

# Telchemy

*QoS Management for Voice over IP*

## **Non-Intrusive Monitoring of VoIP Call Quality**

*Web: [www.telchemy.com](http://www.telchemy.com)*

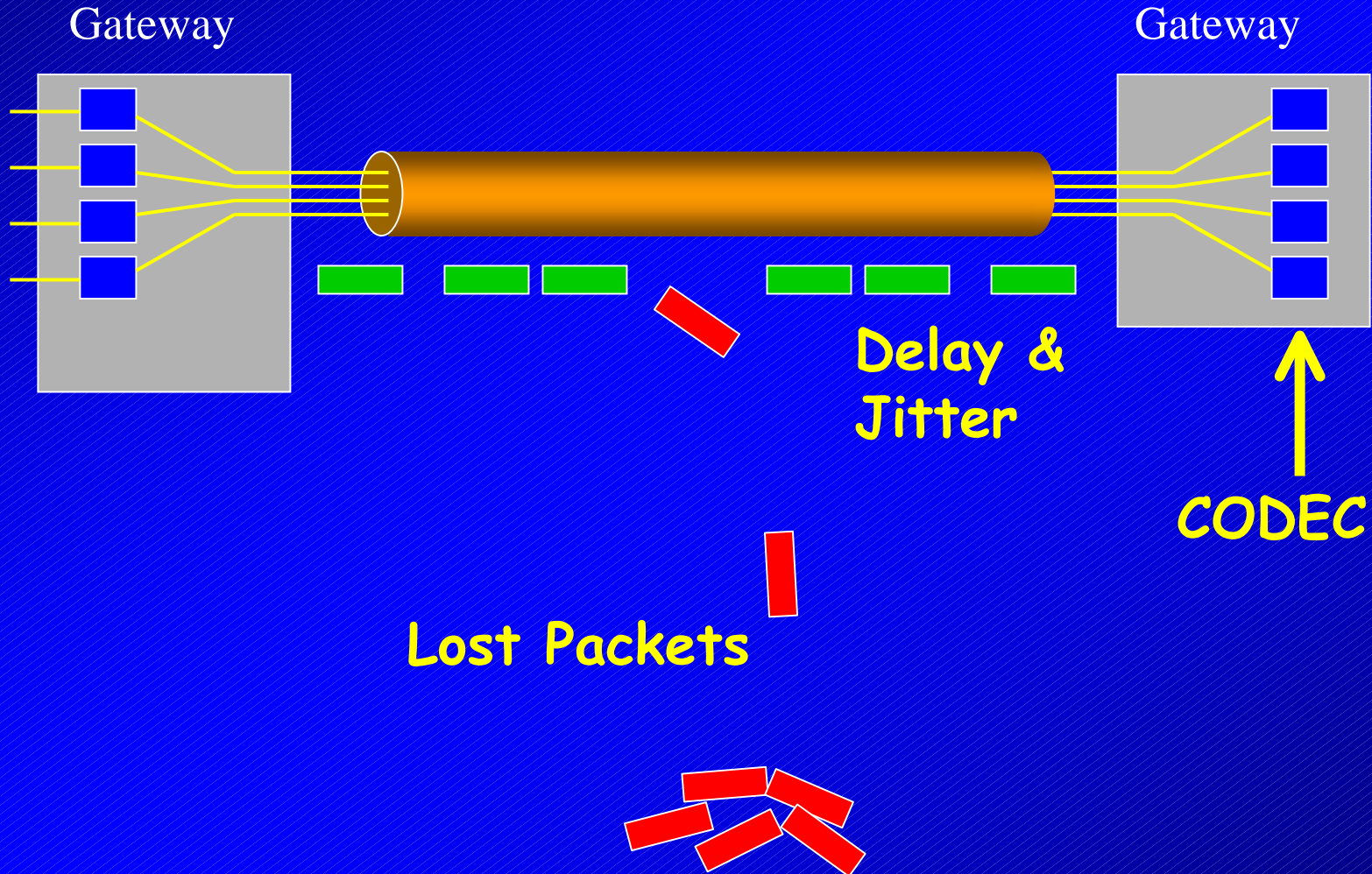
# About Telchemy

- **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*

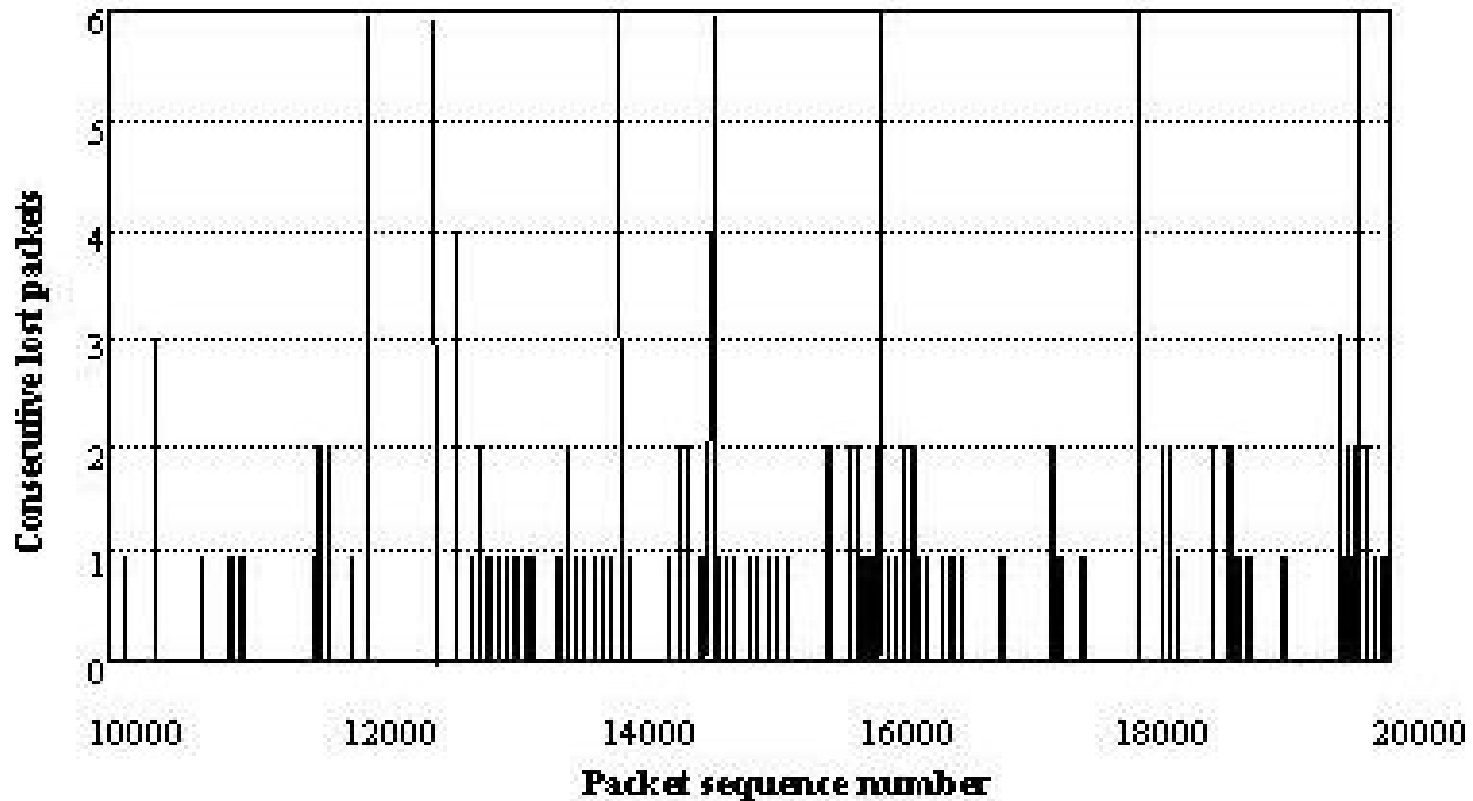
# Why Manage QoS?

