

Telchemy

QoS Management for Voice over IP

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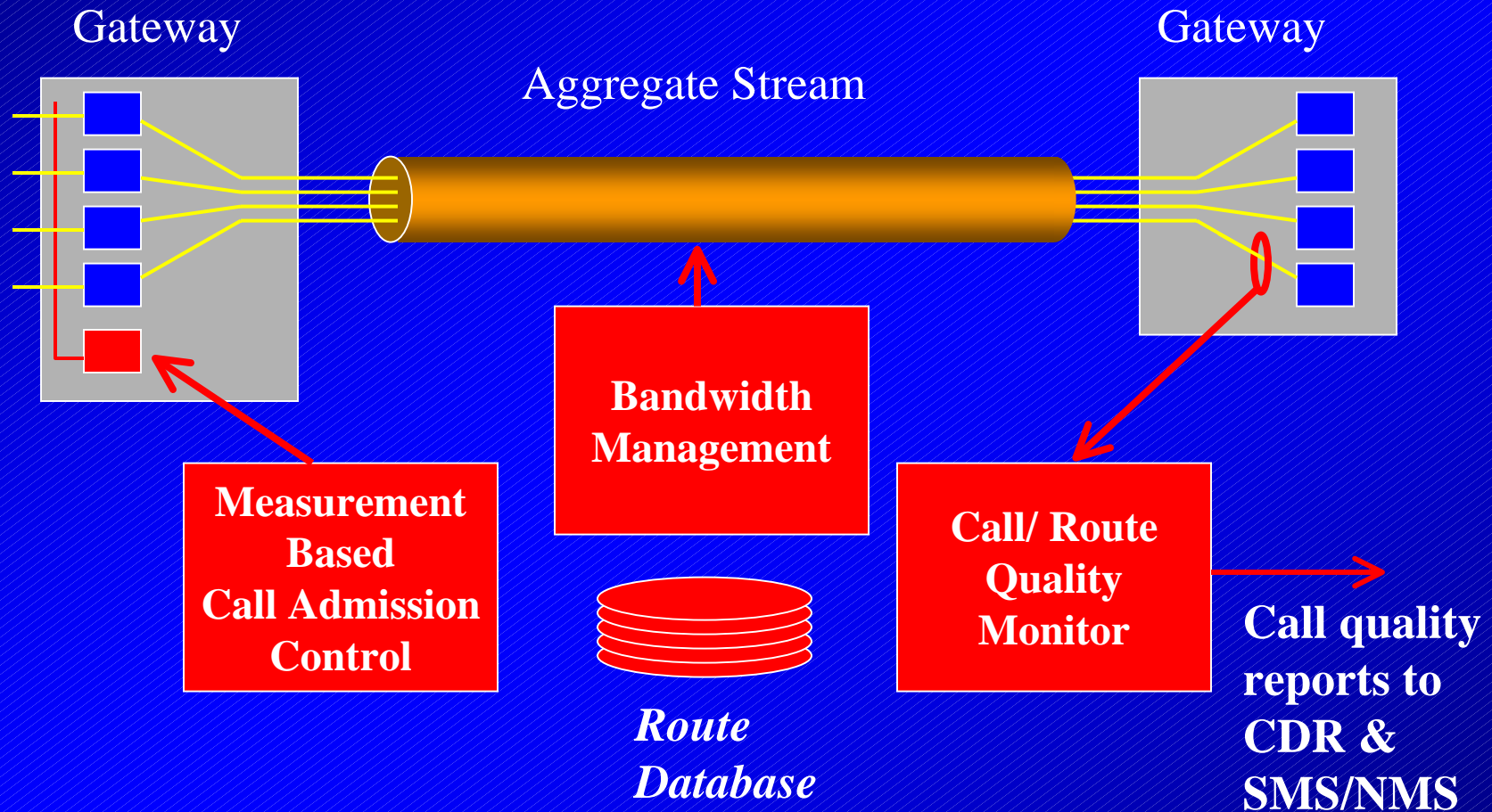
About Telchemy

- **Focus** – *deliver end-user perceived QoS with minimum use of network resources*
- **Approach** – *open architecture, software based, integrate with any VoIP systems*
- **First products** – *lightweight call quality monitoring software for integration into VoIP Gateways, IP Phones and SLA monitors*
- **Current development** – *QoS Server, providing Call Admission Control, Bandwidth Management*

