Monitoring Inter-Carrier Voice over IP Services
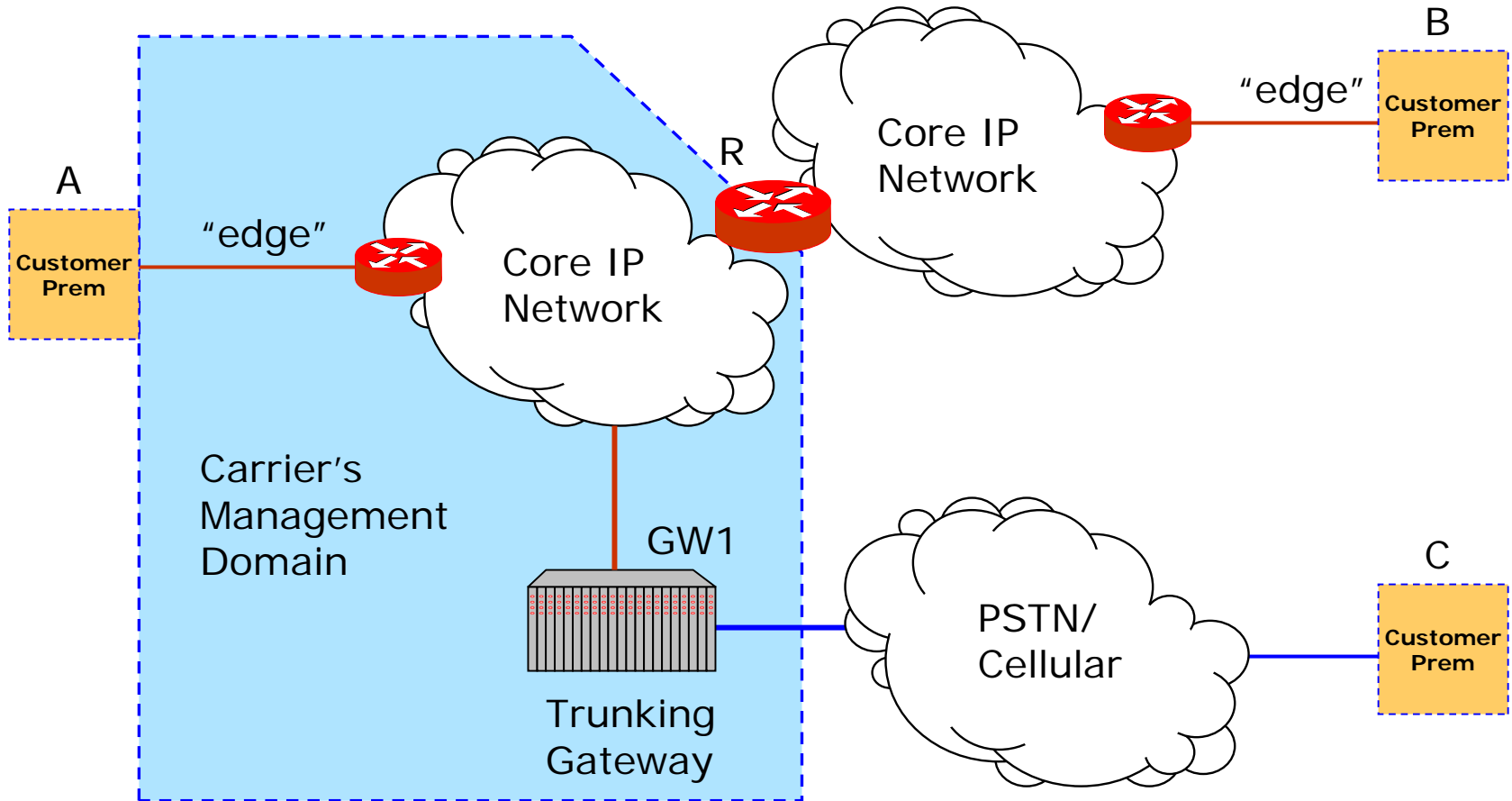