- 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

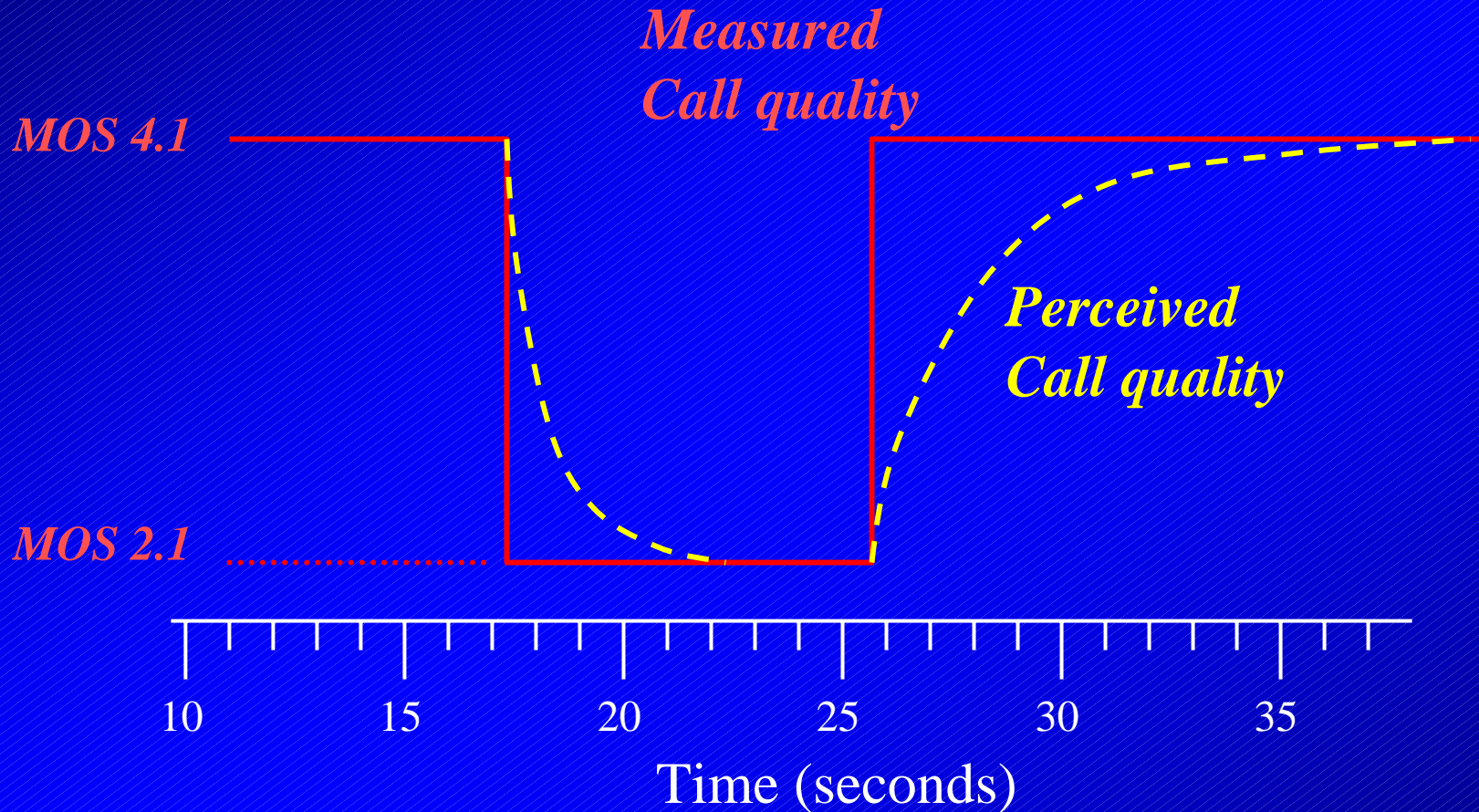
# Factors impacting quality



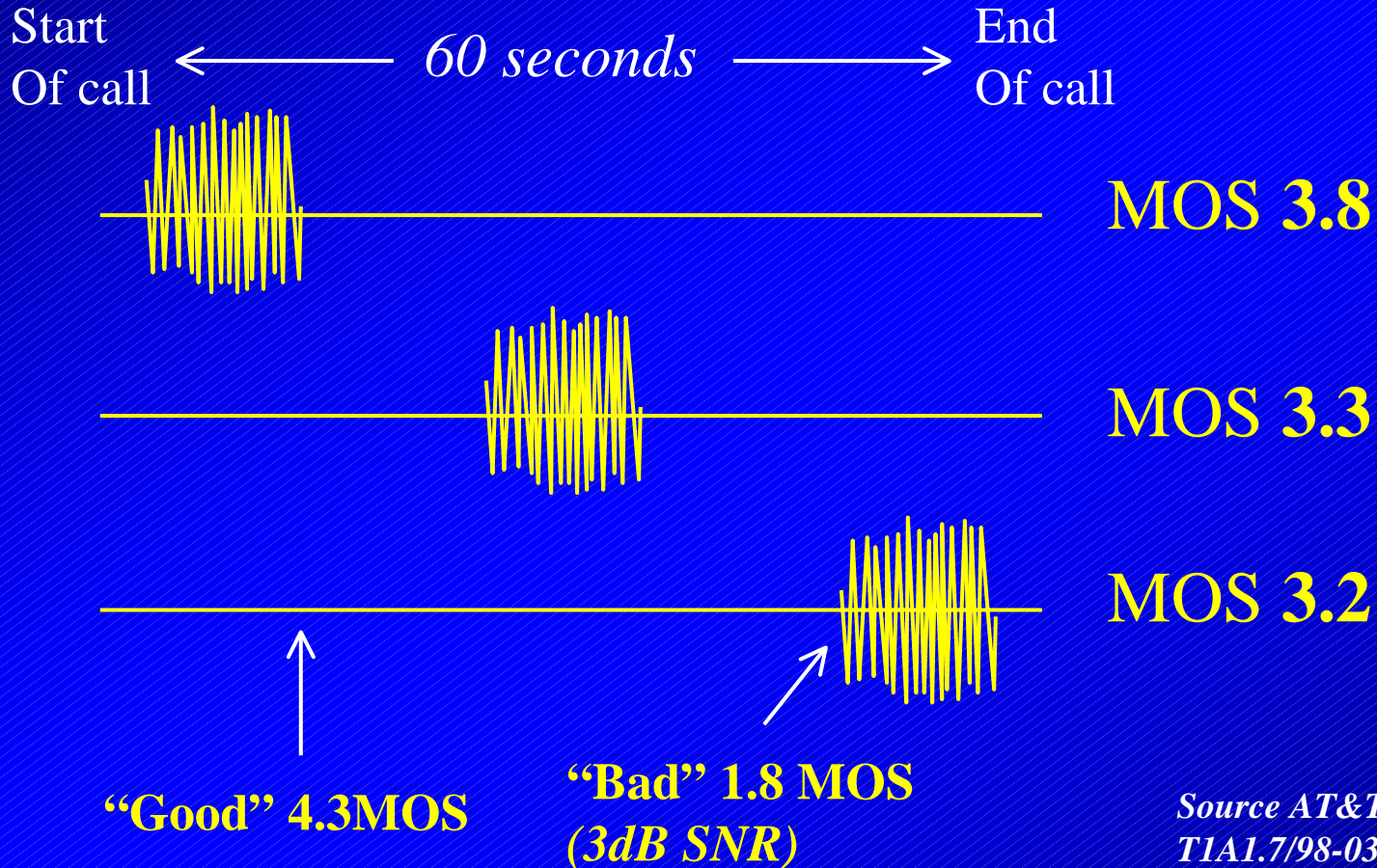
