

Telchemy

*Actively Managing
Multimedia*

VoIP Fault and Performance Management

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About Telchemy

- Leading provider of core technology for VoIP fault and performance management
 - VQmon used for SLA monitoring, VoIP Probes/ Analyzers, VoIP performance management
- Leading development of VoIP performance management standards .. RTCP XR.....
- Leading development of innovative tools, ideas, techniques for managing real time applications .. www.voiptroubleshooter.com



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Outline

- VoIP Performance problems
- VoIP Performance Management Framework
- RTCP XR Metrics explained
- Application Examples

What's the problem? - basic scenario

Packet discard,
Jitter buffer delay,
CODEC distortion

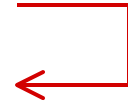
Echo,
Signal level
Noise level

IP Phone



Media path

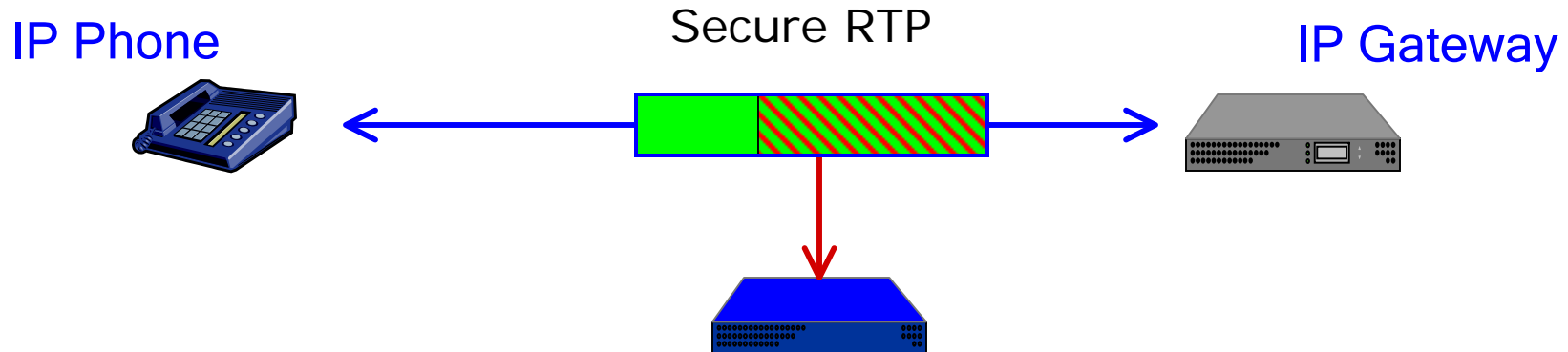
IP Gateway



Packet loss, jitter, delay,
transient IP problems

What's the problem? - Secure RTP

Security can make management difficult

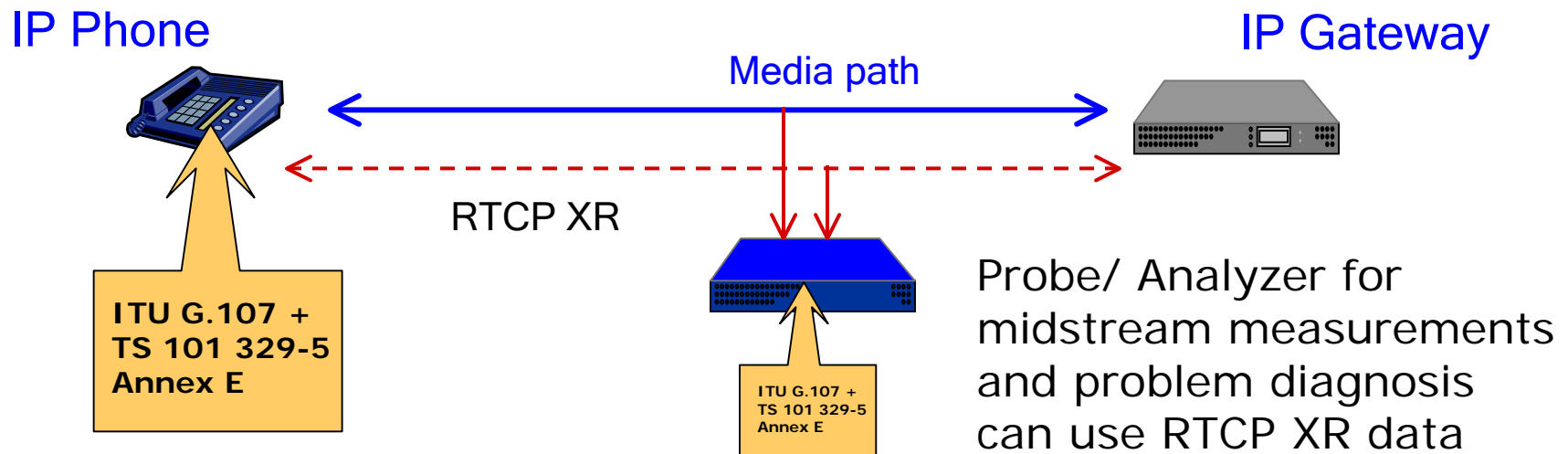


Probe/ Analyzer can't decode voice payloads to see signal/noise/echo

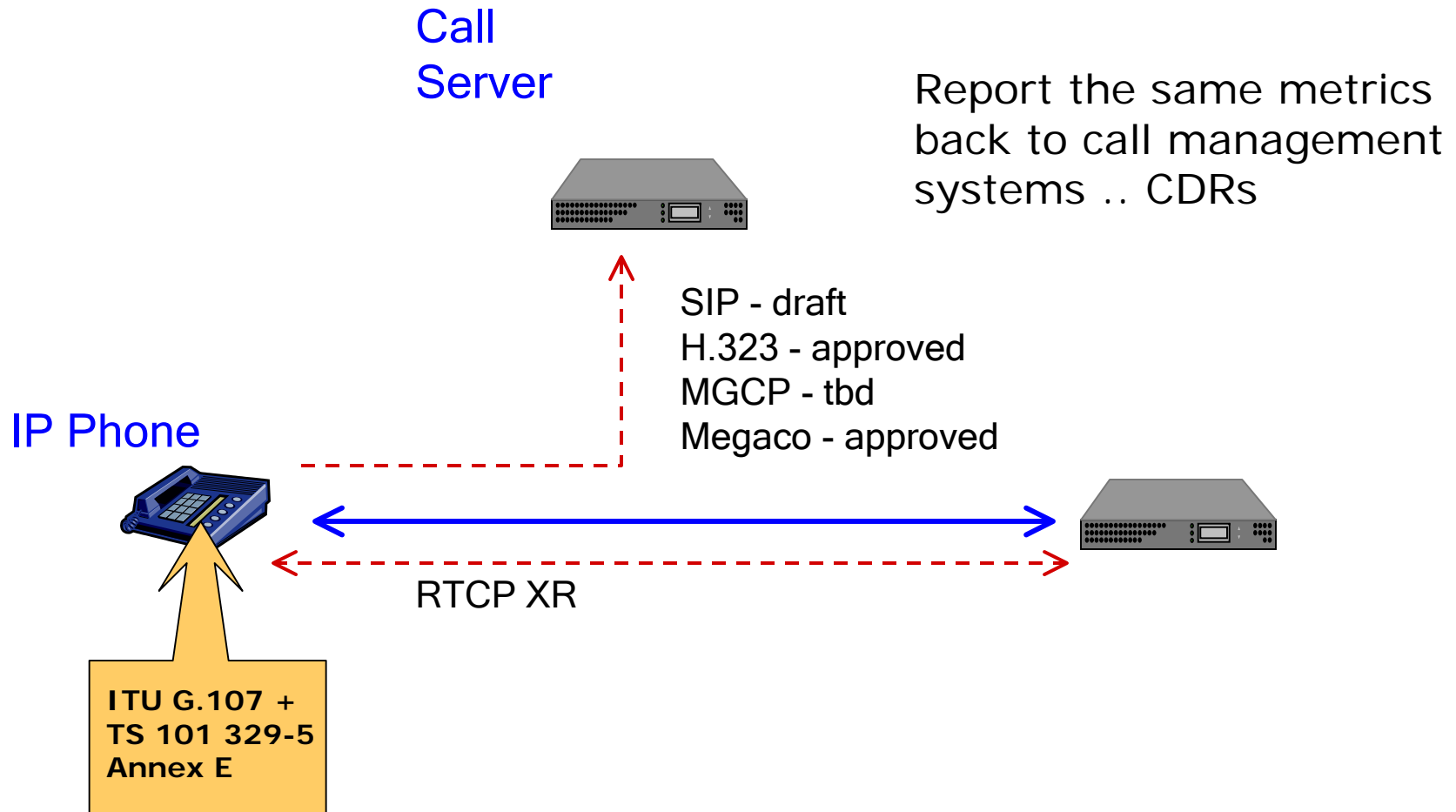
First solution step - RTCP XR “System”