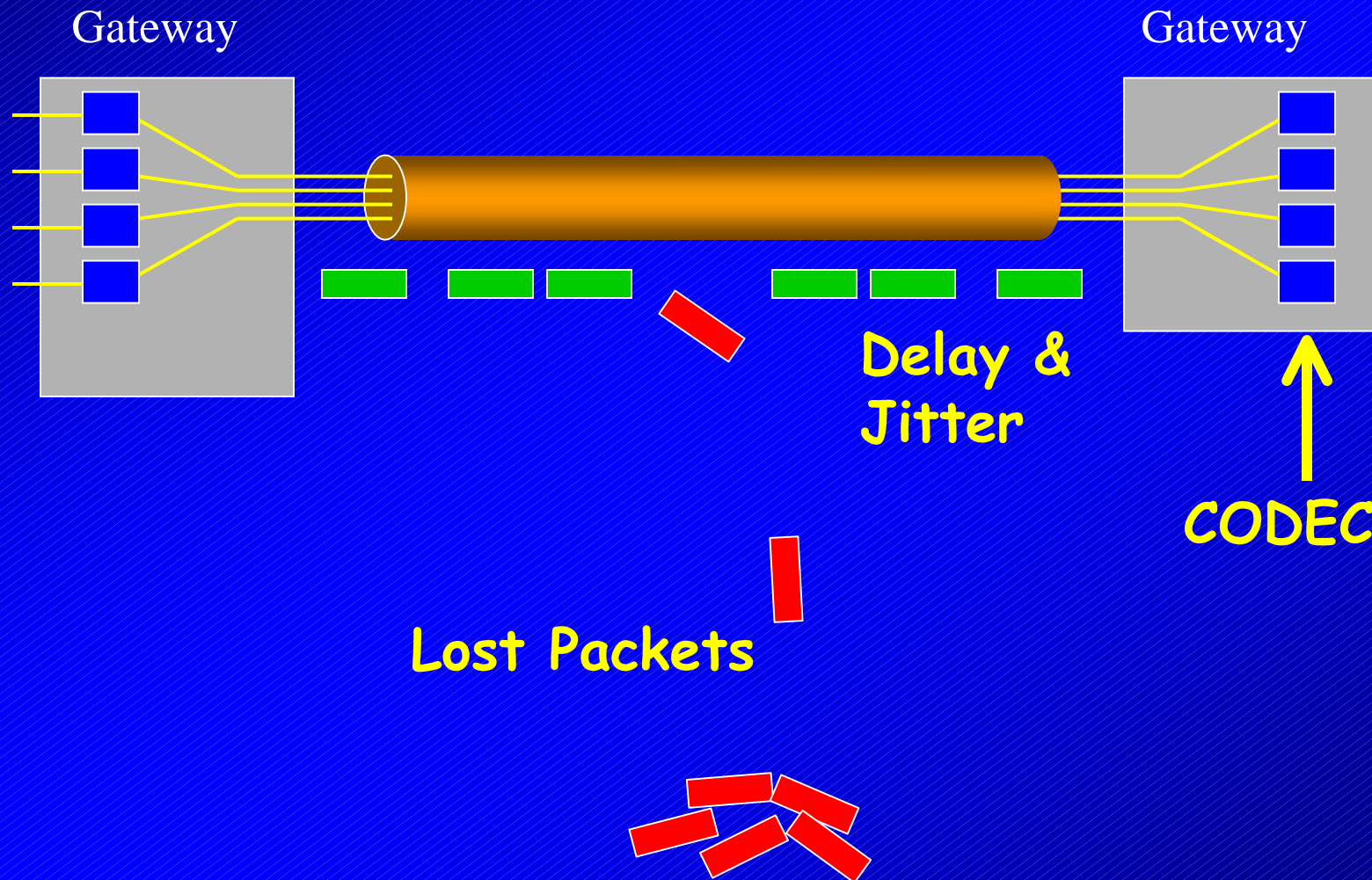
Why Manage QoS?

- Maintain end-user perceived quality
 - *Subscriber retention/ satisfaction*
- Minimize network operating costs
 - *Avoid over provisioning*
- Enforce Service Level Agreements
- Support differentiated service levels
- Identify performance problems/ trends

