Two Way Active Measurement Protocol

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Outline

- The Need For TWAMP
- TWAMP Architecture
- TWAMP Light
- Summary

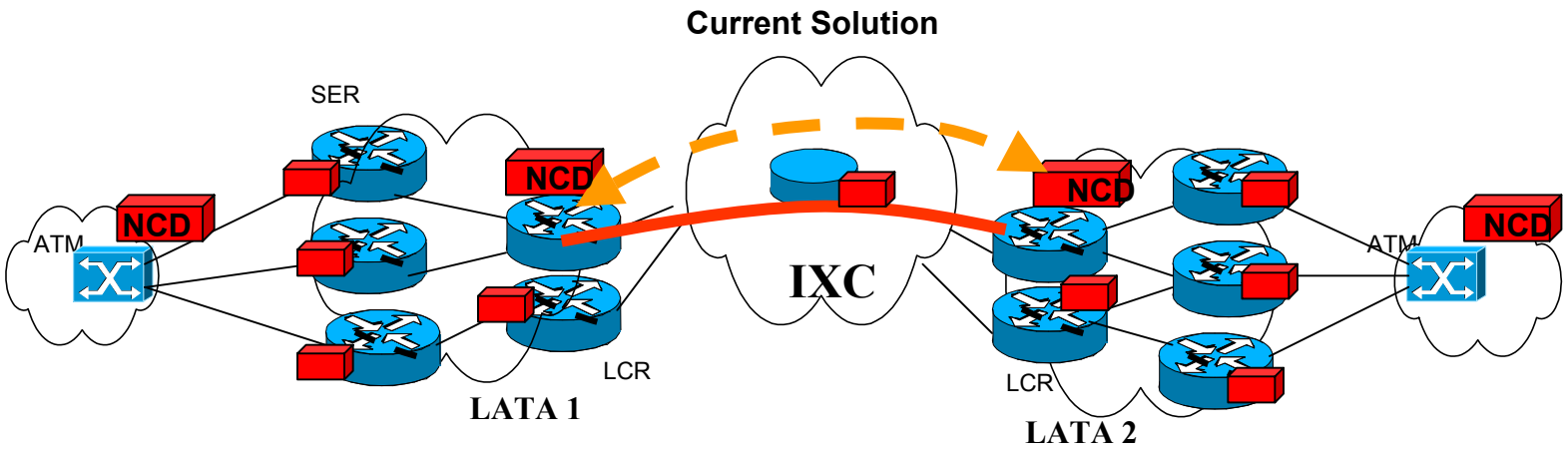
The Need

SLA and performance testing is the key element of service delivery in telecom data networks; tested are internal networks as well as inter-provider networks
Monitored are mostly:

Latency 1-2-way, jitter, packet loss, availability

Monitored are ALL segments of the network – BB, Core, Access, Customer sites
Monitored streams out-of-band or in band, per QoS (at least higher end classes)
Multiple network technologies are involved: TLS, ATM, IP, ..

There is no common testing standards between providers and manufacturers of network equipment



•Network collection devices (NCD) at key locations (end point) in the network.

•Testing is done between NCDs. A dedicated NCD provides the required measurement stability and accuracy; current integrated solutions are no reliable enough – technical design problem