# Packet Loss is *Bursty*



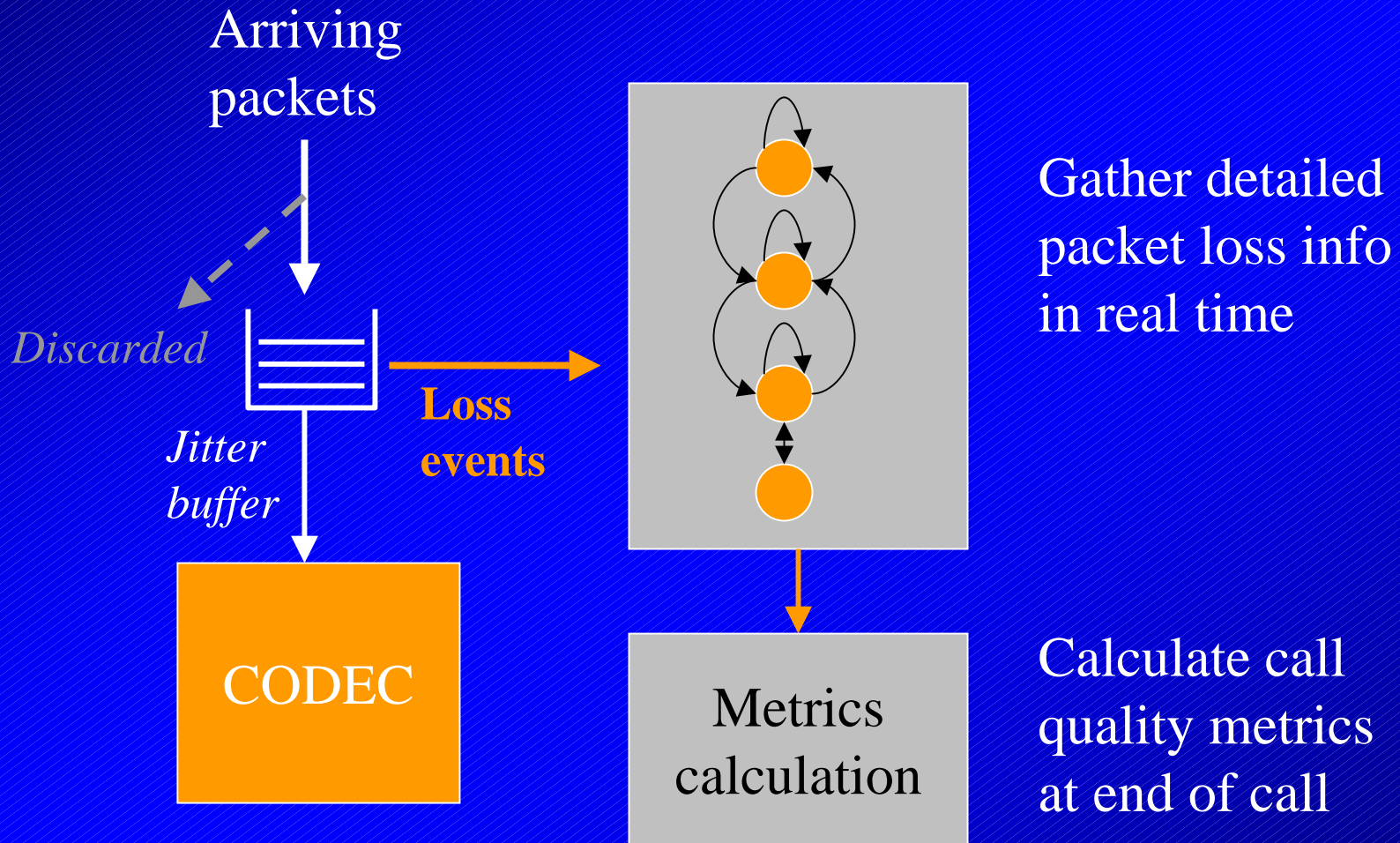
# Call quality varies with time



# “Recency” effect

