Common VoIP Metrics

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Workshop on End-to-End Quality of Service.What is it? How do we get it?
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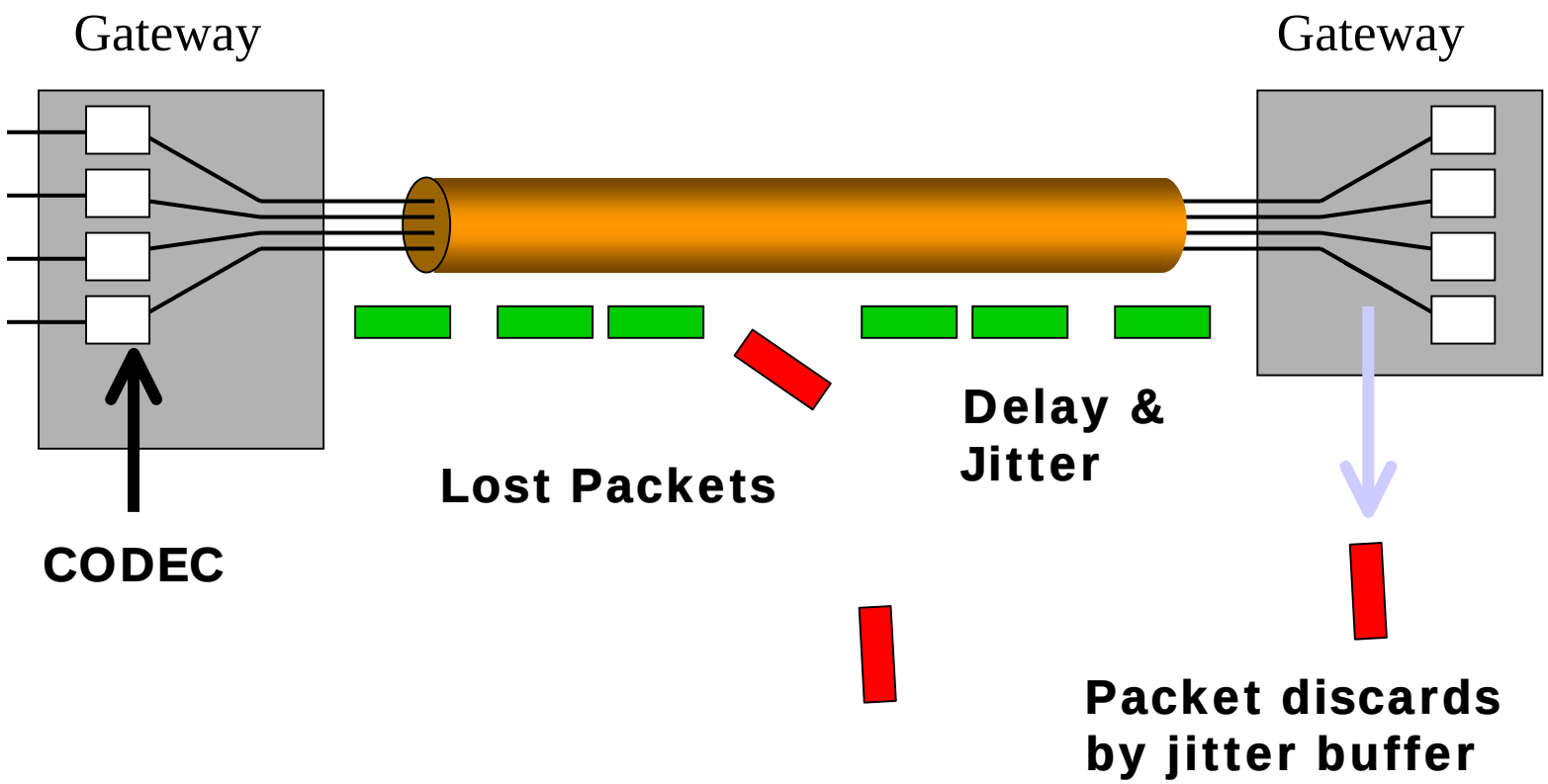
ITU-T

