

---

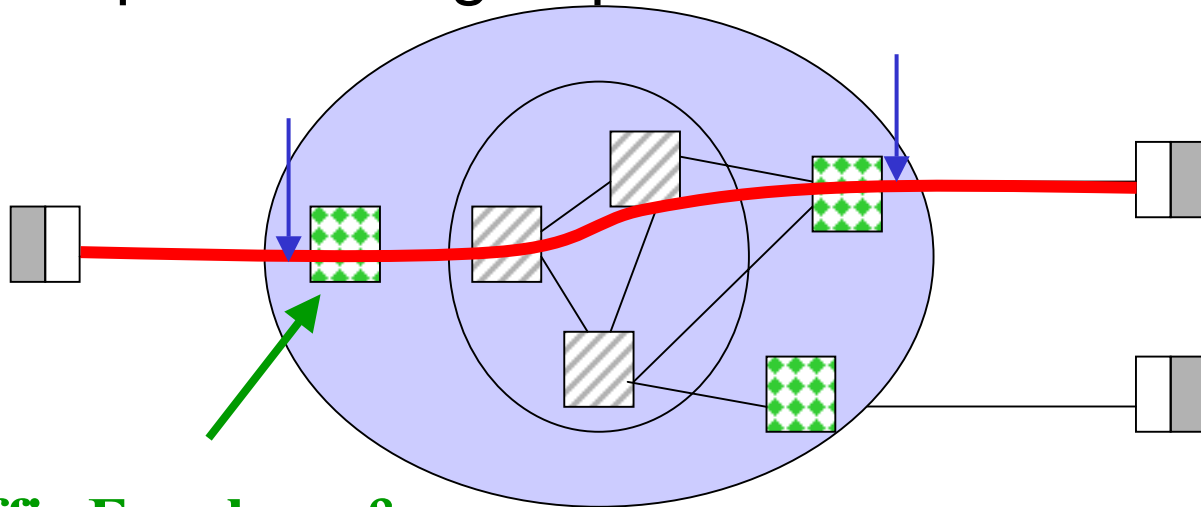
# Service Level Specifications : Semantics & Parameters

**"TEQUILA Internet-Draft"**

*draft-tequila-sls-00.txt*

**danny.goderis@alcatel.be**

- SLS = a set of parameters making up an IP flow contract
- Four basic parameter groups

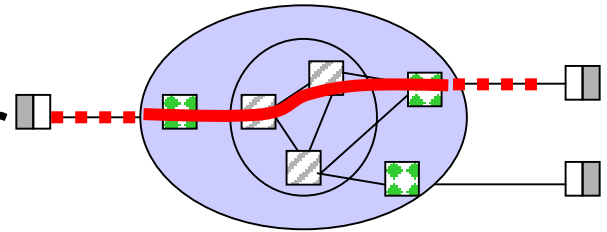


**Traffic Envelope & Conformance**

**IP Flow Descriptor**

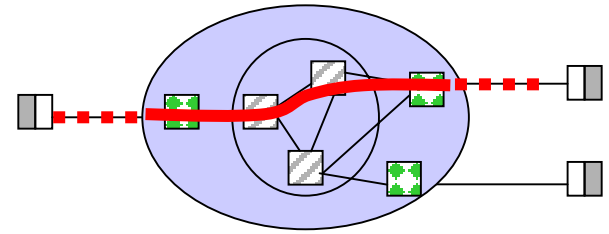
**Scope = (ingress, egress)**

**Performance Guarantees & Excess Treatment**

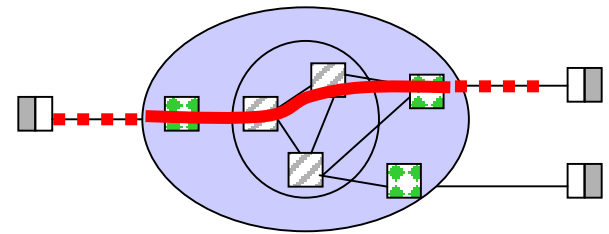


- IP Flow = stream of IP packets sharing at least one common characteristic
  - **DSCP information**
    - (set of) DSCP value(s) | any
  - **Source information**
    - (set of) source addresses | (set of) source prefixes | any
  - **Destination information**
    - (set of) destination addresses | (set of) prefixes | any
  - **Application information**
    - protocol number,...