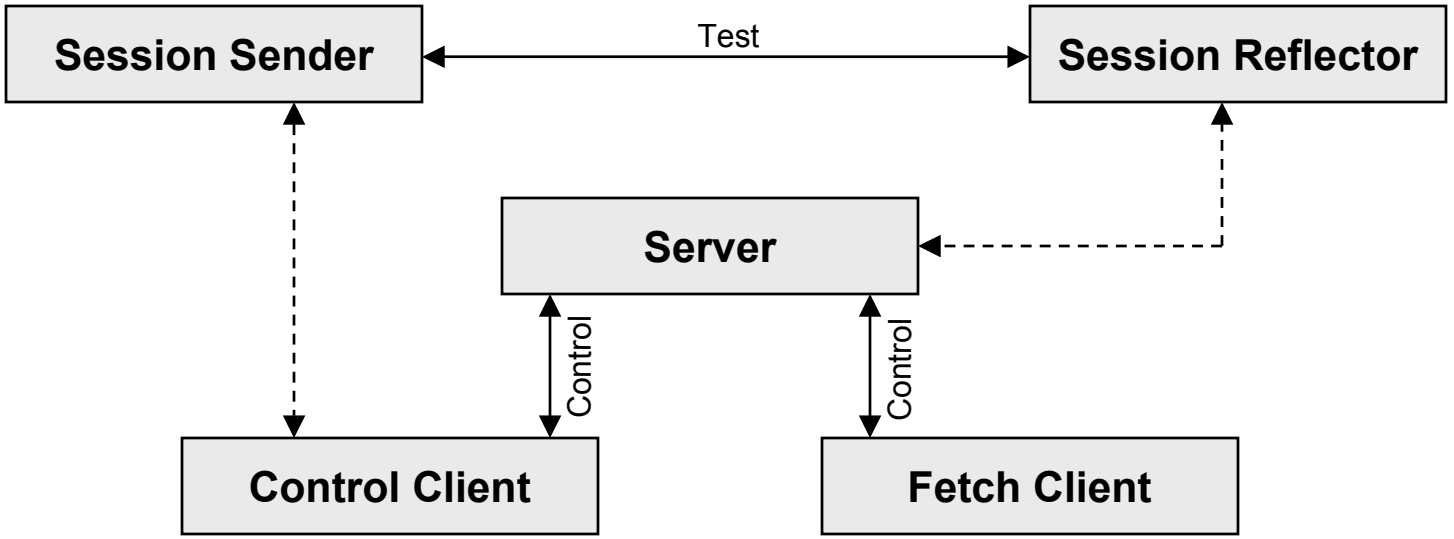
•NCD must be managed as a network element; very difficult to implement at Customer premises

•Current approach is expensive and difficult to scale.

• Scaling numbers number of NCD points –BB < 50; core 100, Access <1000, CP > 1000s (guess)

•Open testing Protocol integrated with NE (SW, RT, NID, CPE…) would facilitate and enable monitoring of the network performance and well as reporting of results – common measurement method.

Architecture



- Based On OWAMP
- The Responder Becomes Reflector
- Introduces Session Reflector Behavior
- Introduces New Test Packet Format
- Bidirectional Test Flow
- Optional Fetch Client

Session Reflector

- Reflects Test Packets Back To Session Sender
- Optionally Records Incoming Packet Information (optional Fetch Client)
- Places Information in Reflected Packets For Round-Trip Metrics Calculation By The Session Sender

Test Packets

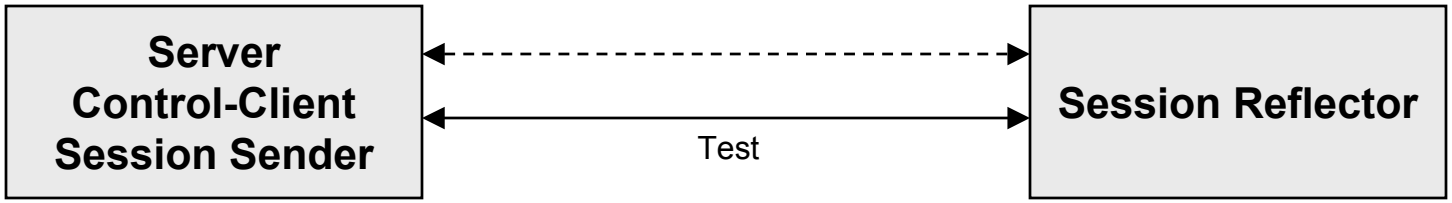
- Sender To Reflector: Same As OWAMP
- Reflector To Sender: New Test Packet

Reflector To Sender Test Packets

Field	Need
Sender Sequence Number	Loss From Sender to Reflector
Sender Timestamp	Round-Trip Latency
Sequence Number	Loss From Reflector to Sender
Timestamp	Round-Trip Latency
Reflector Delay	Round-Trip Latency

TWAMP Light

- Simple (Light) Reflector Design
- Non-Standard Provisioning of Reflector



Summary

- TWAMP for Round-Trip Metrics
- Based on OWAMP Architecture
- TWAMP Light For Simple Reflector Design