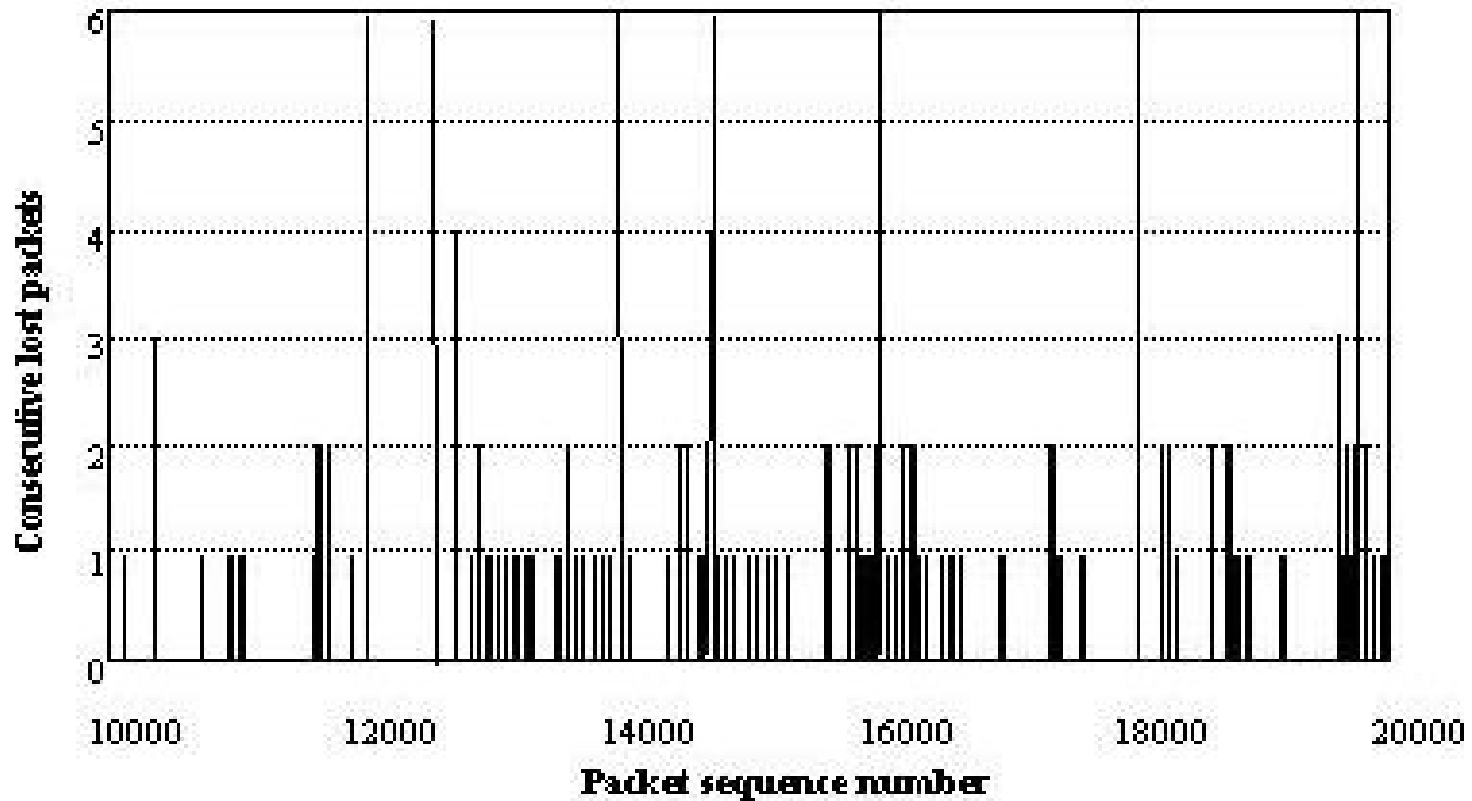
Telchemy QoS Architecture



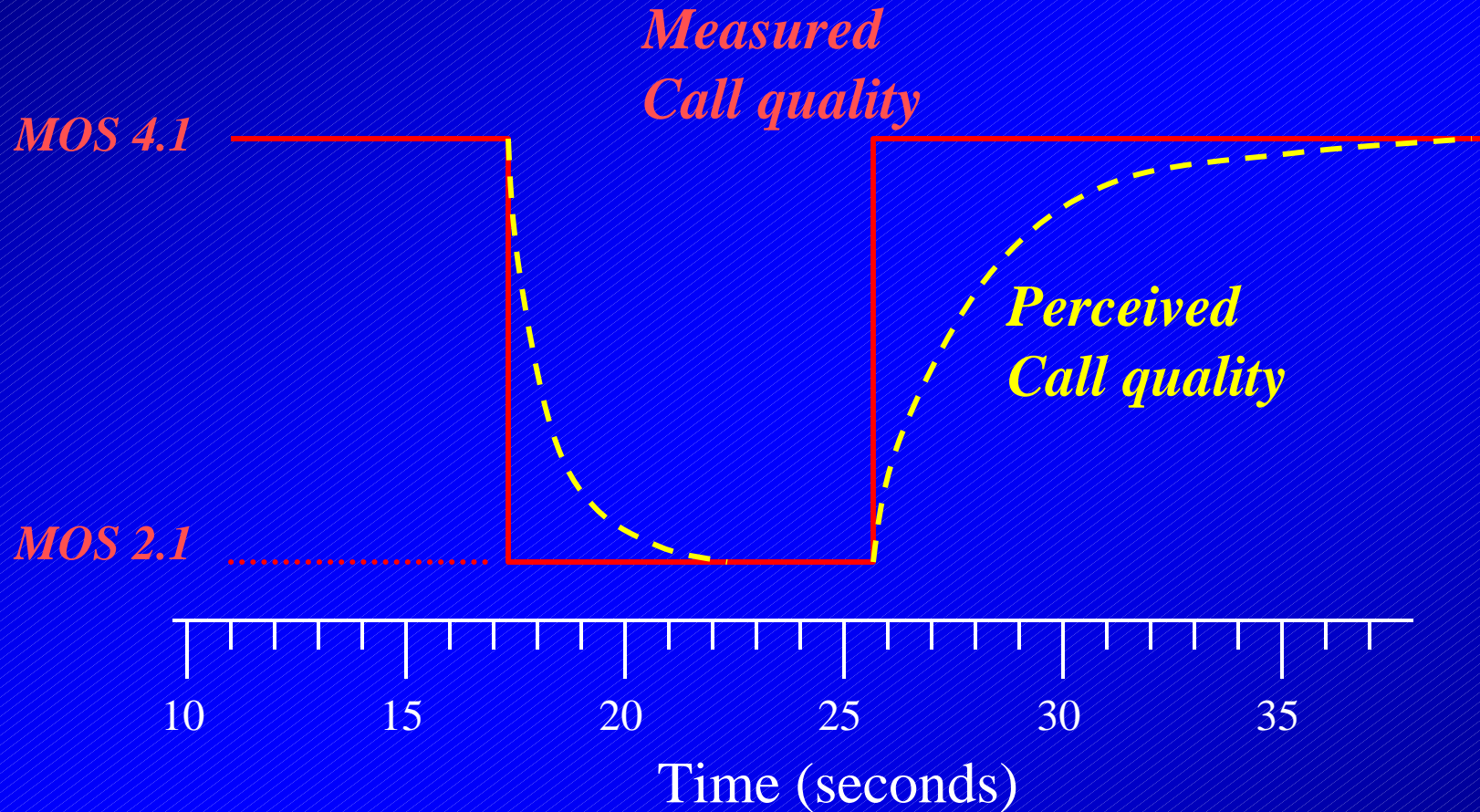
Factors impacting quality