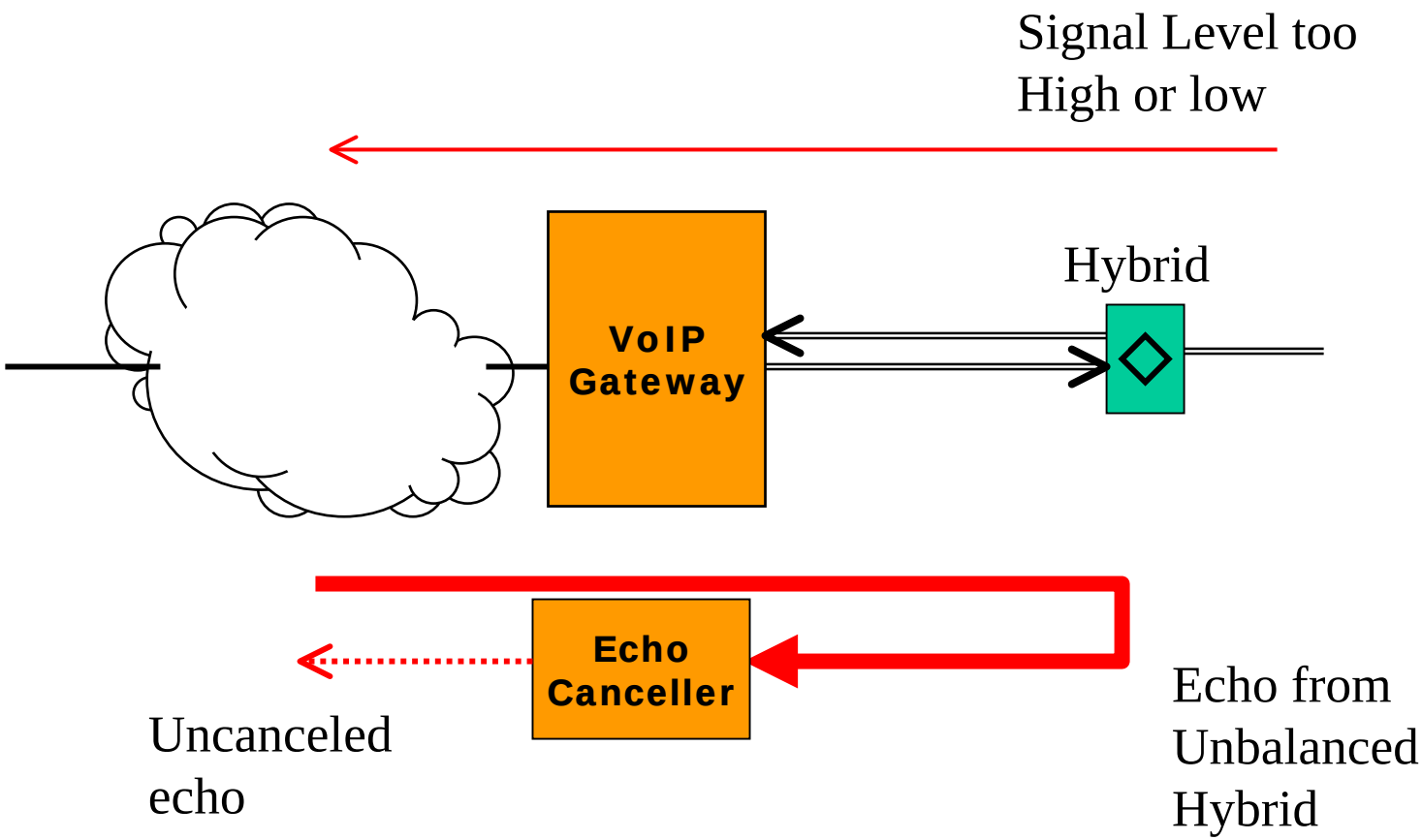
Summary

- Typical VoIP Problems
- Management Requirements
- Common Metrics proposal
- Media path reporting
- Reporting through signaling protocols
- RTCP XR
- Applications examples