Alan Clark,
President & CEO
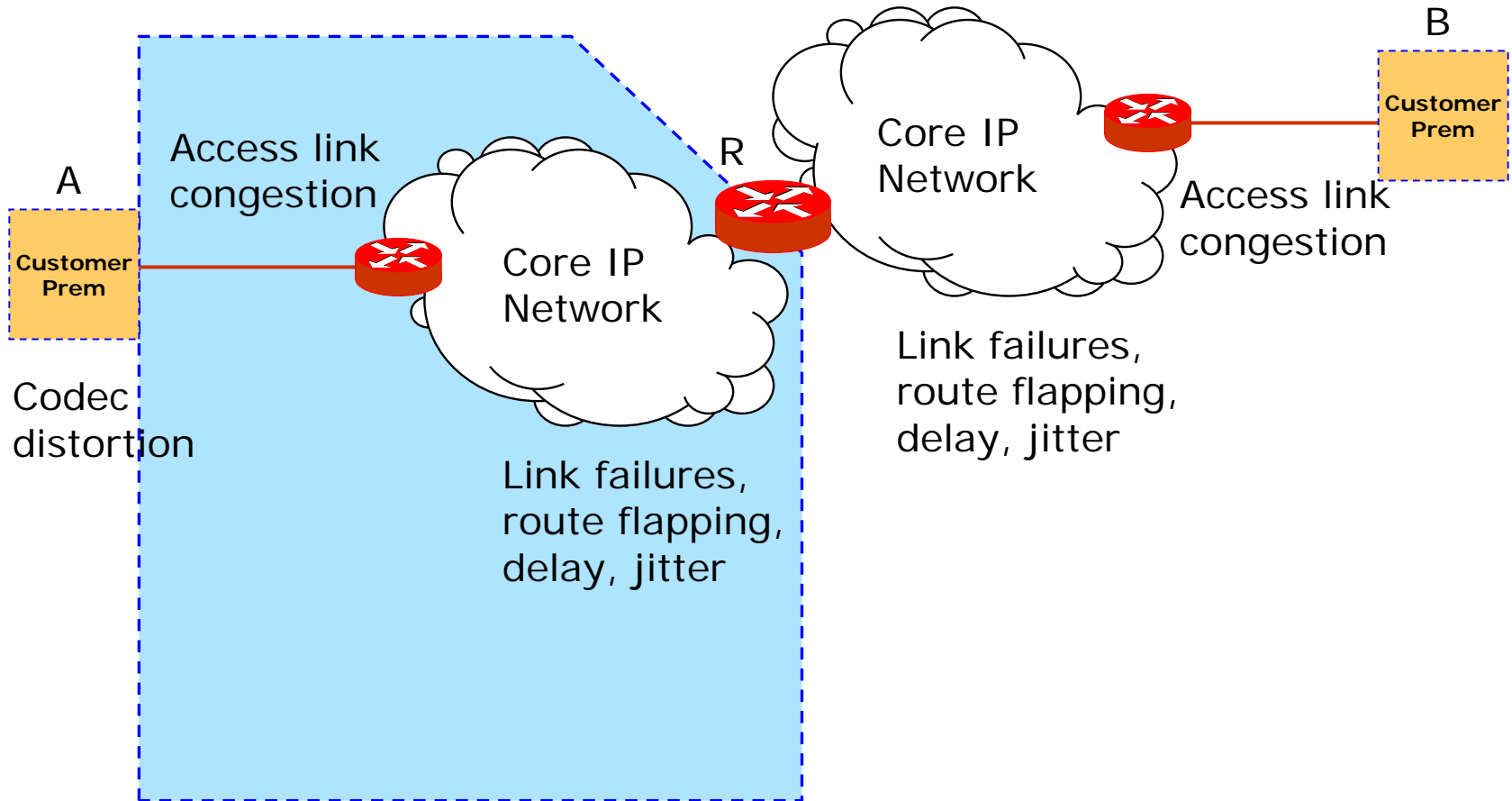Telchemy, Incorporated