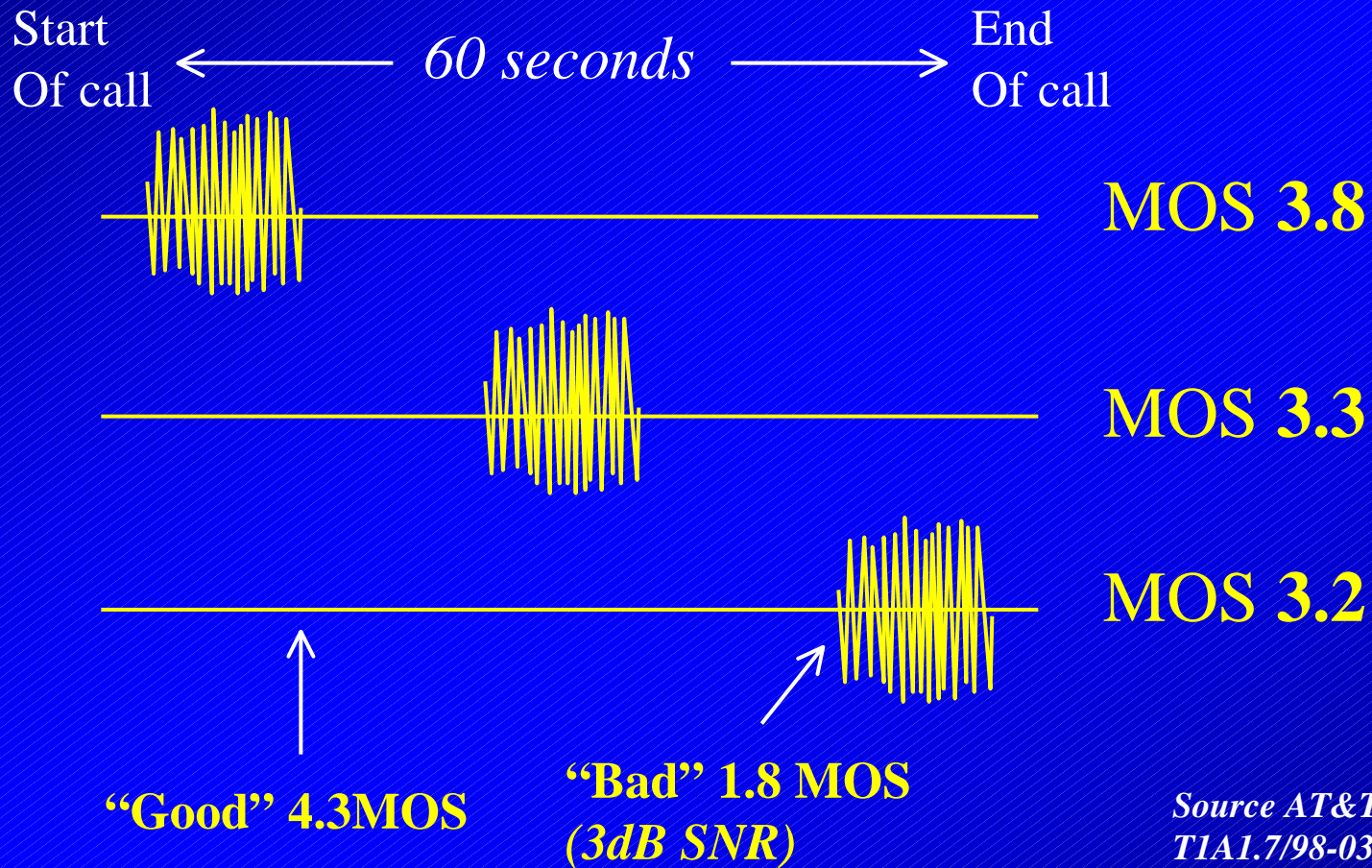
Packet Loss is *Bursty*



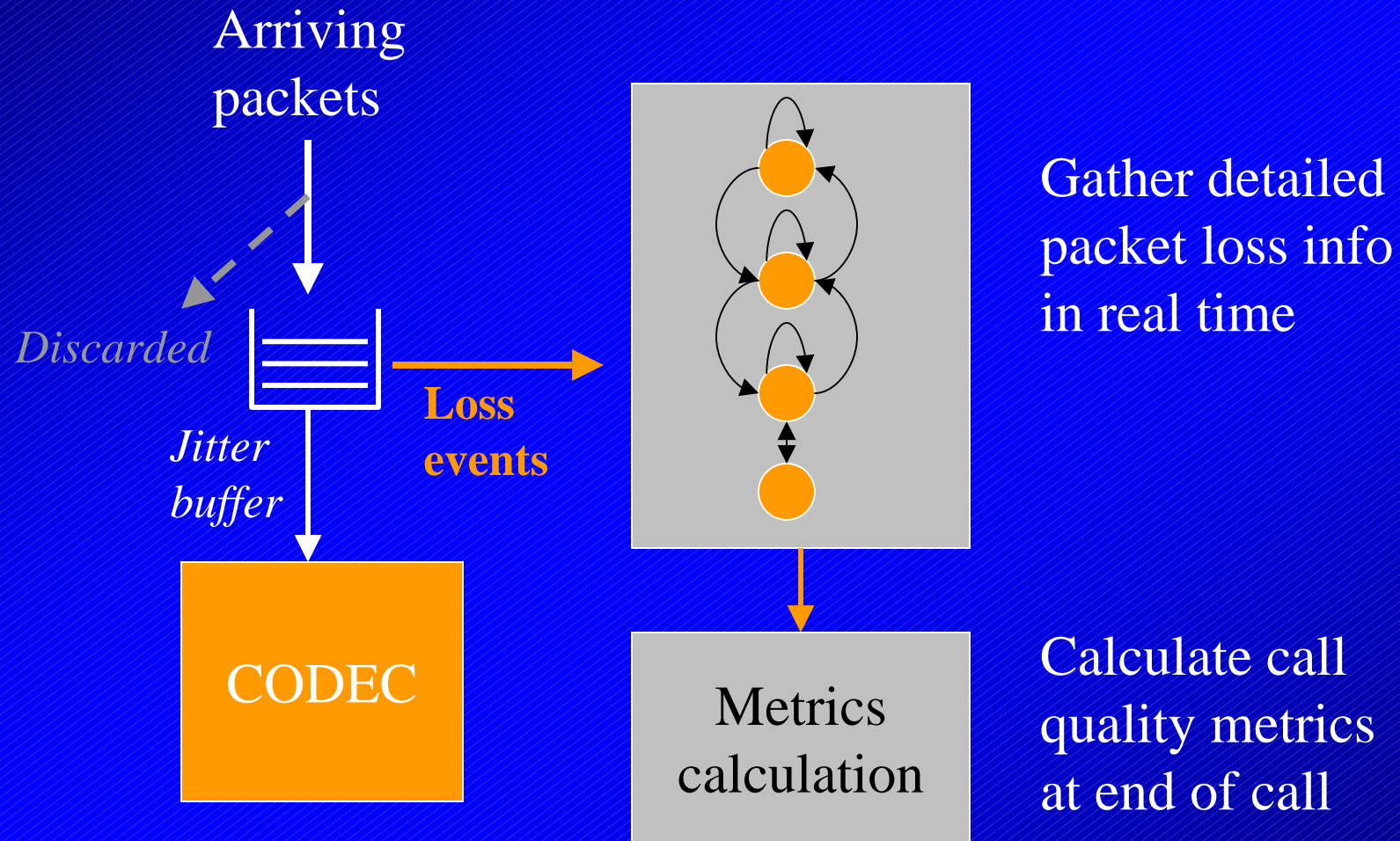