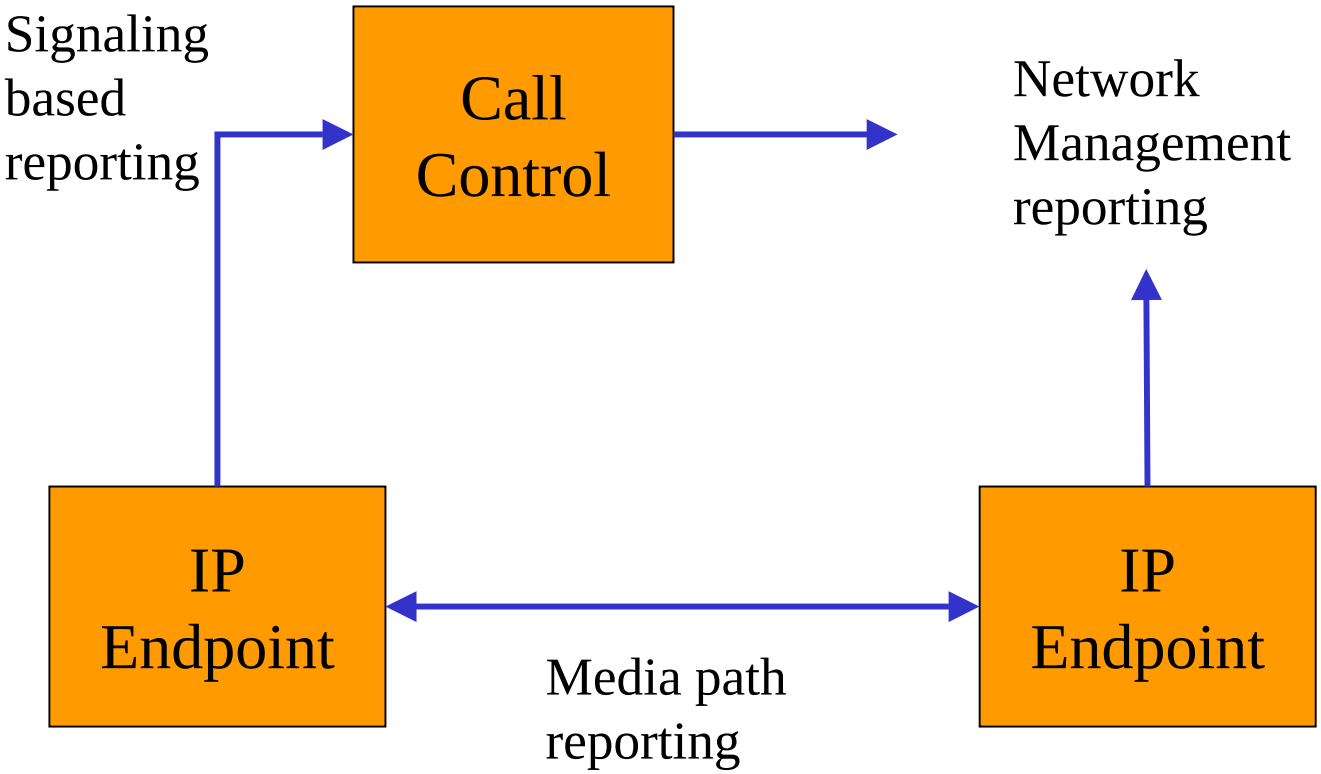
IP related problems



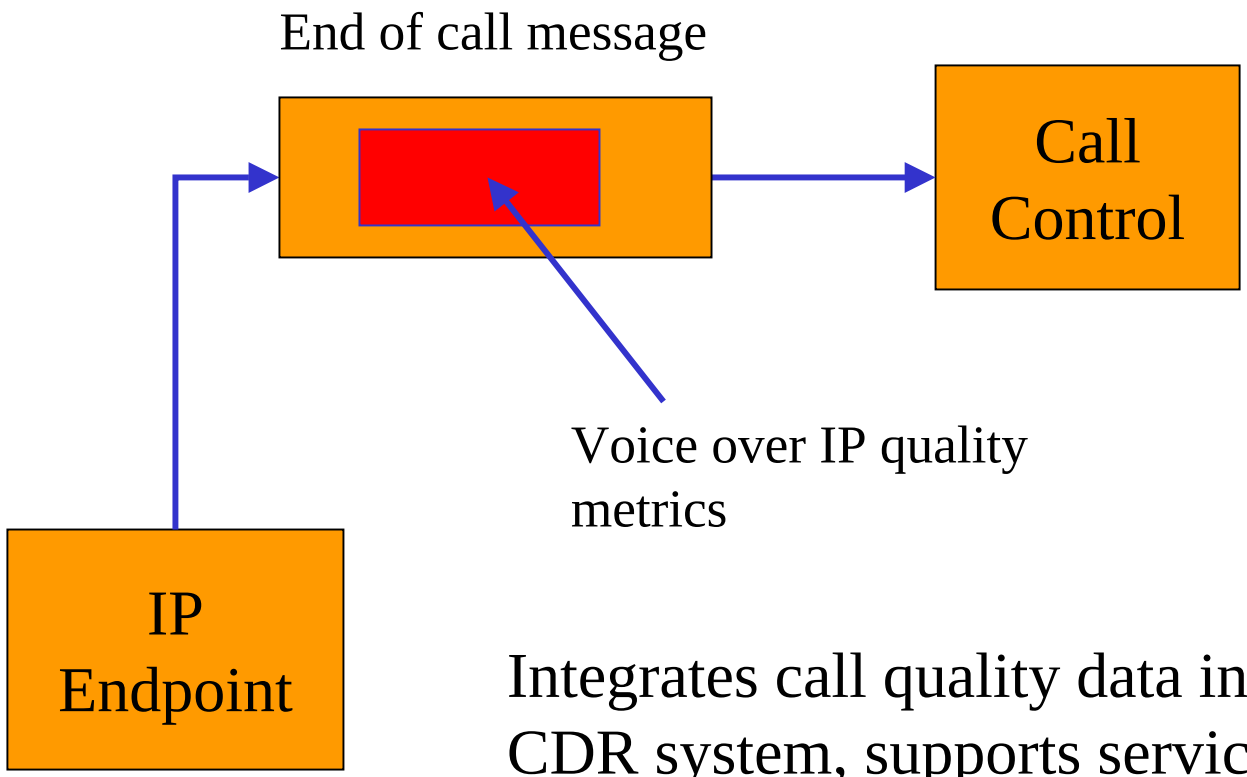
Non-IP related problems



VoIP Metrics Reporting



Signaling System Reporting



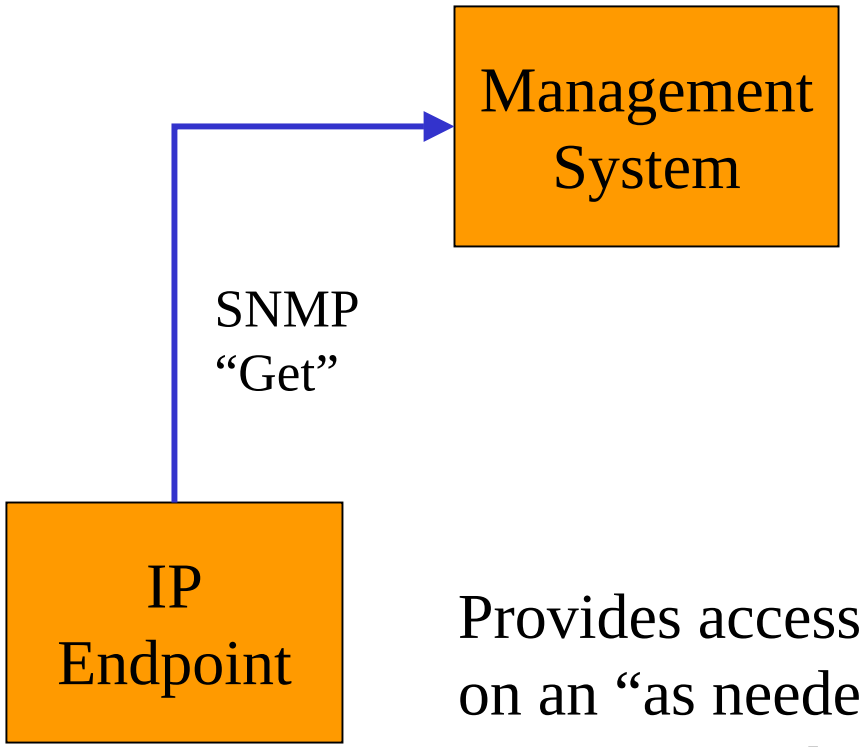
Integrates call quality data into CDR system, supports service management / billing