http://www.telchemy.com

Outline

- Scenarios - VoIP-PSTN vs VoIP-IP
- Typical issues and problems
- Distributed service quality monitoring
- Application example
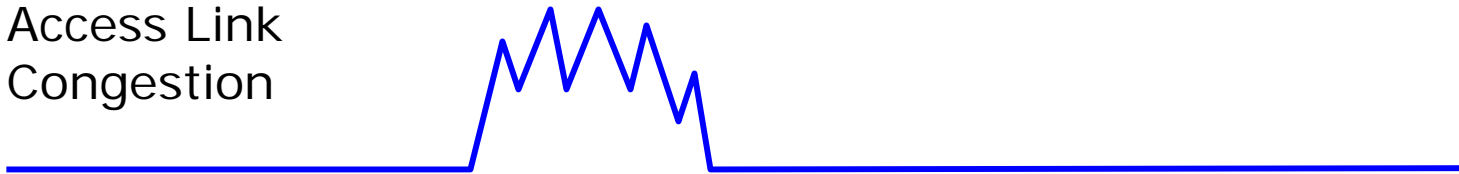
Inter-carrier Scenarios

A   "edge"   Core IP Network   R   Core IP Network   "edge"   B

Customer Prem

Carrier's Management Domain

GW1

Trunking Gateway

PSTN/ Cellular

Customer Prem   C

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Inter-carrier Scenarios - VoIP-IP

B

Customer Prem

Access link congestion

A

Customer Prem

Core IP Network

R

Core IP Network

Access link congestion

Codec distortion

Link failures, route flapping, delay, jitter

Link failures, route flapping, delay, jitter

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IP Problems

Access Link
Congestion

Link
Failures

IP Problems are Transient

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Inter-carrier Scenarios - VoIP-PSTN