RTCP XR – RFC3611

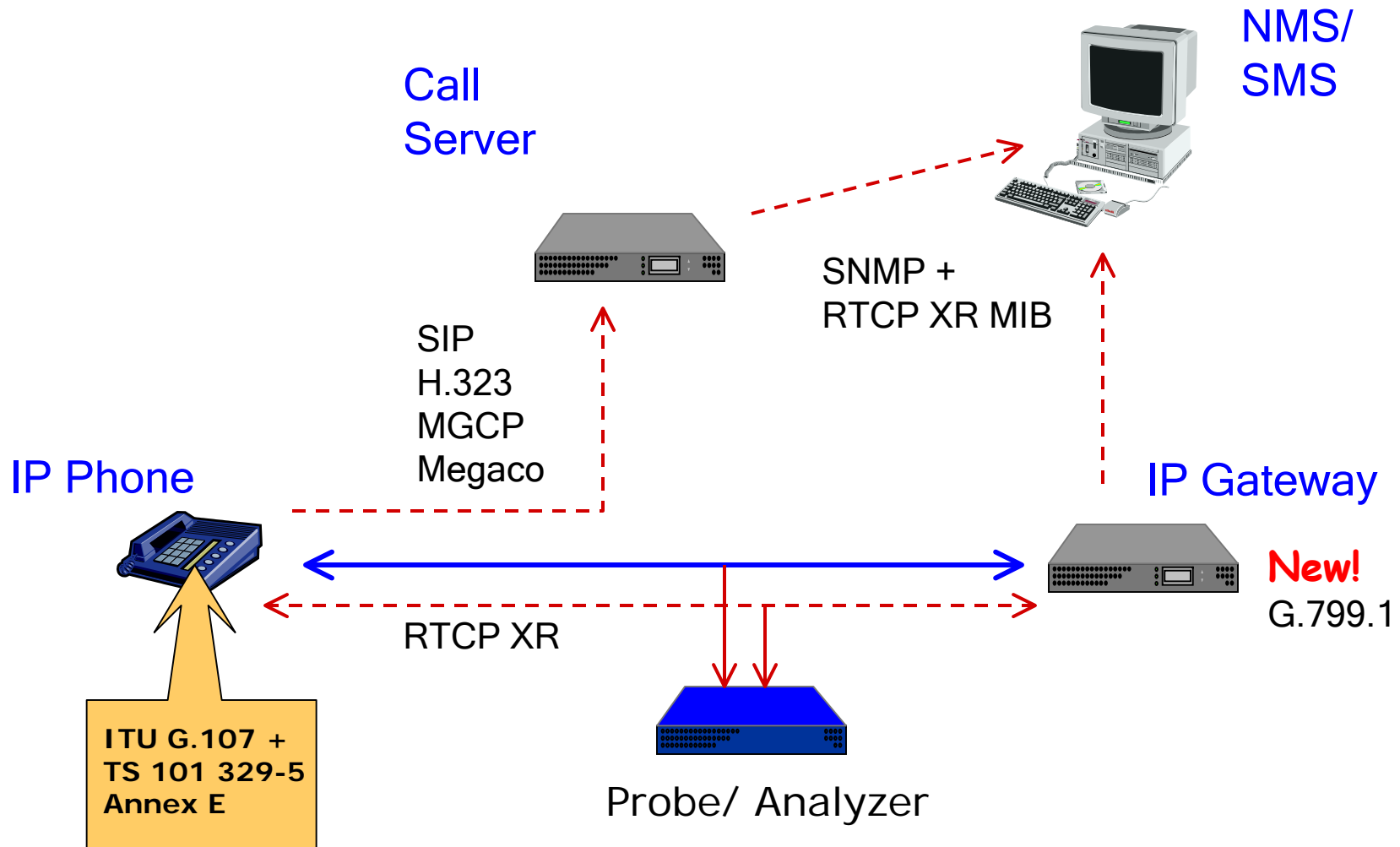
- media path reporting protocol
- exchange information between endpoints
- measure at/near “user interface”
- metrics optimized for VoIP
- make use of existing data from DSP