Media Path Reporting

Allows information to be exchanged between endpoints

Allows information to be sent through firewalls

Management Reporting



Provides access to information on an "as needed" basis
Integrates with current NMS

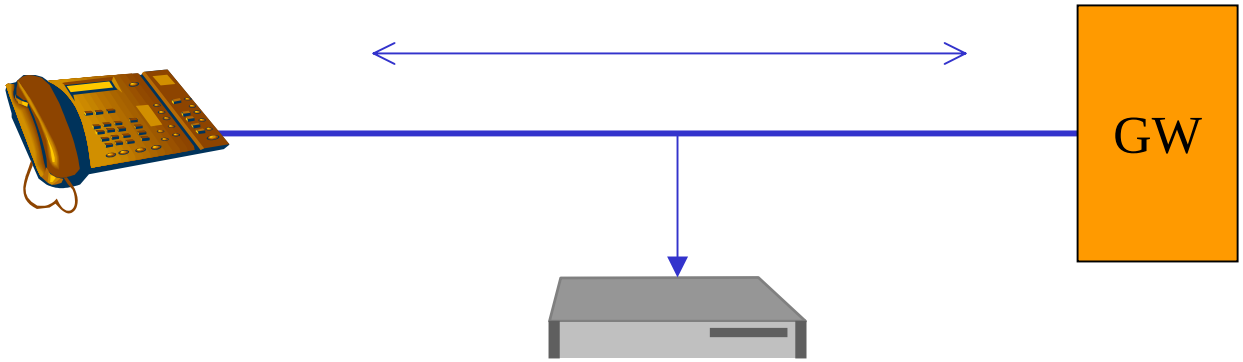
Common VoIP Metrics?