A

Customer Prem

Link failures, route flapping, delay, jitter

Access link congestion

Core IP Network

Codec distortion

Signal level, Noise, Echo

GW1

Codec distortion
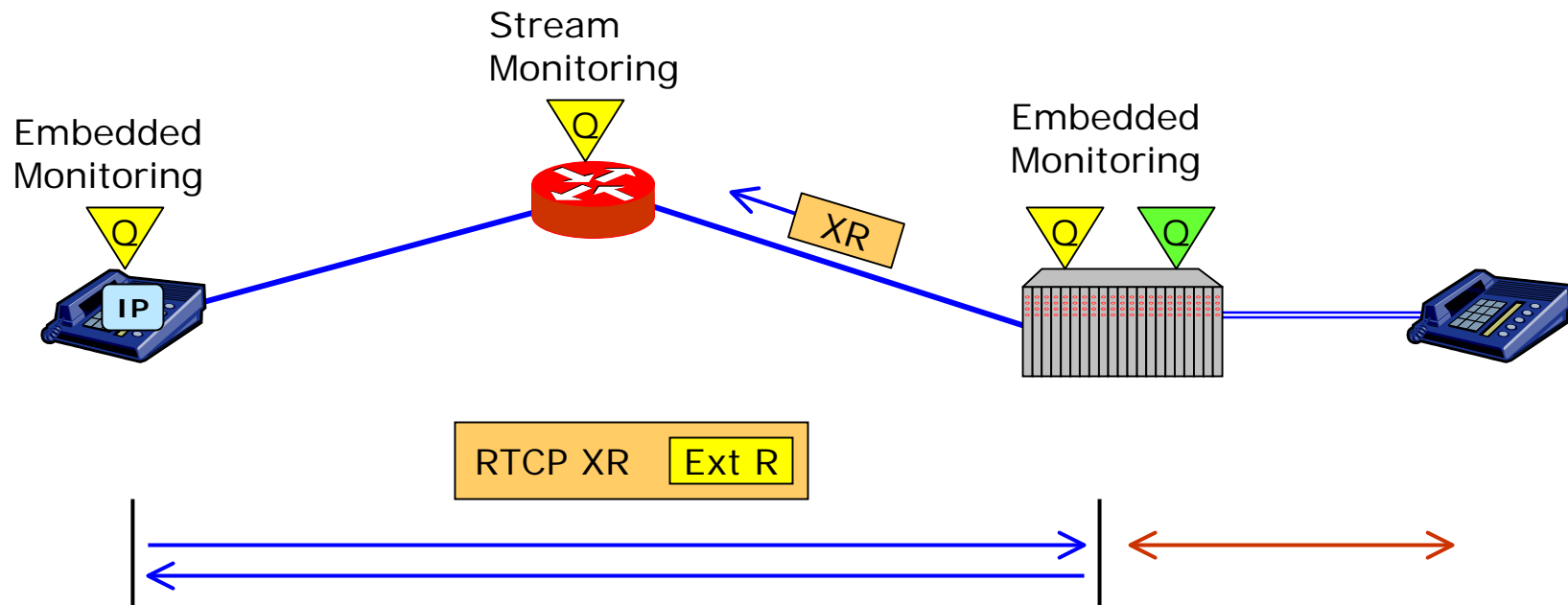
PSTN/ Cellular

C

Customer Prem

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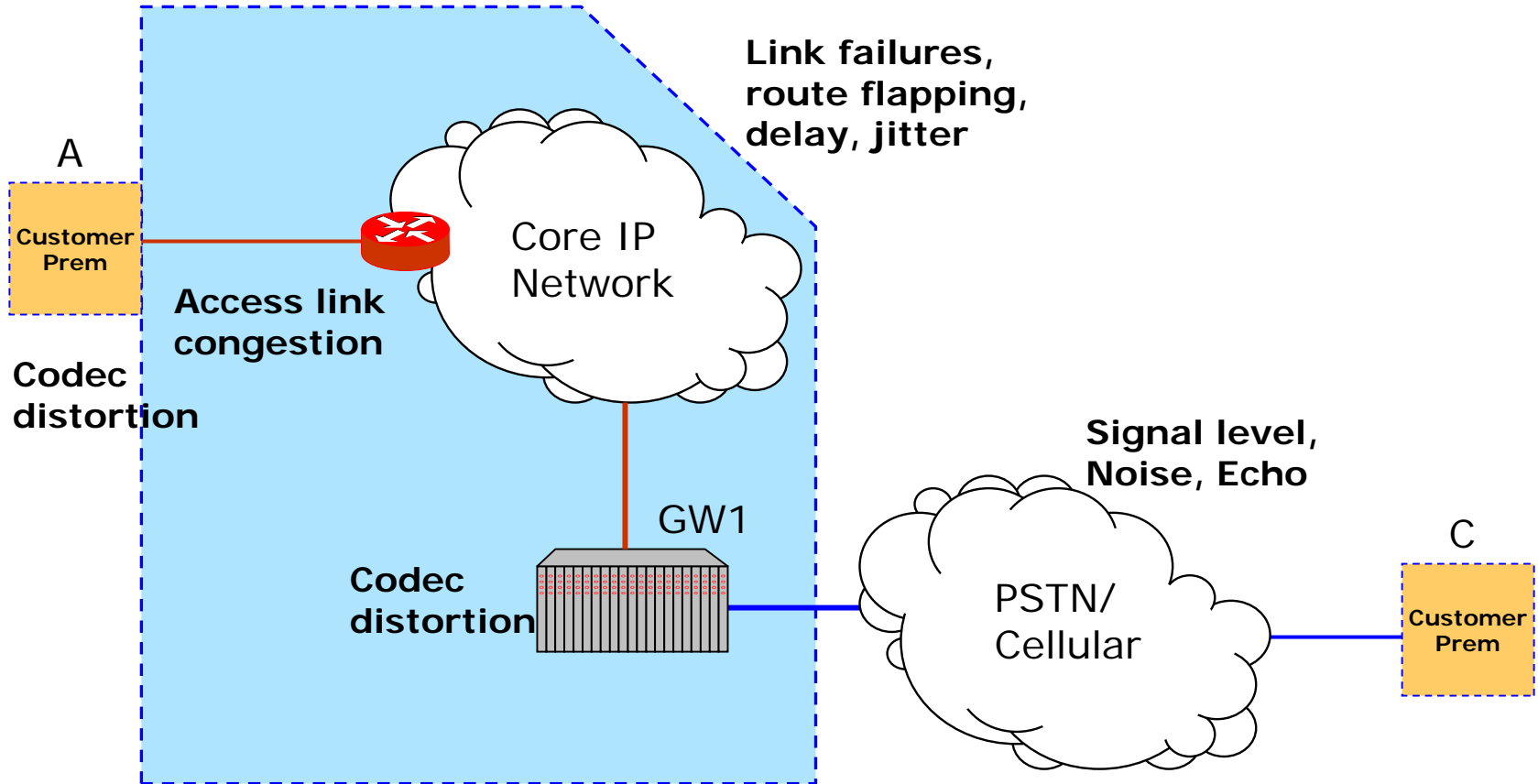
Added complexity

- IP problems are transient

- Can't just add-subtract aggregate statistics

- Impact of problem is often due to the collision of several factors (e.g. delay and echo)