# Scope

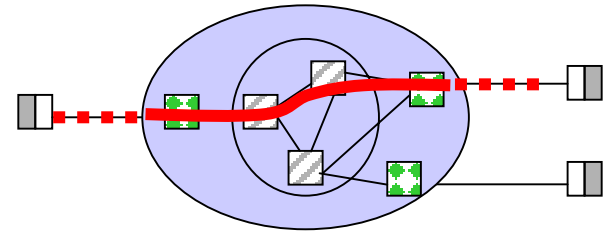


- Scope = the geographical region over which the QoS is to be enforced
- Scope = (Ingress, Egress)
  - Ingress : (set of) interface addresses | any
  - Egress : (set of) interface addresses | any
    - *IP-addresses | L2-link identifiers*
- Scope models
  - Pipe or one-to-one model : (1,1)
  - Hose or one-to-many|any model : (1, N| any)
  - Funnel or many|any-to-one model (N|any,1)

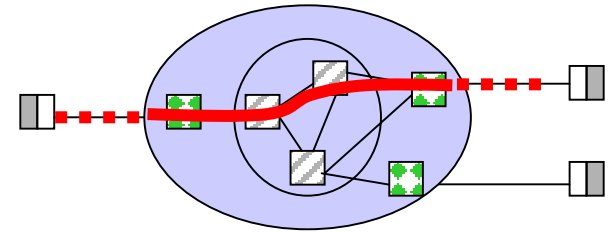


- Traffic Envelope = set of (conformance) parameters describing **how** the packet stream should look like to get performance guarantees
- Traffic Conformance **testing** is the set of actions allowing to identify in- & out-of-profile packets
  - Example: token bucket
- **Excess treatment**
  - drop | shape | remark

# Performance Guarantees



- The performance parameters describe the transport guarantees the network offers to the customer
  - for the packet stream identified by *Flow descriptor*
  - over the geographical region defined by *Scope*
- Four (measurable) parameters
  - **delay** | optional quantile
  - **jitter** | optional quantile
  - **packet loss**
  - **throughput**



- **Delay & jitter**

- indicate the maximum packet transfer delay and delay variation from ingress to egress
  - can be deterministic (worst case) or probabilistic (quantile)
  - guarantee for *in-profile* packets (only)

- **Packet loss**

- the ratio of the lost and the sent (in-profile) packets
  - *sent* packets at ingress
  - *lost* packets between (and including) ingress/egress

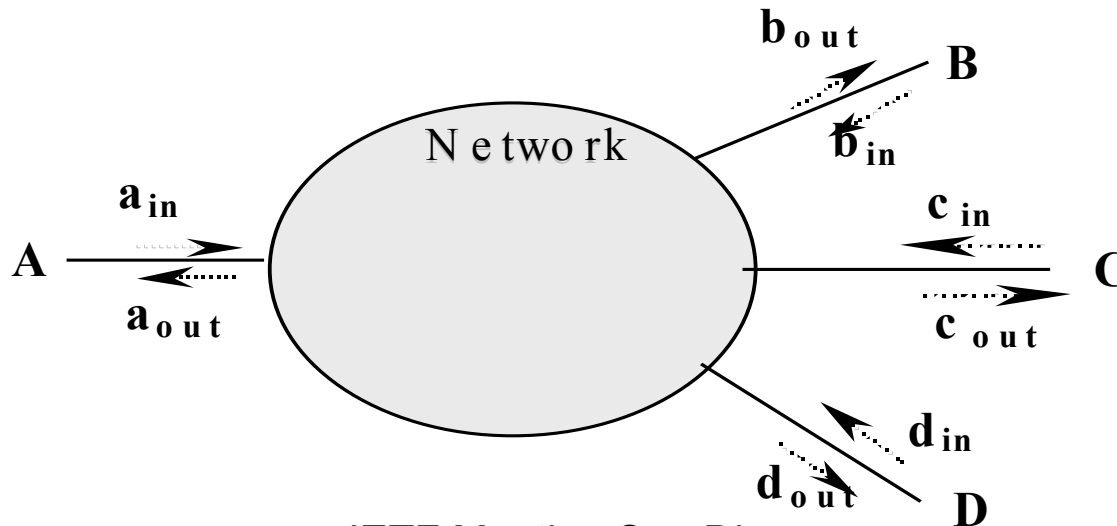
- **Throughput guarantee**

- the packet rate measured at egress
  - counting all packets identified by Flow Id

- **Service Schedule**
  - when is the service available
  - Start time, End time
- **Reliability & Protection**
  - Mean down time
  - Maximum time to repair
- ...



- **Bi-directional services (e.g. VLLs)**
  - bi-directional VLLs = combination of 2 SLs
- **Virtual Private Networks**
  - combination of multiple hose & filter SLs
  - guaranteed throughput from ingress to all egress
  - maximum allowed rate towards a customer side (e.g  $A_{out}$ )



---

**[www.ist-tequila.org/](http://www.ist-tequila.org/)**

Danny Goderis, Alcatel

Yves T'joens, Alcatel

Christian Jacquenet, France Telecom R&D

George Memenios, NTUA

George Pavlou, UniS

Richard Egan, Racal Research Ltd

David Griffin, UCL

Panos Georgatsos, AlgoSystems

Leonidas Georgiadis, Univ. Thessaloniki

Pim Van Heuven, IMEC