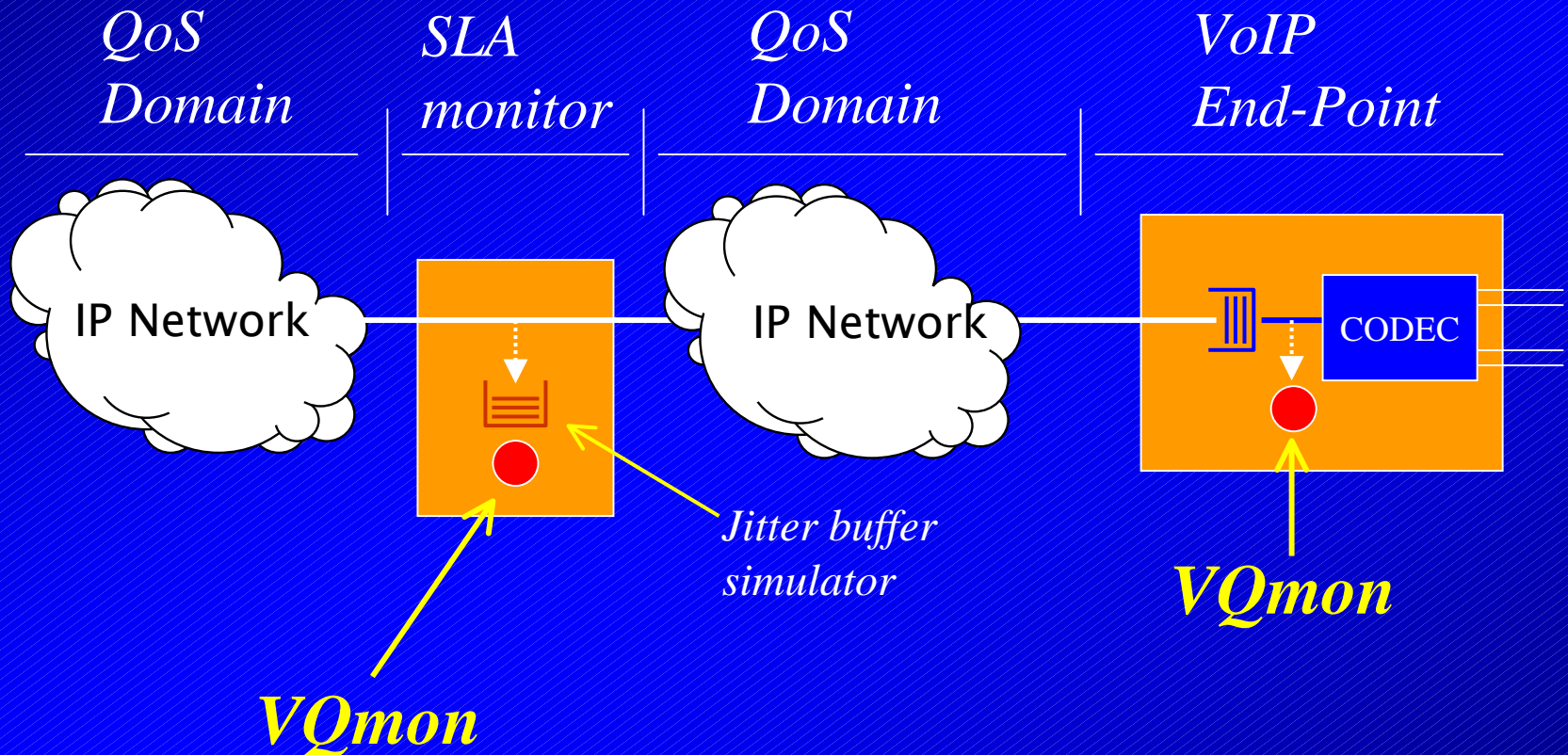


# How VQmon works

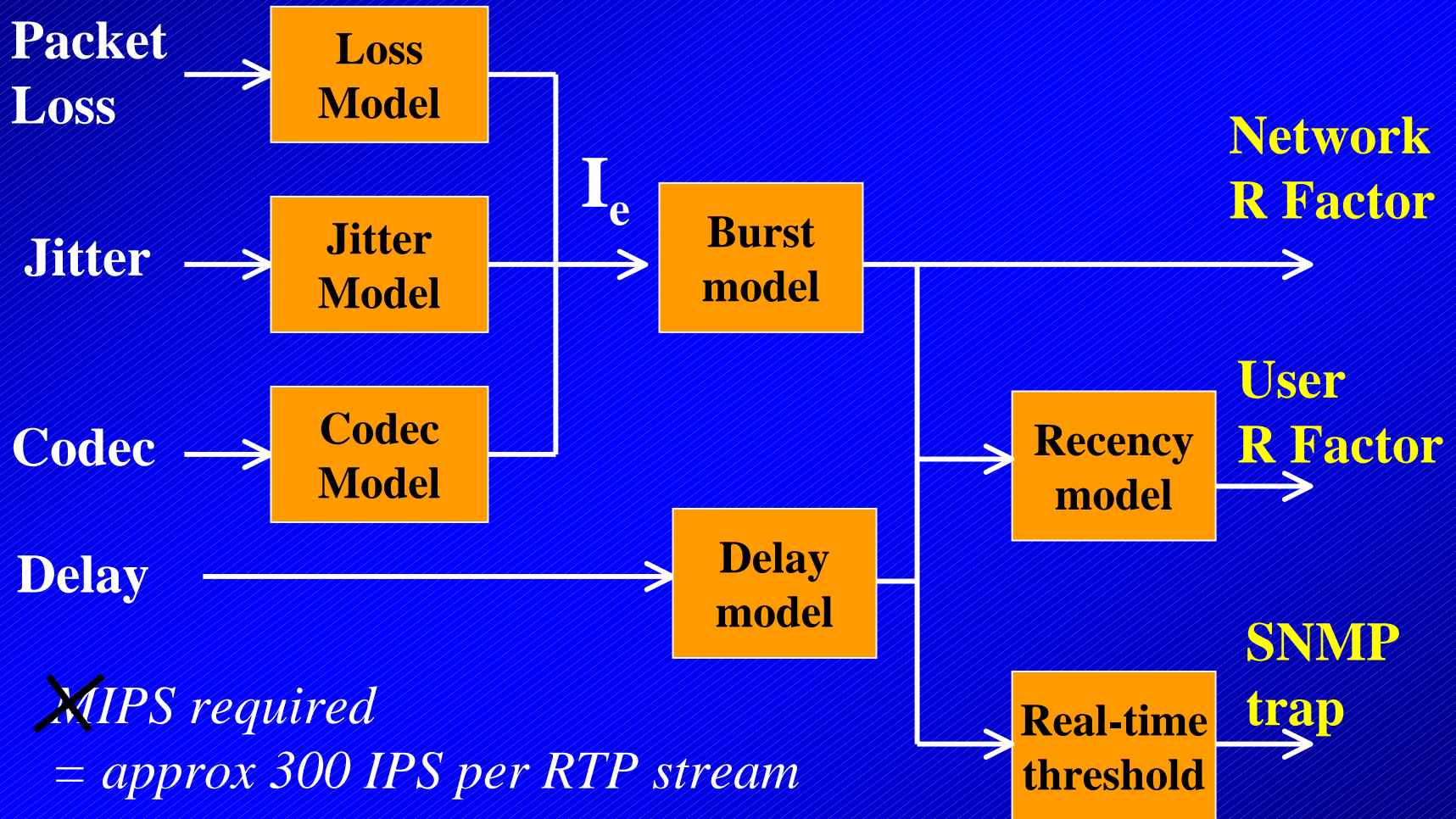




# Gateway or SLA?

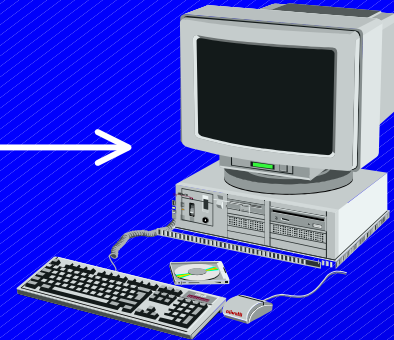