- Equipment needs only count/ measure one set of metrics regardless of the protocol used for reporting
- Network manager/ operator can see the same set of data regardless of how it was reported
- Drive the equipment vendors towards a common “sensible” metrics set

RTCP XR protocol

Loss rate	Discard rate	Burst density	Gap density
Burst duration (mS)		Gap duration (mS)	
Round trip delay (mS)		End system delay (mS)	
Signal level	RERL	Noise level	Gmin
R factor	Ext R	MOS-LQ	MOS-CQ
Rx Config	-	Jitter Buffer Nominal	
Jitter Buffer Max		Jitter Buffer Abs Max	

RTCP XR applications

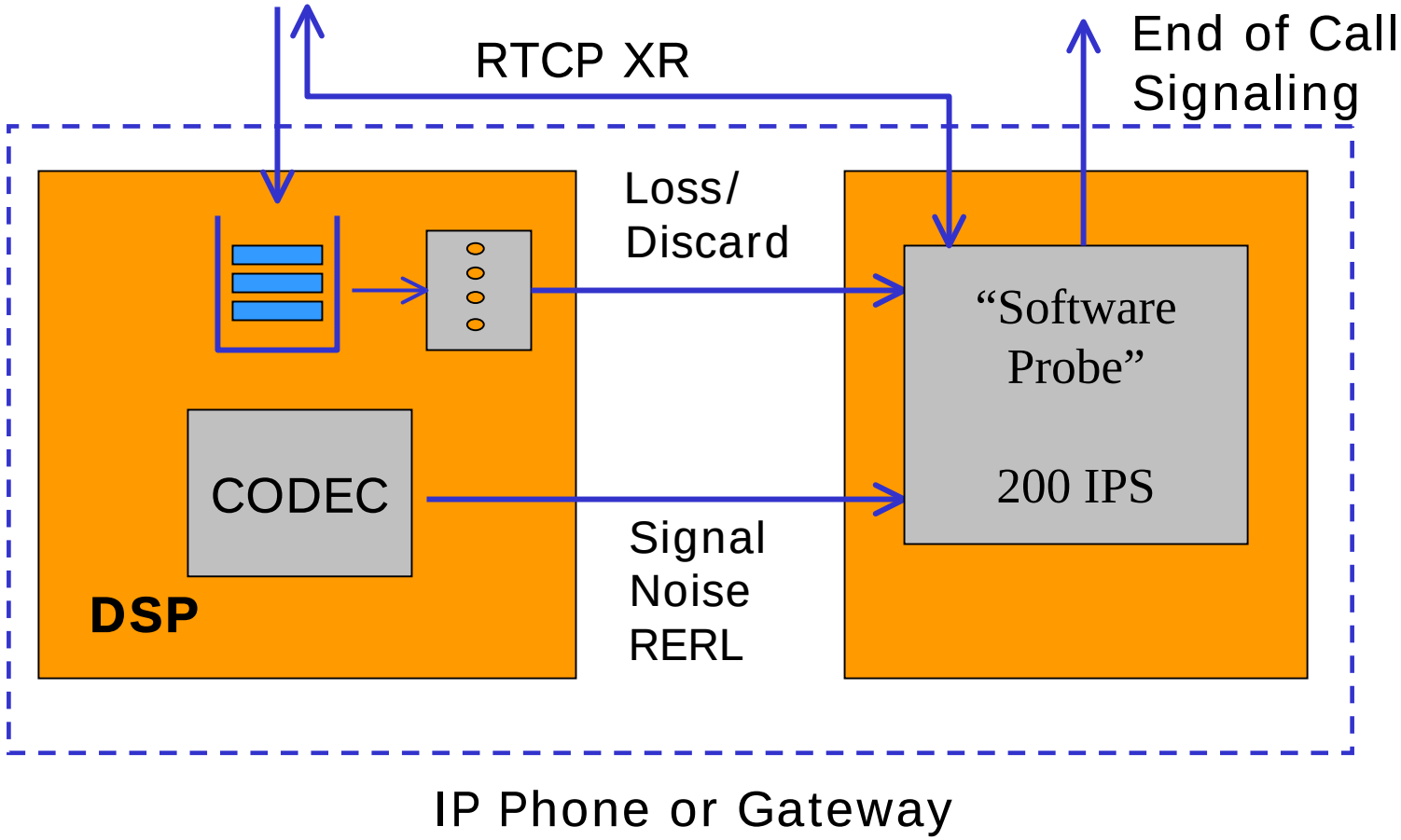


Provides several key functions:
