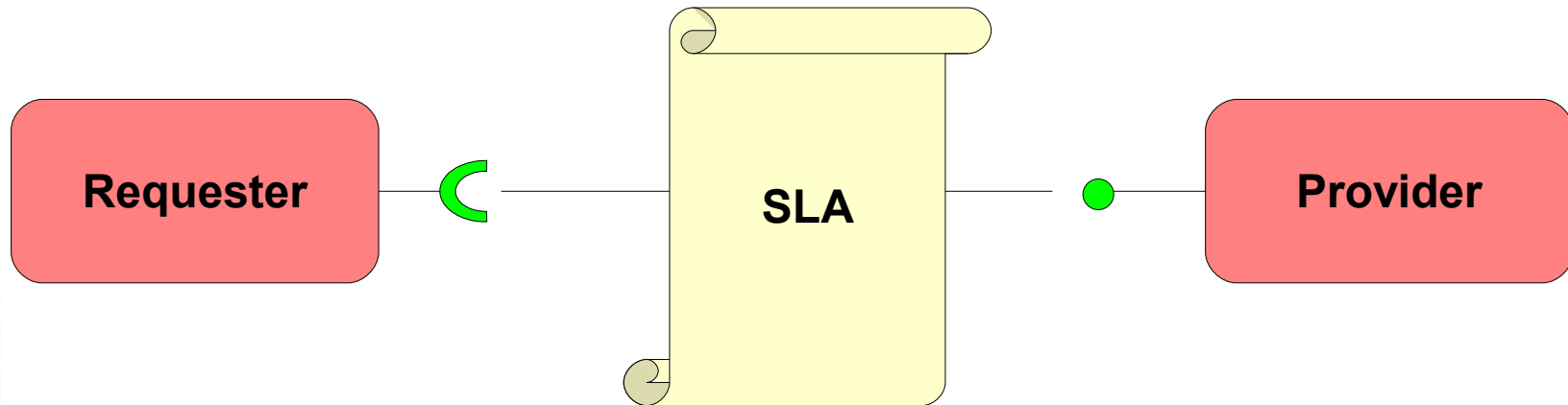 - Telecom
  - Throughput, response time, jitter, ...
- Web hosting
  - 95% availability
  - 1 Gb storage space
- Outsourcing
  - Hebergement d'applications

SLA & SOA

- Notion de service

- 4 niveaux de contrat (Beugnard, 1999)
  - Syntaxique, comportemental, synchronisation, **QoS**

Domaine « SLA »

■ Axes de recherche

❖ Forme
- Formalismes: balises (XML), règles, sémantique, ...

❖ Fond
- Contenu

❖ Négociation

❖ Service Level Management (SLM)
- Execution
- Monitoring, reactions, ...
- Partie tierce

Contenu – Structure

Contexte
  Parties
    Parties signataires (2..n)
    Parties tierces
  Date d'expiration / de validité

Description du service
  Specification

Termes
  Garanties
  Obligations
  Politiques / reactions
  Compensations
    Penalités / Recompenses

Signed

Negotiation

- Agreement signature

- Protocols, algorithms

- 3 levels
  - Simple selection
  - Customizable SLA
  - Actual negotiation

Negotiation

- 1st level : selection

  - ❖ Service provider publishes its *specification*

    - Extended service specification (functional & extra-functional)
    - QoS-level contract (Beugnard, 1999)