Second step - signaling based reporting



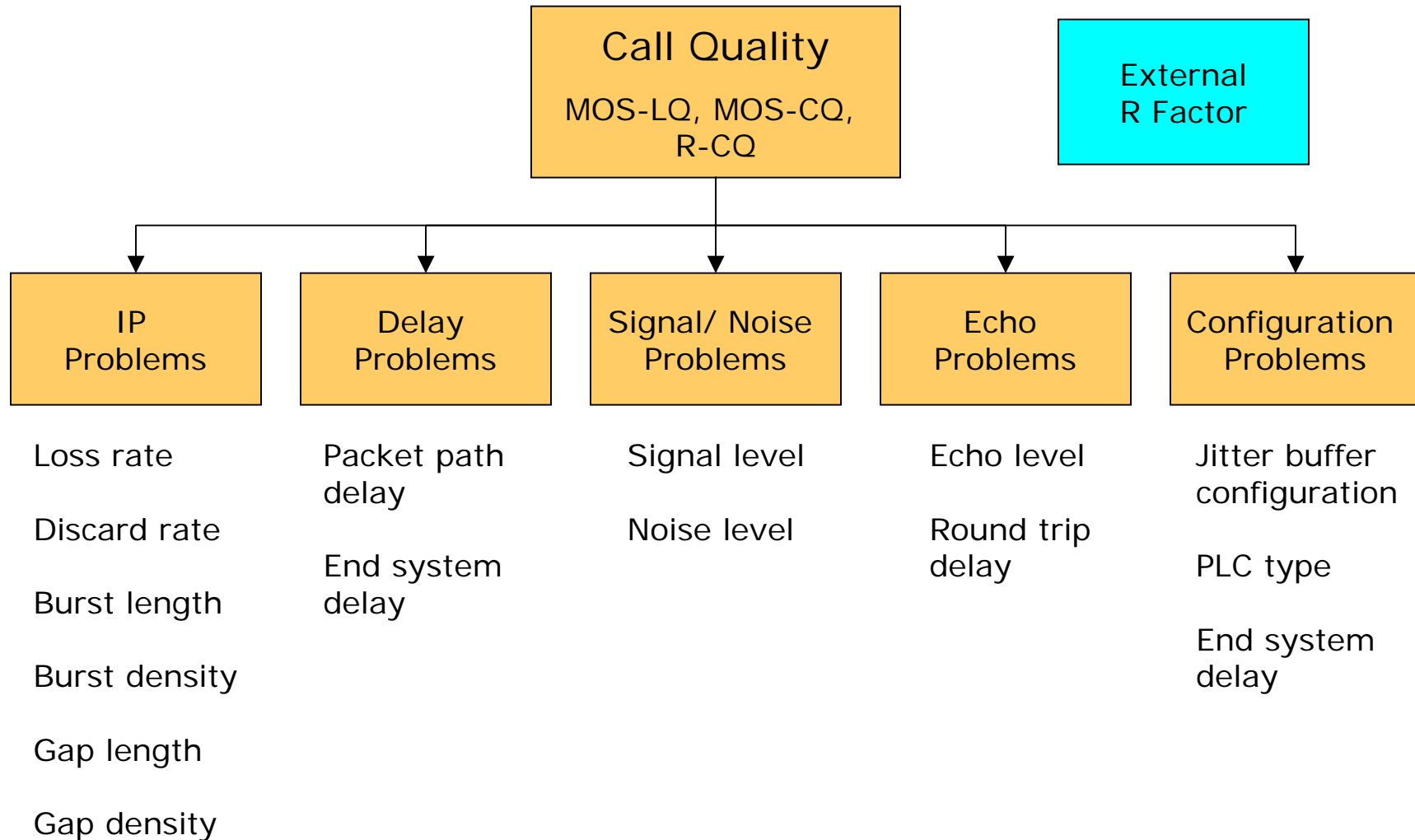
Complete Solution - Management Framework