- Exchange information between endpoints to support more comprehensive call quality estimates
- Allows mid-stream systems to monitor endpoint QoS, even if RTP payload encryption is used
- Supports exchange of endpoint measured QoS where endpoint is in different management domain
- Supports endpoint adaptation

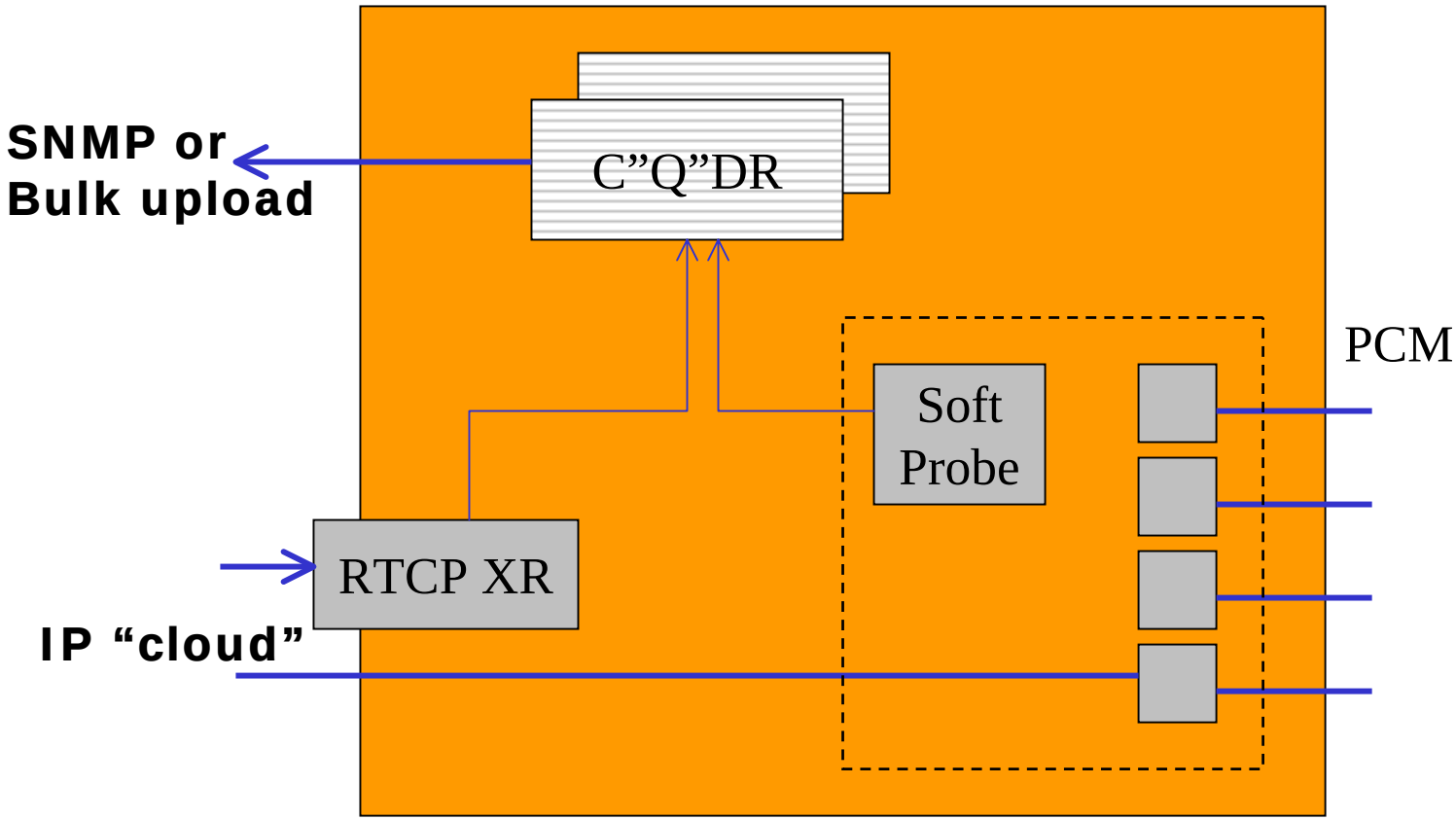
Migrating into signaling protocols

- RTCP XR – IETF AVT group
  - In RFC editor queue – RFC in October?
  - Already being implemented by manufacturers
- H.323 …. H.460.9 Annex 2
  - Consent in January 2004?
- H.248 …. H.248.rtcpxr
  - Consent in January 2004?
- SIP ….. New work in IETF