  - ❖ A service is selected according to its *specification*

    - Scoring
    - Service ranking

Negotiation

- 2nd level : customization
  - Service provider publishes pre-defined offers
    - Fixed QoS levels
    - e.g. Premium, gold, silver, best-effort
  - Or non-fixed contract terms
    - Negotiable
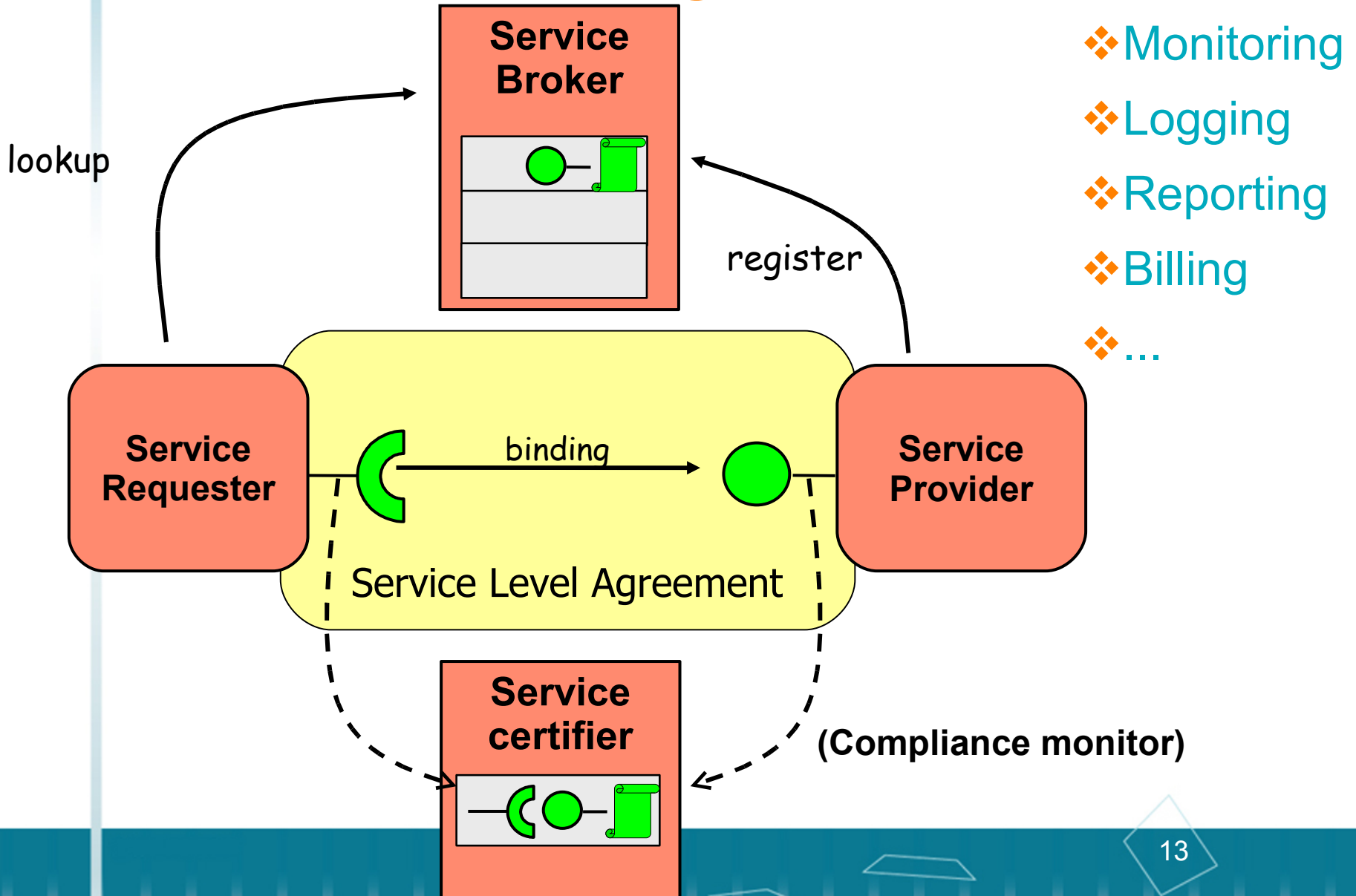   - Range of QoS properties
      - can modify pricing for example

Negotiation

- 3rd level : discussion
  - ❖ Actual negotiation
    - Parties go through a complete negotiation process
  - ❖ A service provider may reevaluate its service specification in order to meet the requester's requirements
  - ❖ A requester may lower its requirements in order to use a service

Service Level Management

Service Broker

lookup

register

Service Requester

binding

Service Provider

Service Level Agreement

Service certifier

(Compliance monitor)

❖ Monitoring
❖ Logging
❖ Reporting
❖ Billing
❖ ...

State of the Art

- **Formalisms**
  - ❖ SLAng
  - ❖ Rule-based SLA
  - ❖ WSLA (Web Service Level Agreement) specification
- **Frameworks**
  - ❖ ContractLog
  - ❖ Compliance monitor (WSLA)
- **WS-Agreement specification**
  - ❖ Main standard
  - ❖ Cremona framework (IBM)

Open issues

- Re-negotiation

- Service composition & sub-contracting

- Multi-parties contract

- Services dynamiques (cours 4/12)