Call quality varies with time



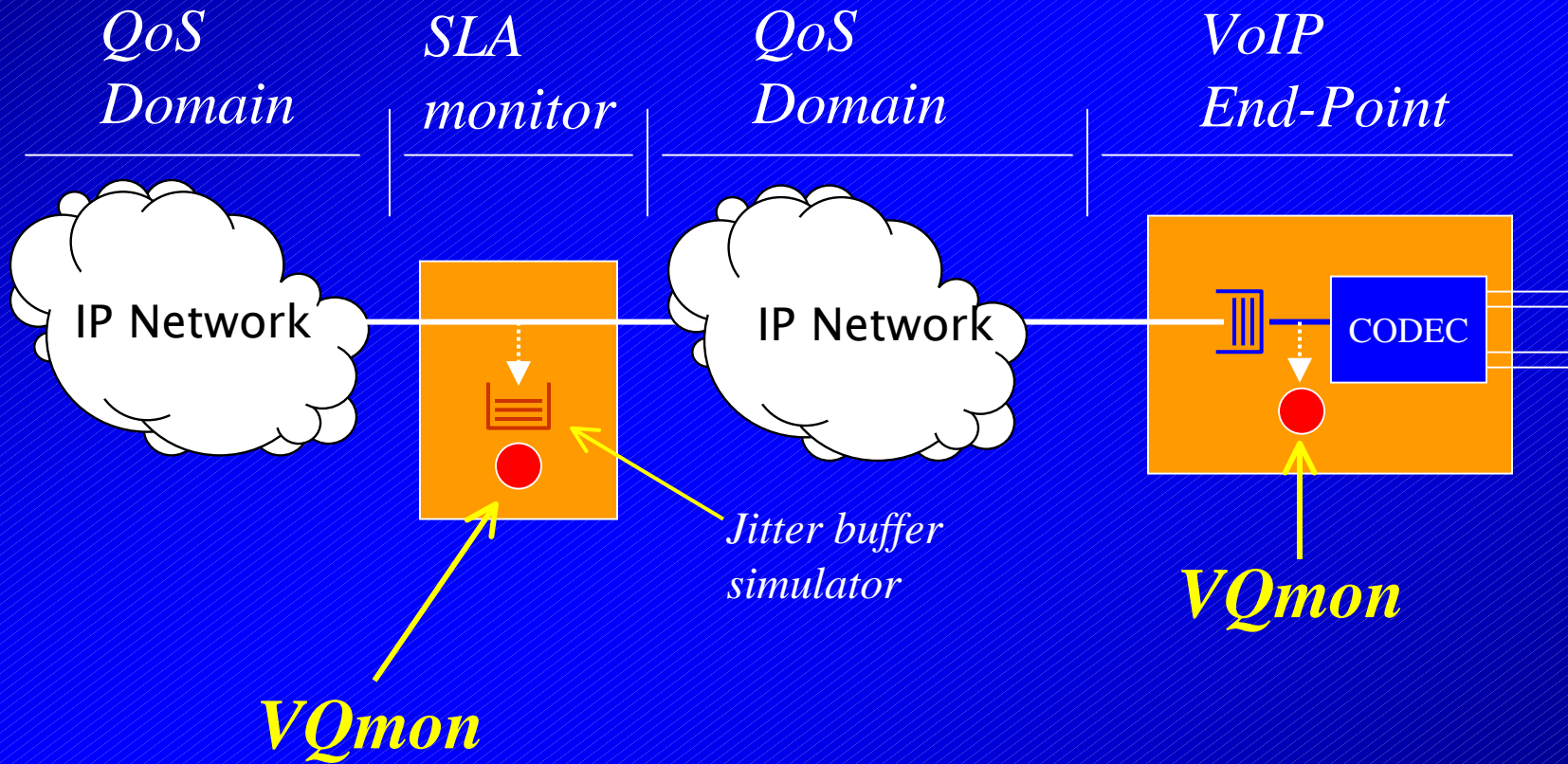
“Recency” effect



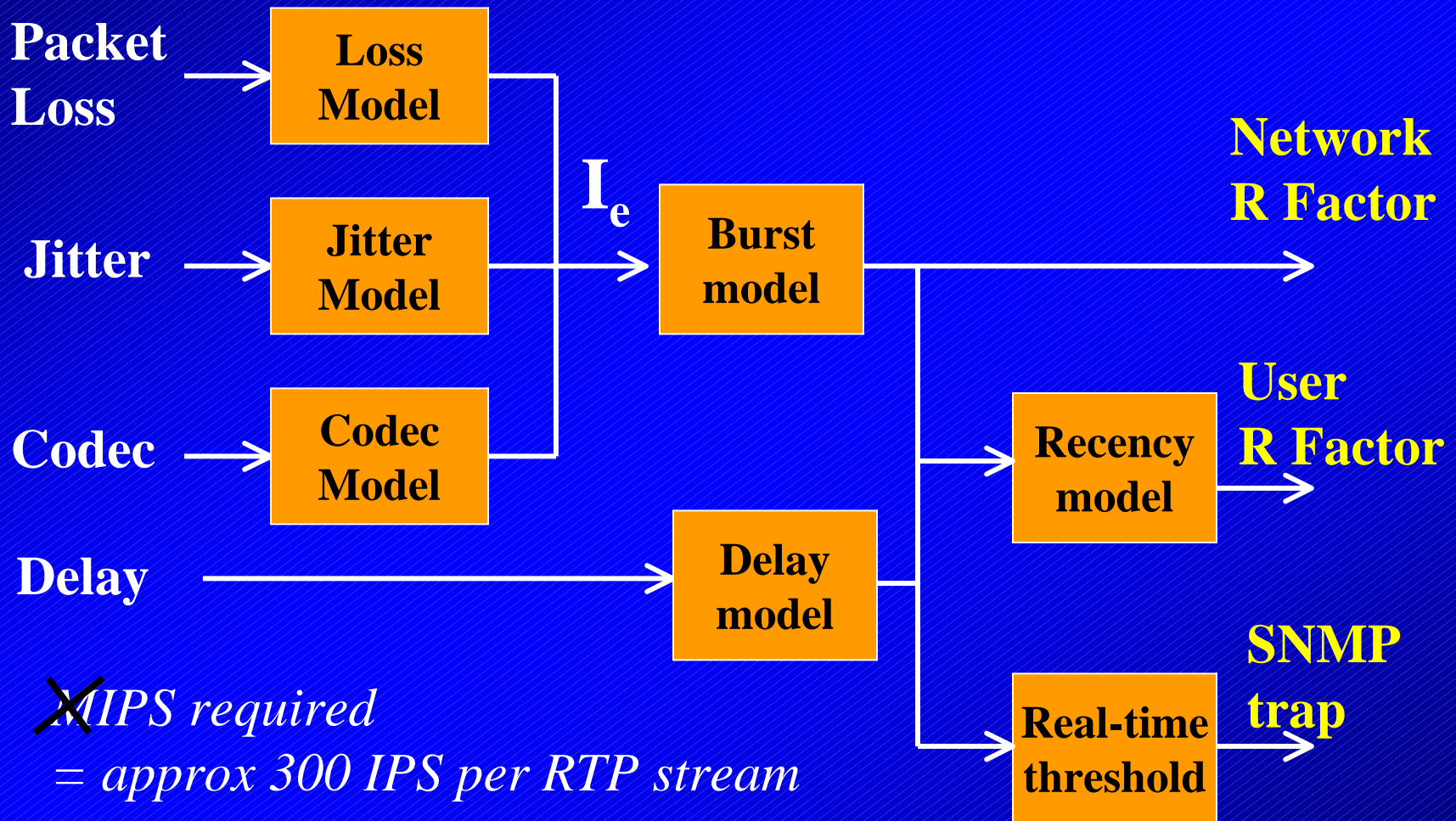
How VQmon works



Gateway or SLA?

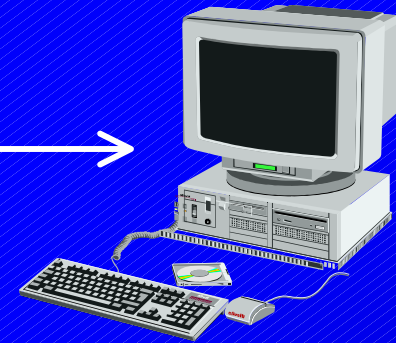


Extended E Model



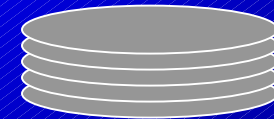
Call Quality Metrics

→ **SNMP**
Network R Factor
History - Min, Max, Avge, Groups
Events – R Factor, (src, dest) IP address