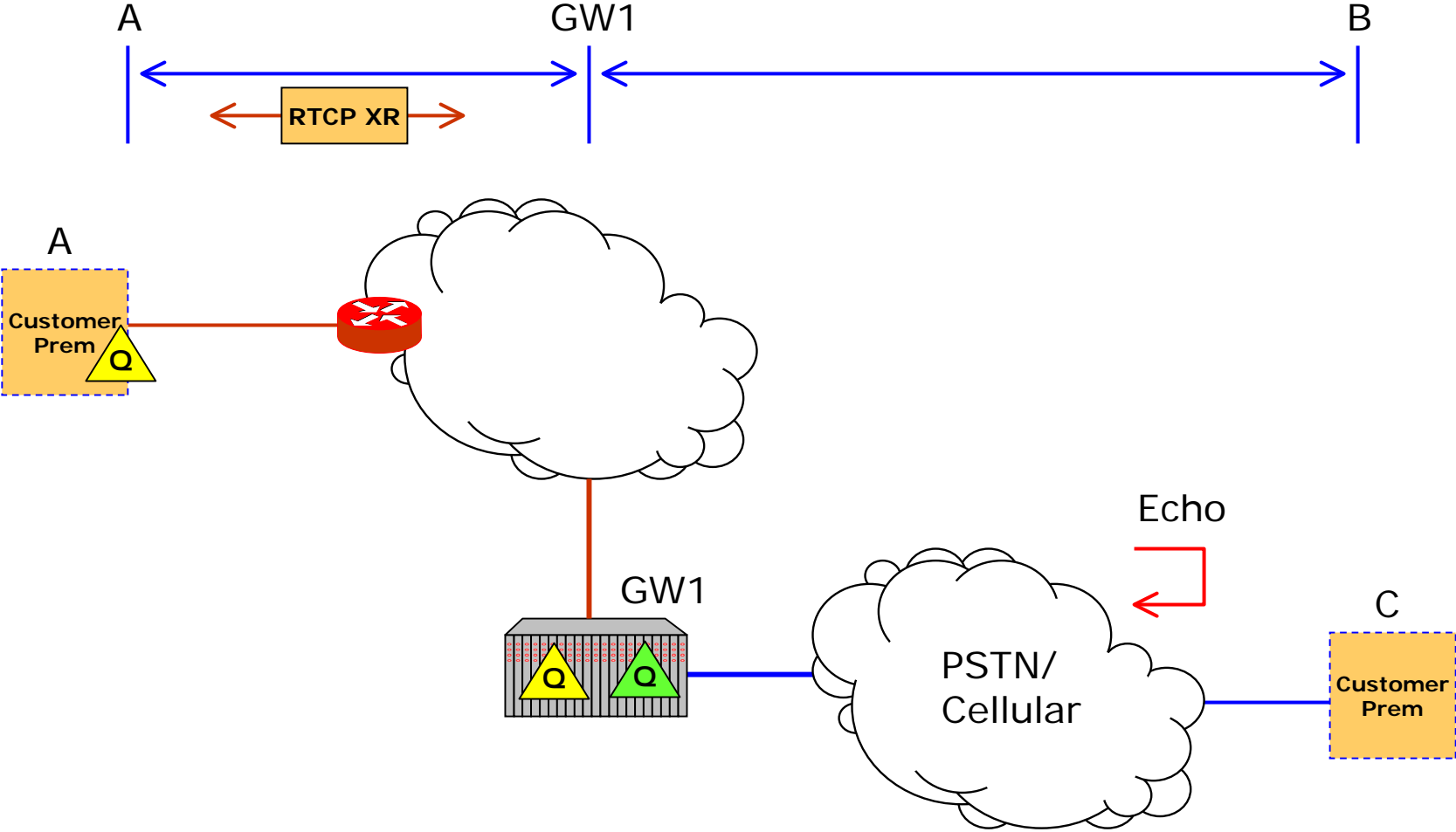- Need to monitor?
  - end-to-end quality or
  - end-demarc

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Distributed performance monitoring

Stream Monitoring

Embedded Monitoring

Embedded Monitoring

Q

Q

Q

Q

IP

XR

RTCP XR   Ext R

Q VoIP monitoring function
   (e.g. VQmon)

Q PCM monitoring function
   (e.g. P.561-3)

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VoIP-PSTN Monitoring

VoIP-PSTN Monitoring

- **Embedded monitoring function in Gateways**
  - Has direct access to both packet and PCM data
- **RTCP XR**
  - provides end-to-end data exchange
  - supports diagnosis of loss plan and echo problems
- **Signaling based reporting**
  - End-of-call reporting via signaling system
  - Metrics based on RTCP XR
- **SNMP - RTCP XR MIB**