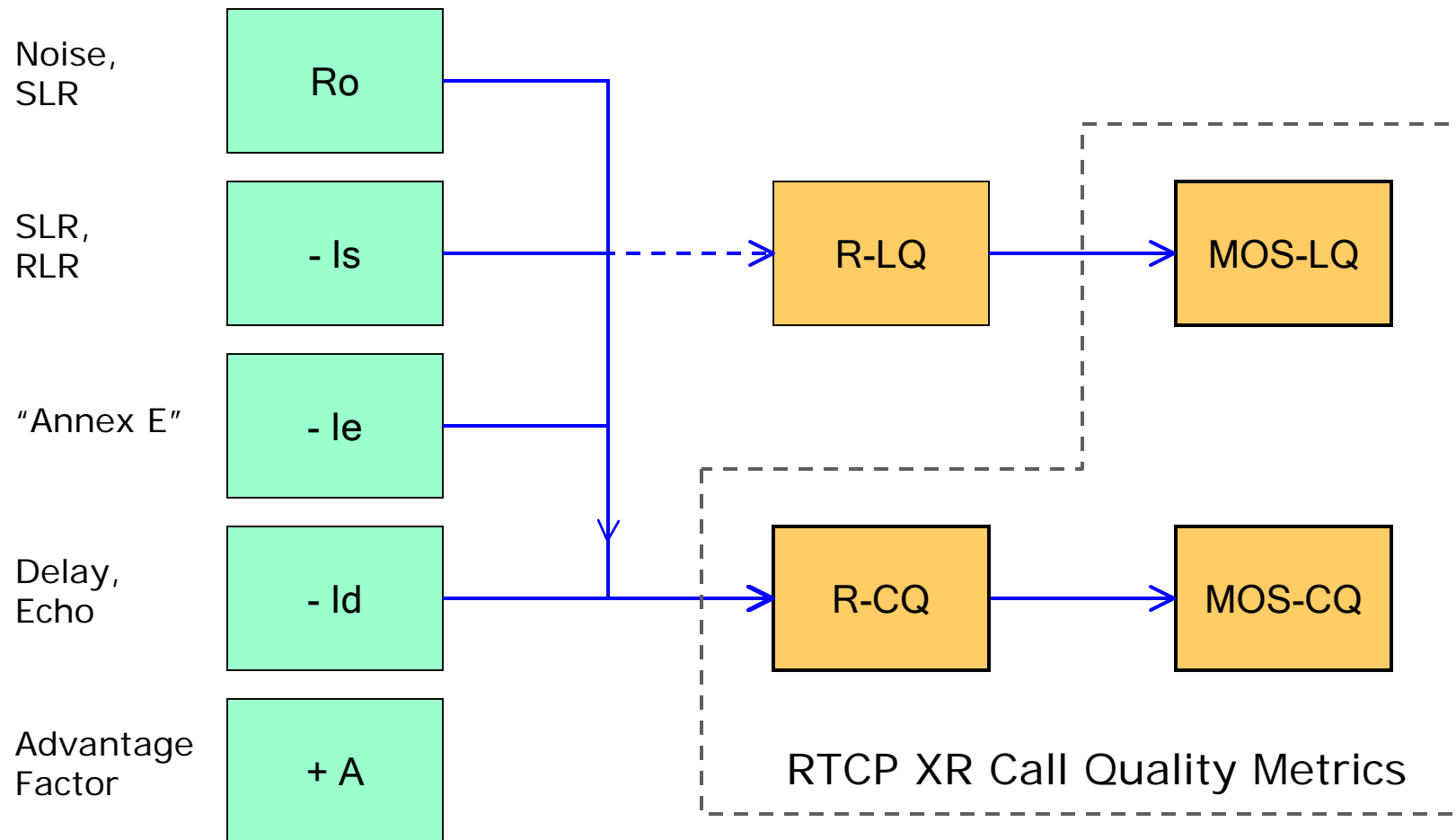
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RTCP XR VoIP Performance Metrics