Generating VoIP Metrics

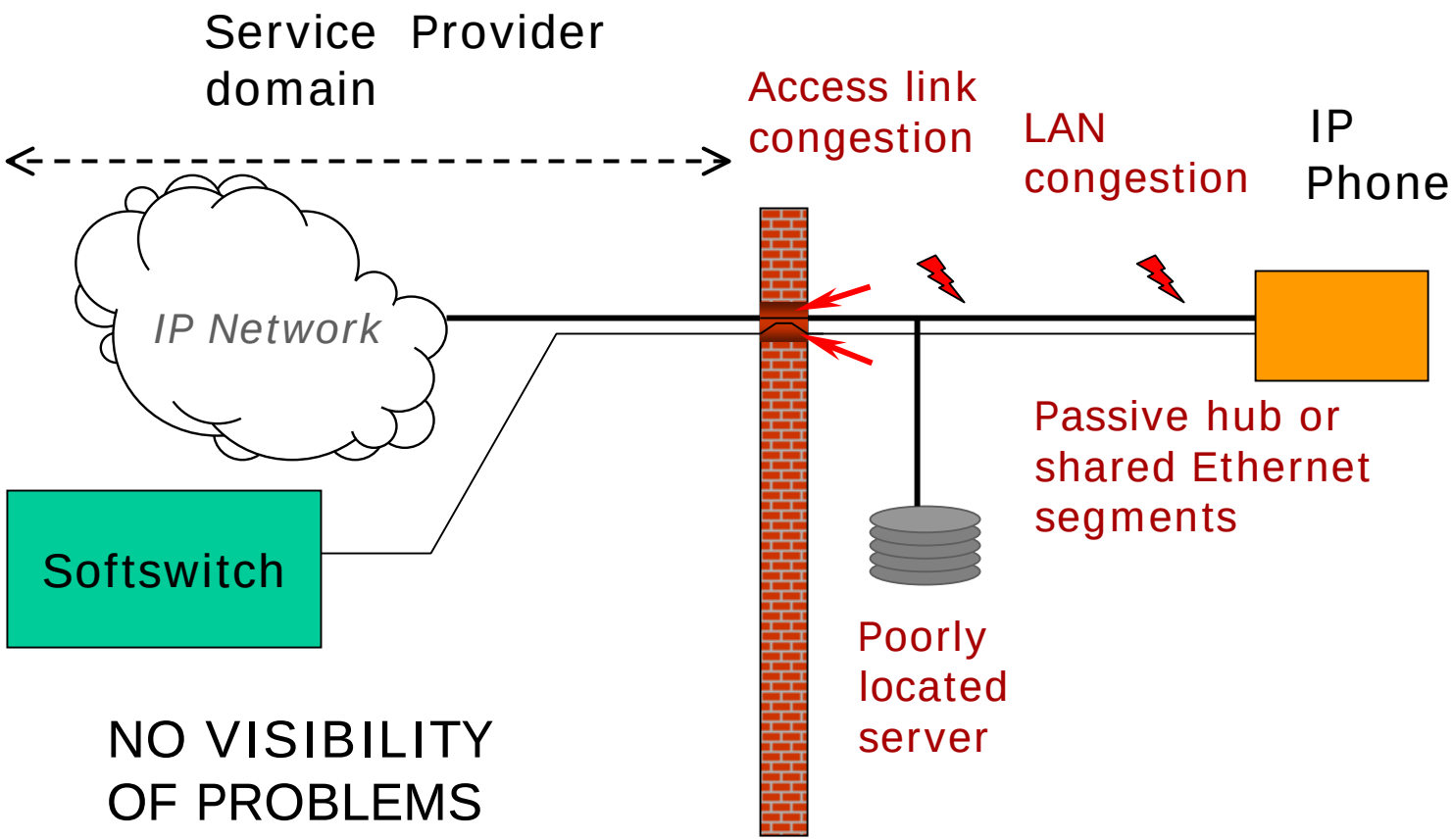


Accumulating endpoint metrics in Gateway

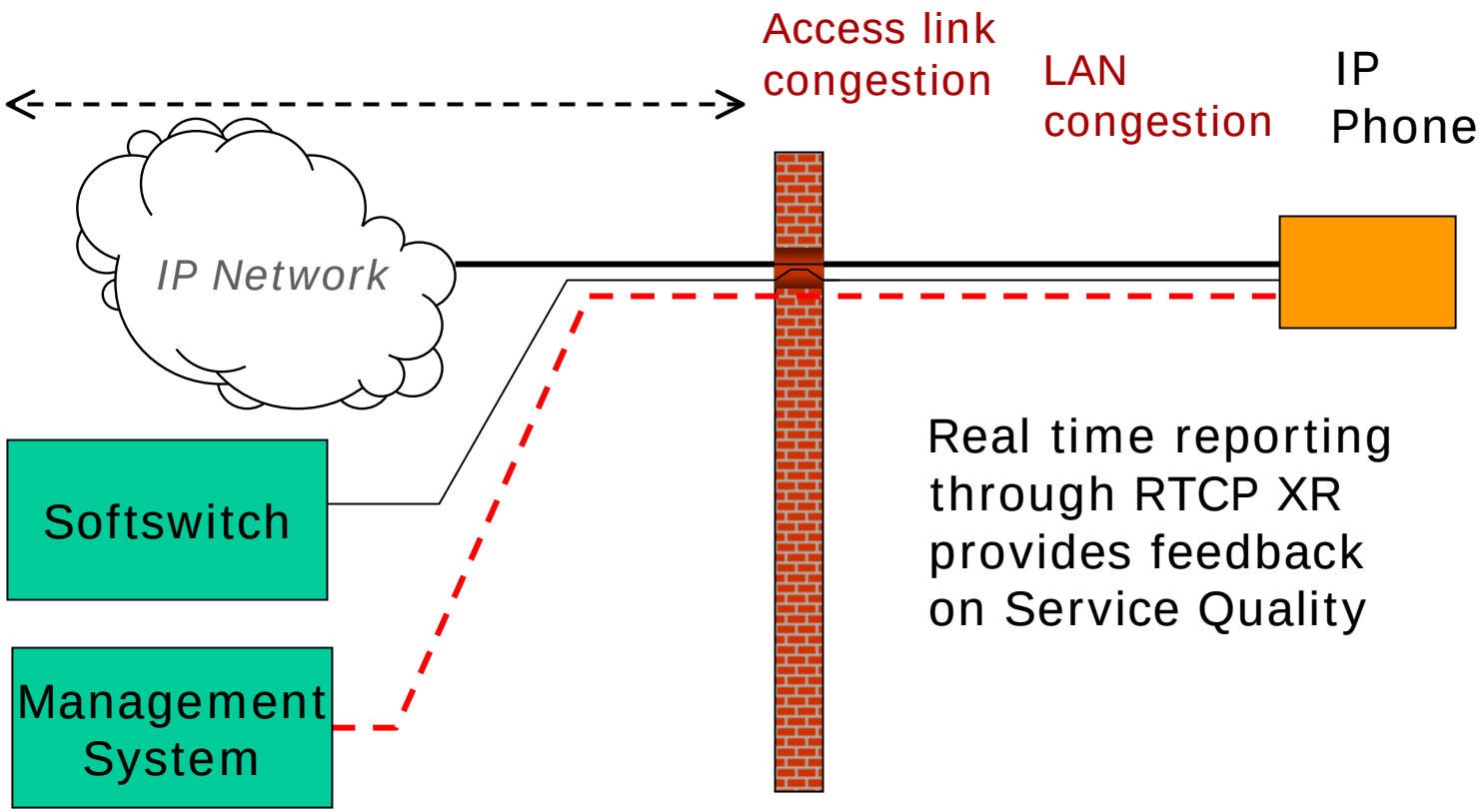


SNMP MIB based around RTCP XR metrics

Example – IP Centrex



Solution to IP Centrex problem



Summary

- Equipment needs only count/ measure one set of metrics regardless of the protocol used for reporting
- Network manager/ operator can see the same set of data regardless of how it was reported
- Drive the equipment vendors towards a common "sensible" metrics set
- Already gaining support within the industry:
  - Nine+ test equipment vendors will be supporting RTCP XR decodes by the end of 2003
  - At least three major IP equipment manufacturers expected to be supporting RTCP XR by the end of 2003
  - Three major DSP software vendors providing support for this architectural model by the end of 2003