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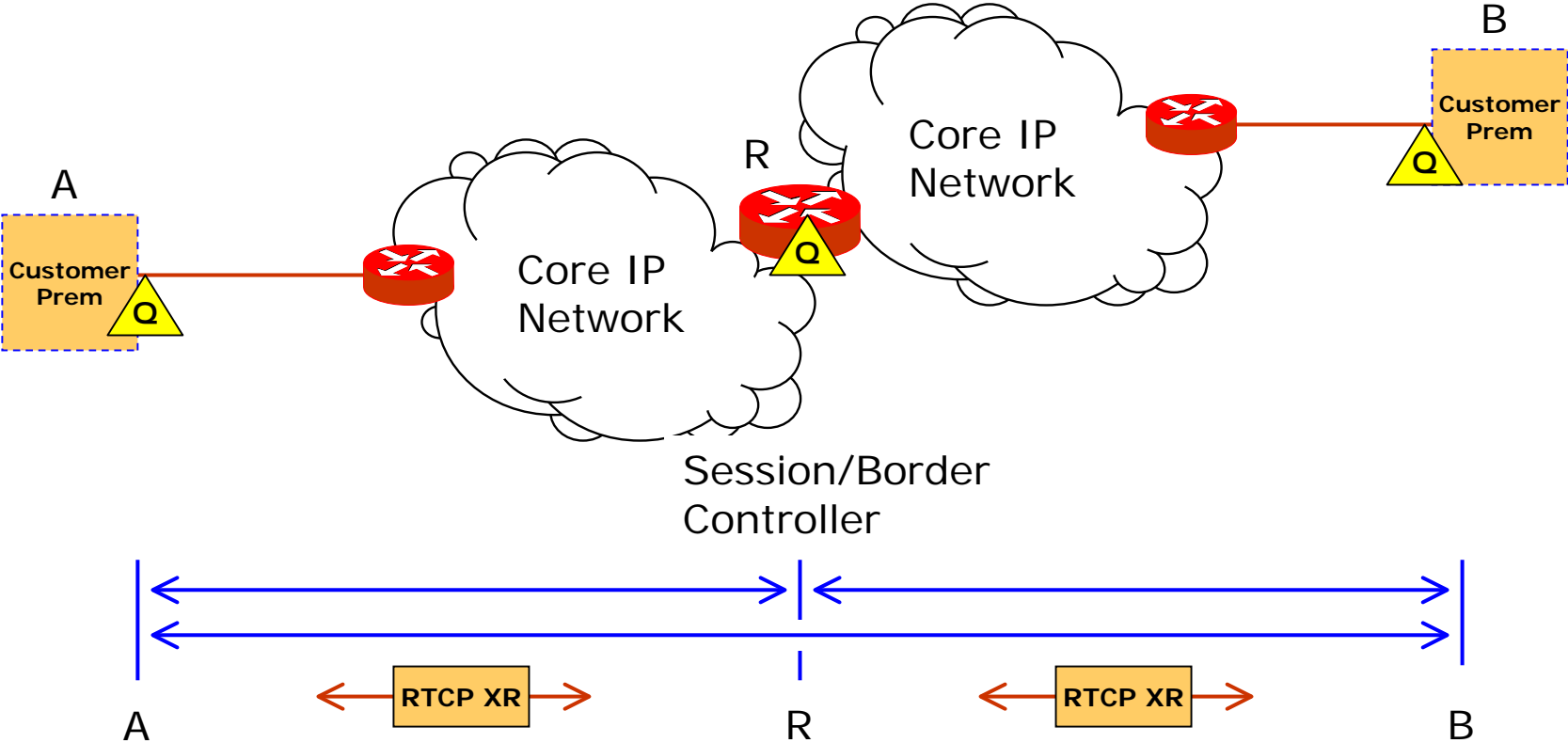
VoIP-IP Monitoring

VoIP-IP Monitoring

- Can monitor both endpoint to demarc and end-to-end call quality
- Session/Border Controller (SBC) is ideal location for monitoring function between service providers
- Embedded monitoring provides real time data from endpoints
- Use RTCP XR to provide:
  - SBC with access to endpoint provided data
  - Endpoint with feedback on endpoint-SBC path
  - Endpoint with feedback on endpoint-endpoint path