# Extended E Model



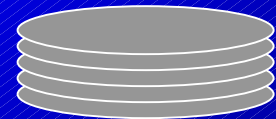
# Call Quality Metrics

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



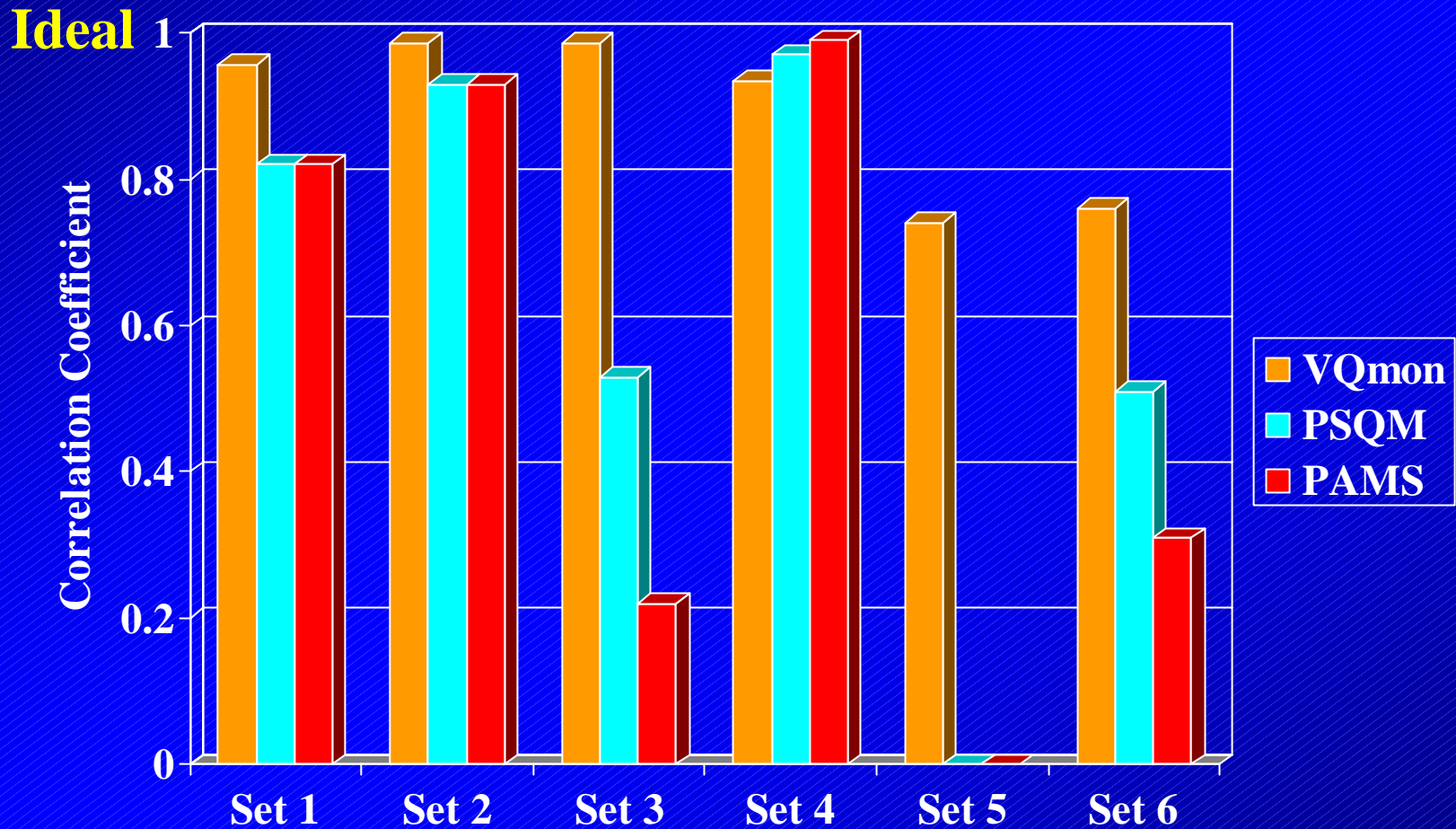
*Net Management System*

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

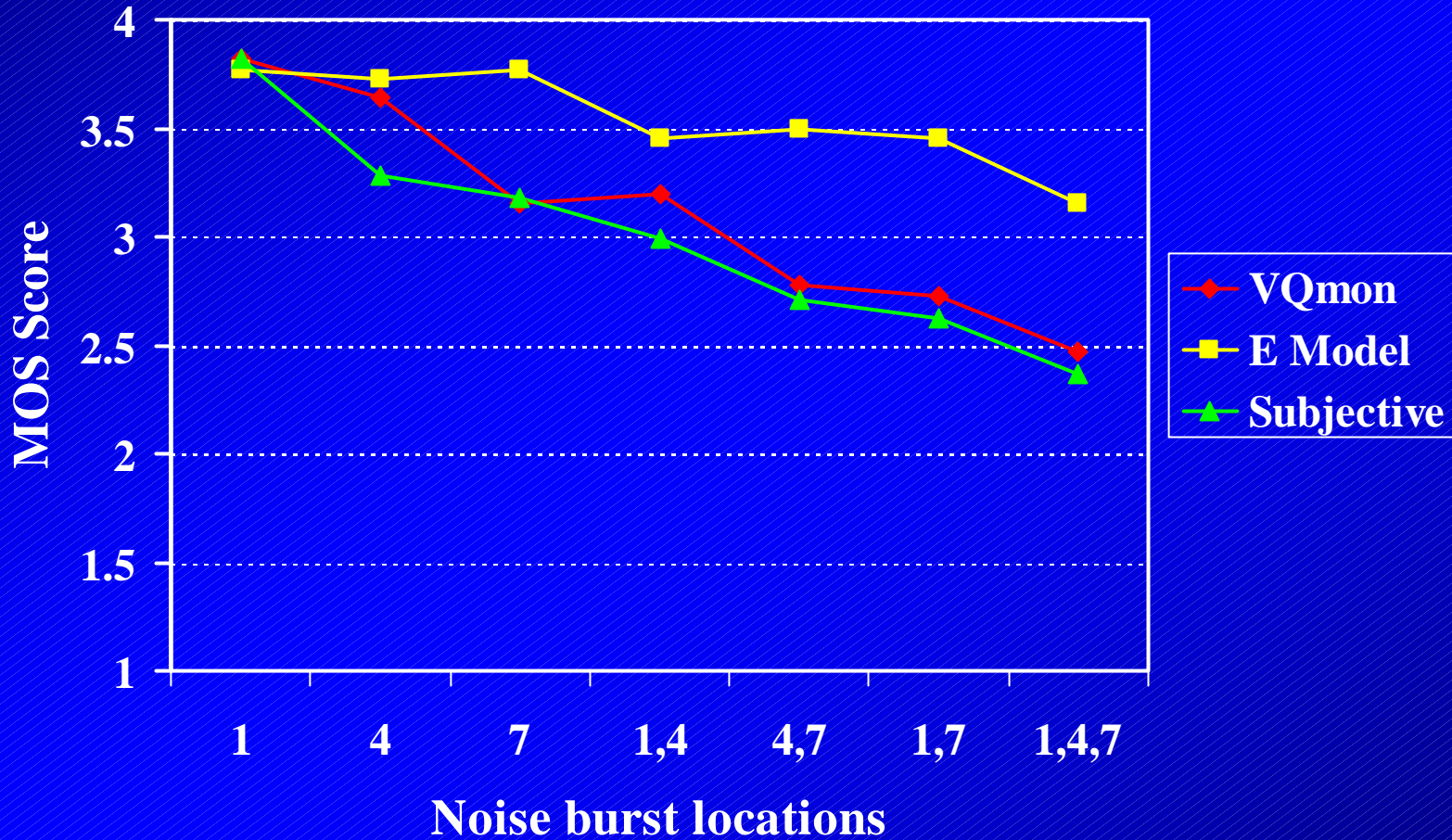


*Billing System*

# VQmon vs PSQM & PAMS



# VQmon vs E Model



# Embedded Monitoring

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.....