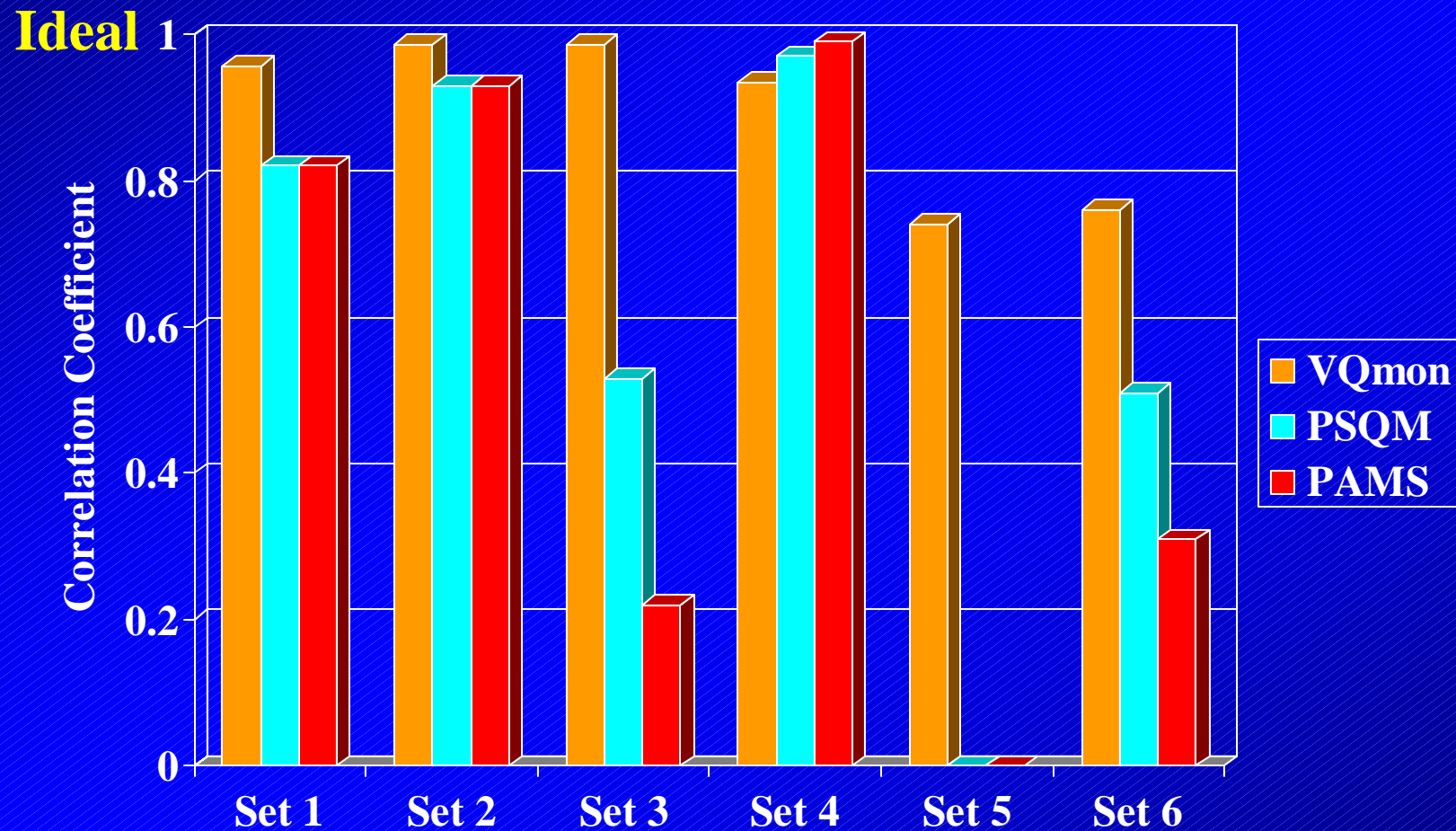
Net Management System

→ **Signaling System**
User R Factor & estimated MOS

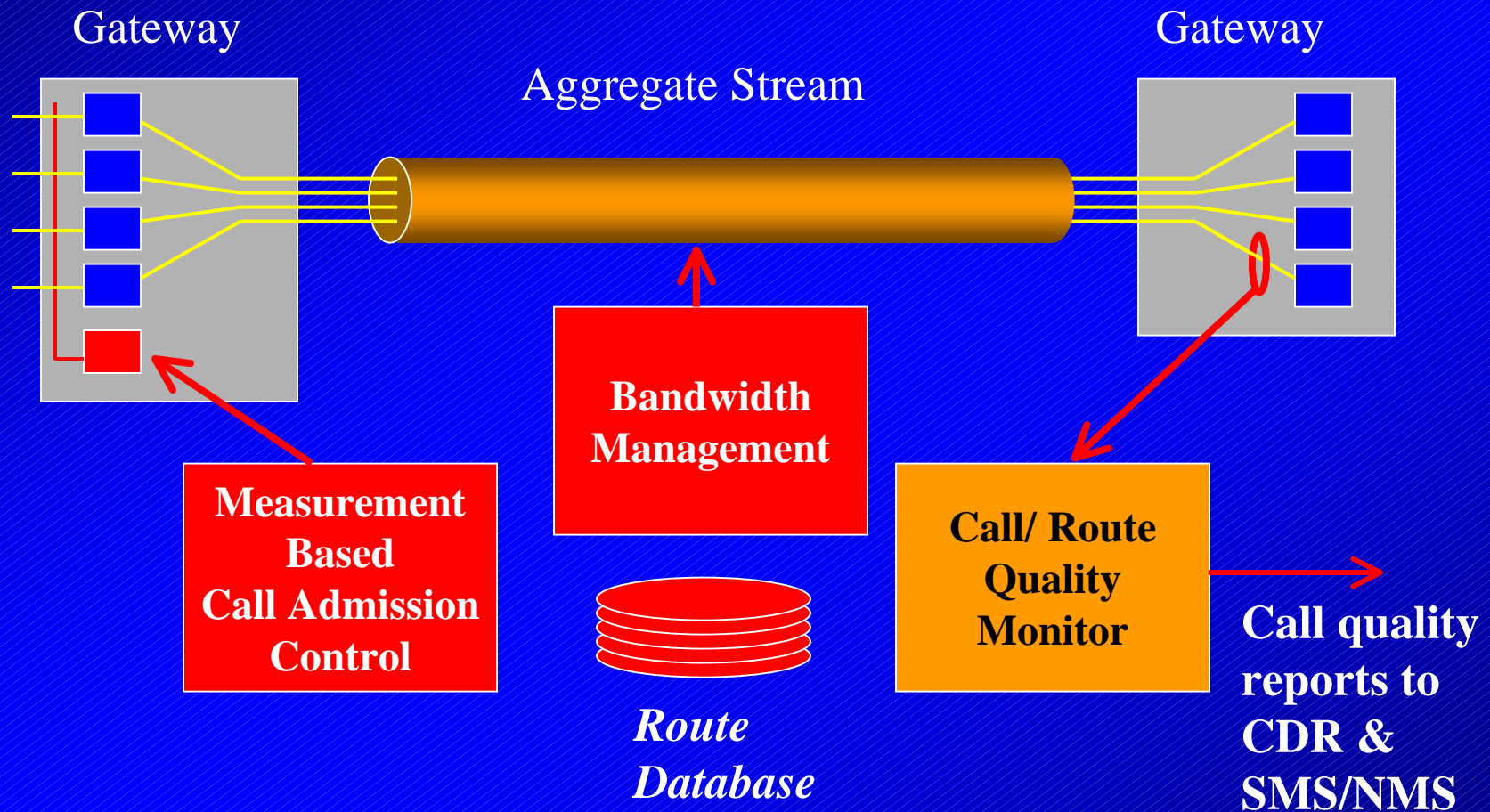


Billing System

VQmon vs PSQM & PAMS



VoIP QoS Architecture



VQmon

Accurate

Fast

Monitors ALL Calls

Real Time

Supports needs of
Billing AND OSS/NMS

Minimal resources
-Can add to existing HW

Add to Gateways, IP Phones, Test Eqpt, SLA monitors,
Edge Routers, Prequalification tools, probes.....