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VoIP Performance Management Framework
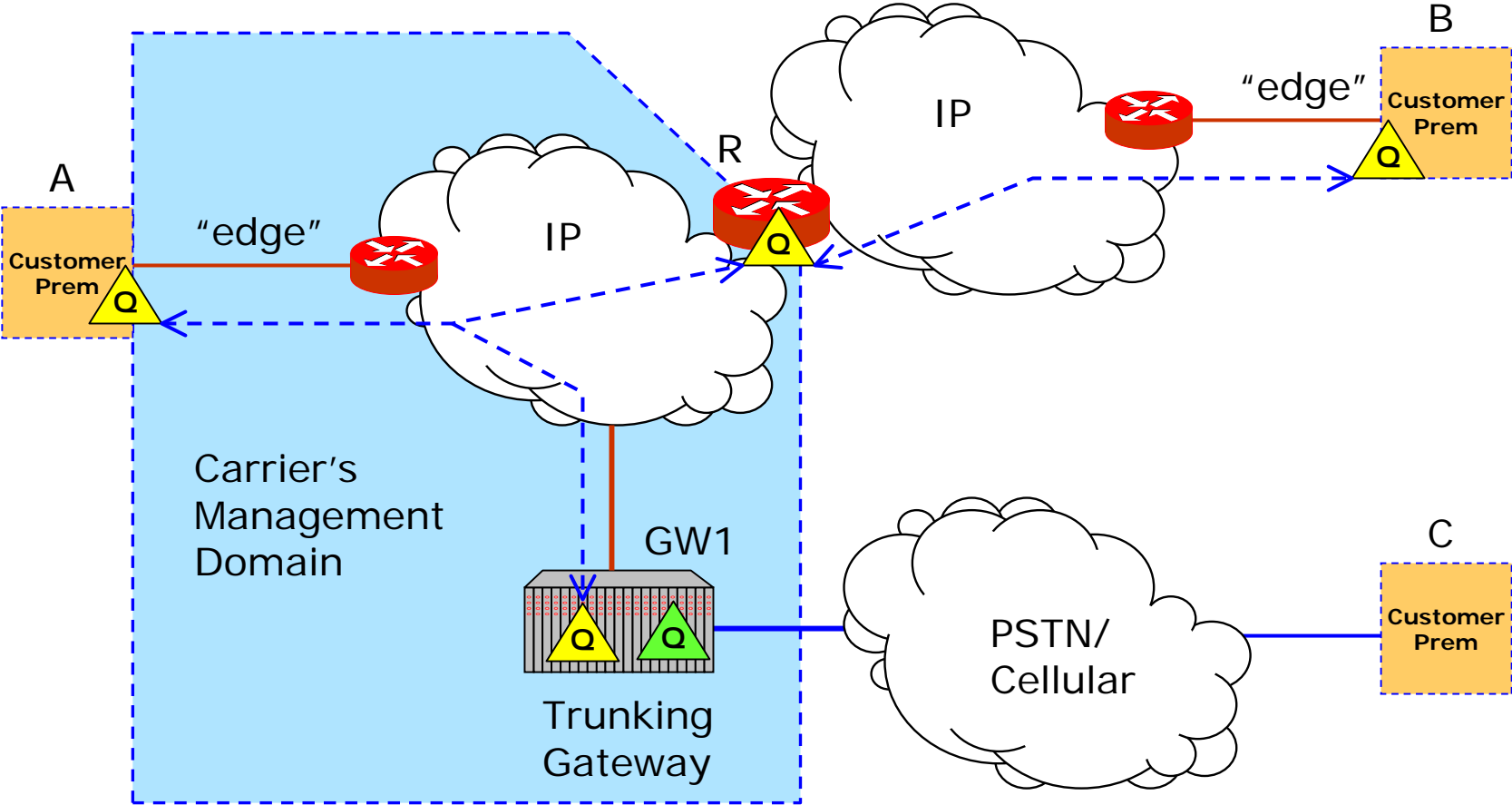
Recommendations

- Use the VoIP Performance Management Framework
- Deploy RTCP XR in access gateways, trunking gateways, IP phones
- Deploy RTCP XR-aware mid-stream monitoring technology in Session/Border Controllers and probes
- Use passive monitoring for live traffic
- Use active testing for pre-deployment and on-demand troubleshooting

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About Telchemy

Leading provider of Performance Management Infrastructure Technology

SQmediator
Mediation Function

VQmon®

SQprobe

Service Quality Monitoring Software Integrated into IP Phones, Gateways, Routers

VQmon Analysis Software for Probes and Analyzers

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