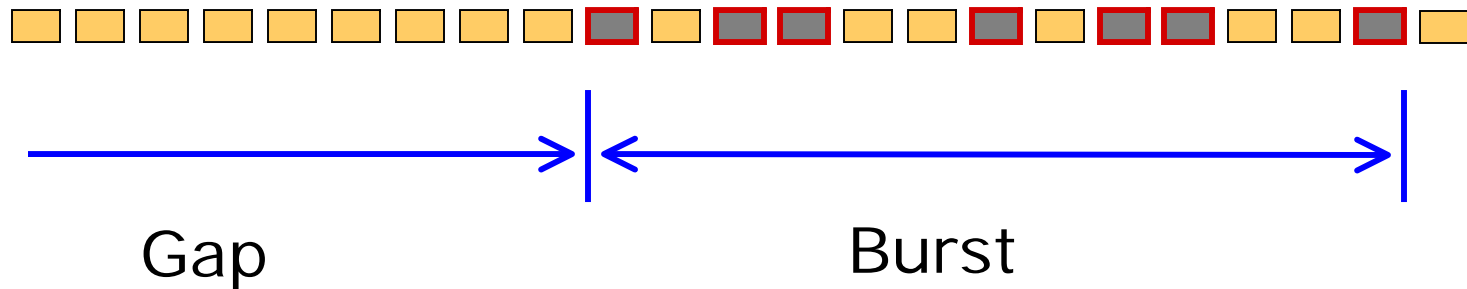


ITU G.107 (E Model) and RTCP XR

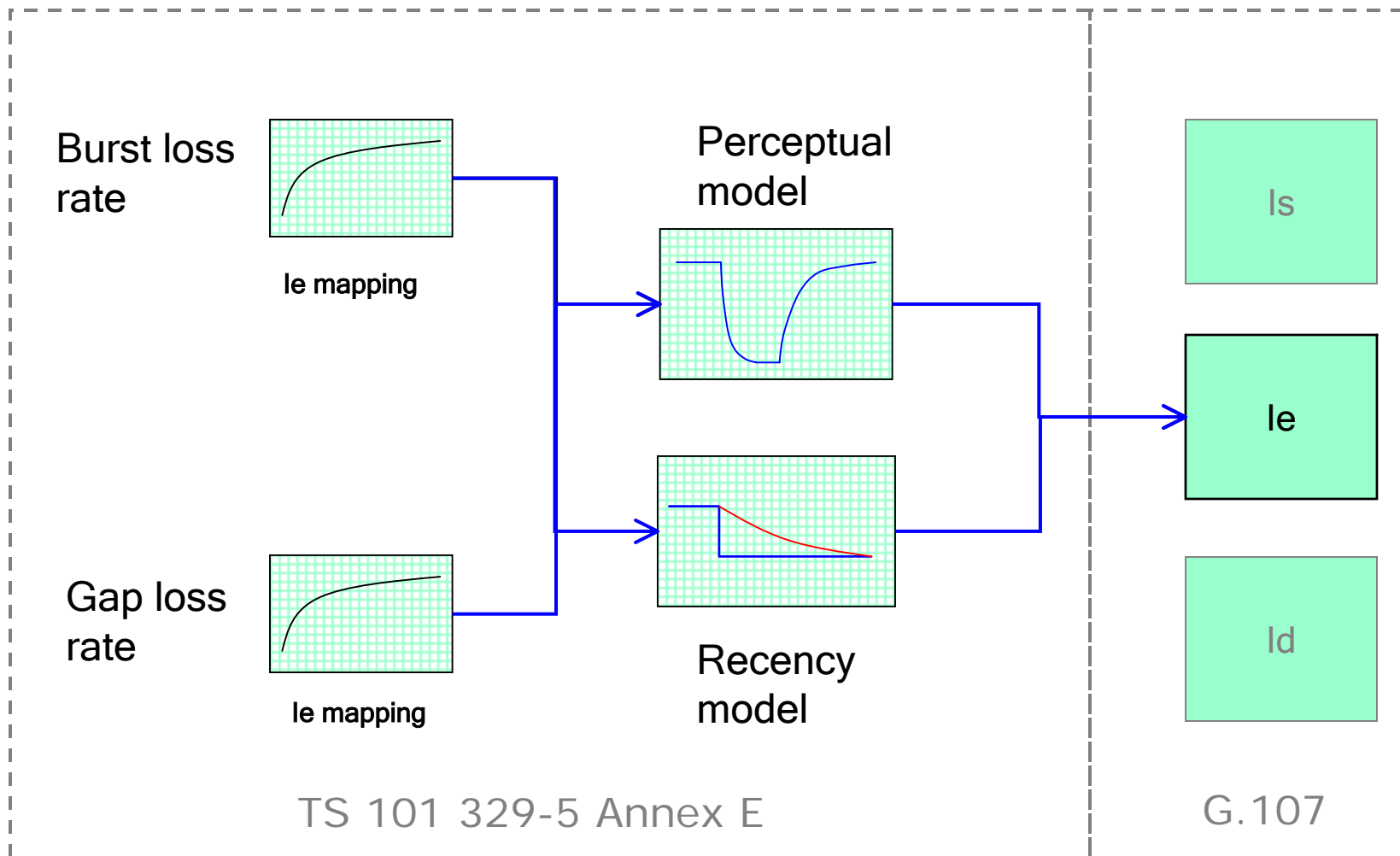


“Annex E” - Burst Packet Loss Model

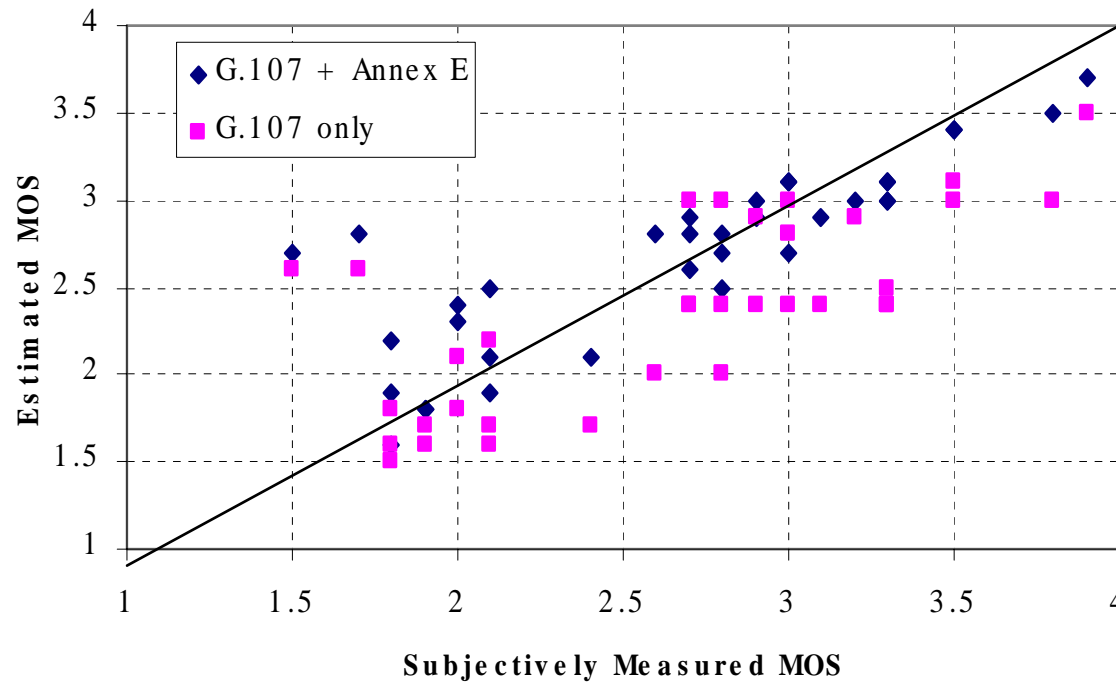
Typically 20-40% loss rate



“Annex E” - Perceptual Model



Annex E improves accuracy

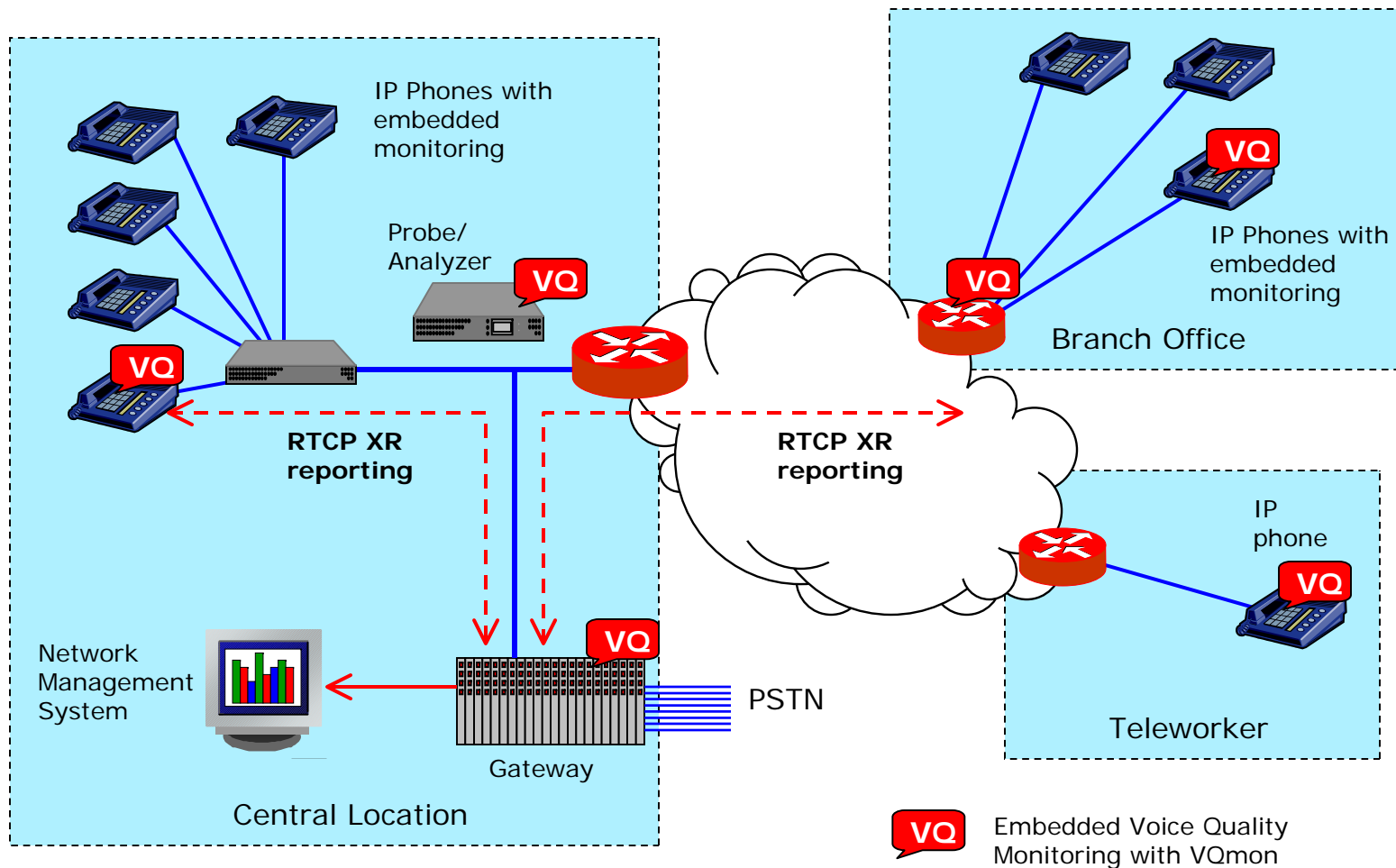


Time
Varying
Packet
Loss

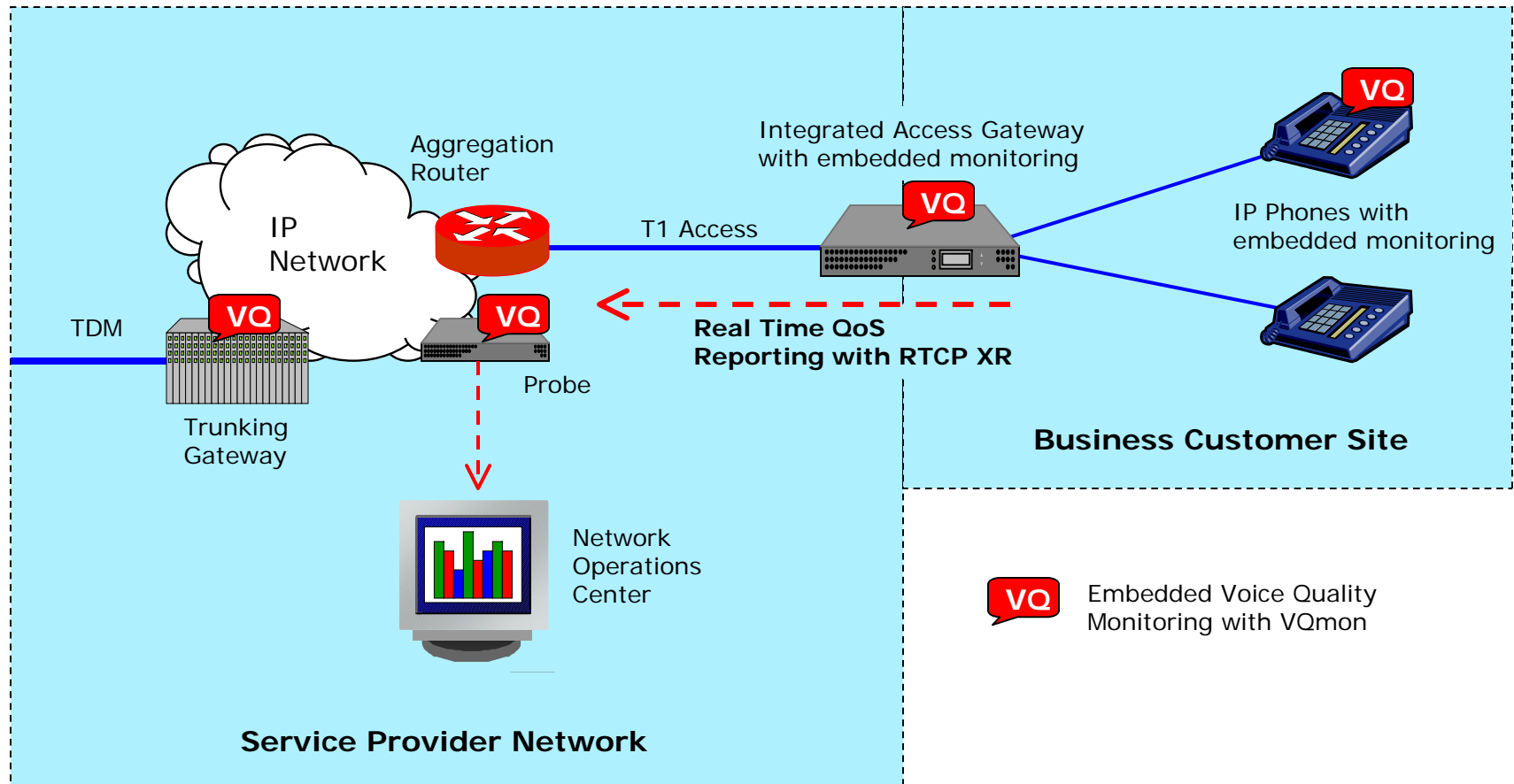
G.107 + "Annex E" - Correlation 0.84, Mean error 0.3 .. **A+**

G.107 only - Correlation 0.71, Mean error 0.5 .. **C-**

Applications - Enterprise



Applications - IP Centrex



Key Message

- VoIP performance management framework
 - Consistent set of VoIP metrics, based on RTCP XR
 - Media path and signaling protocol based reporting
- Distributed model
 - Ability to monitor every desktop, every home, every demarcation point
 - Provides end-to-end view through multiple service providers
- Identifies complex VoIP performance issues
- Applicable to Enterprise IP Telephony, IP Centrex, Cable Telephony, Cellular/IP
- Compatible with emerging Secure RTP framework
- Standards approved
- Technology available today
- Use it!!!!