

## NetQoS Expert Q&A Webcast: Getting a Grip on VoIP



### VoIP Expert Q&A Panel



**Steven Taylor** Moderator

Webtorials Editor-in-Chief and author of the series:  
*VoIP State-of-the-Market Reports*



**Jim McQuaid** Panelist

NetQoS Senior Product Manager— NetQoS® VoIP Monitor and co-author  
of RFC 2544



**Jim Metzler** Panelist

Vice President of Ashton, Metzler & Associates and co-founder of  
Kuberman™, a consulting and analyst venture guiding the innovative  
development and usage of IT products and services



**Jeff Hicks** Panelist

NetQoS VoIP Architect and co-author of: *Taking Charge of Your VoIP  
Project: Strategies and Solutions for Successful VoIP Deployments*

## The User Experience



- What are the users of IP Telephony experiencing in your organization?



Pg. 3 © NetQoS, Inc. 2007. All Rights Reserved.

NetQoS  
Performance Experts

## VoIP Quality Issues



- “I can’t get a dial tone!”
- “Quality is terrible on these VoIP phones; I could barely understand the conversation.”
- “My call was dropped!”
- “My call isn’t going through?”
- “The echo was terrible on my call!”
- “My call takes a long time to connect!”

Pg. 4 © NetQoS, Inc. 2007. All Rights Reserved.

NetQoS  
Performance Experts

## Knowledge of the User Experience



- You need to have a view of what the user is experiencing making calls.
  - If not, you are flying blind.
- Even in a “perfect” network, the result can be other than perfection.
  - Would you make a complex recipe without ever tasting the food?

Pg. 5

© NetQoS, Inc. 2007. All Rights Reserved.

**NetQoS**  
Performance Experts

**NetQoS**  
Performance Experts

## VoIP Q&A Topic #1: Call Quality



## Mean Opinion Score (MOS)



- MOS correlation to user satisfaction

MOS	User Satisfaction
4.34 – 5.0	Very satisfied
4.03 – 4.34	Satisfied
3.6 – 4.03	Some users dissatisfied
3.10 – 3.60	Many users dissatisfied
2.60 – 3.10	Nearly all users dissatisfied
1.0 – 2.60	⊖

Source: ITU G.107

Pg. 7

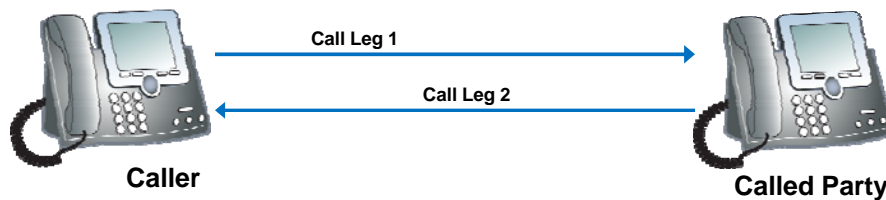
© NetQoS, Inc. 2007. All Rights Reserved.

NetQoS  
Performance Experts

## Measuring Call Quality



- IP Calls consist of two completely separate streams of RTP traffic, one in each direction
  - Each “call leg” is independent ( and may take a different route through the network)
  - Together they make up a call.
- Sampling gives some indication; comprehensive data is needed to ensure service levels.



Pg. 8

© NetQoS, Inc. 2007. All Rights Reserved.

NetQoS  
Performance Experts

## Poll Question #1

## VoIP Q&A Topic #2: Call Setup

## Making the Call: Call Setup



- Call quality is irrelevant if you can't get a dial tone!
- Bell System trained most people to expect dial tone within two seconds
- After dial tone, and keying the number, there is a post-dial delay, again, people expect a response within about two seconds
- Poor performance on call setup is invisible if you are only monitoring call quality, i.e. MOS, for completed calls.

## The PSTN and Gateways



- Most calls still use the public network to reach other organizations and locales.
- Gateways are a common source of trouble and questions
  - Is the reported quality problem a function of the IP call leg or the analog call leg?
  - Can I tell if analog signal strength is the core problem or not?
  - How heavily utilized are the trunks on my gateways?

## Poll Question #2

## VoIP Q&A Topic #3: Troubleshooting

## What About Joe's Phone?

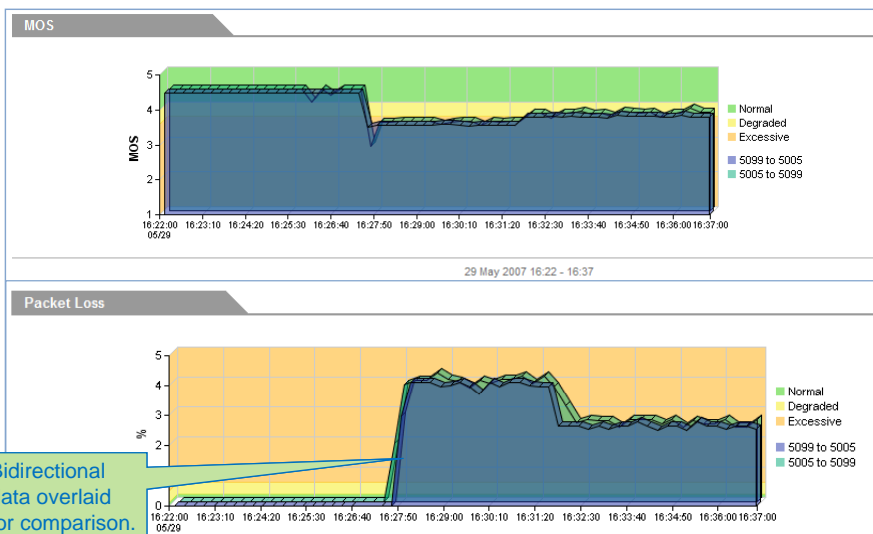


- In general, you do not want to manage individual phone calls or users
  - Thresholds should not trigger until a minimum number of call-minutes or dial-attempts are affected
- But, when there is a problem phone, you need detailed call-in-progress information about the quality metrics of that call.
  - This may be a politically important phone user or perhaps a representative phone at a problem location

Pg. 15 © NetQoS, Inc. 2007. All Rights Reserved.

NetQoS  
Performance Experts

## Call Watch Metric Details



Pg. 16 © NetQoS, Inc. 2007. All Rights Reserved.

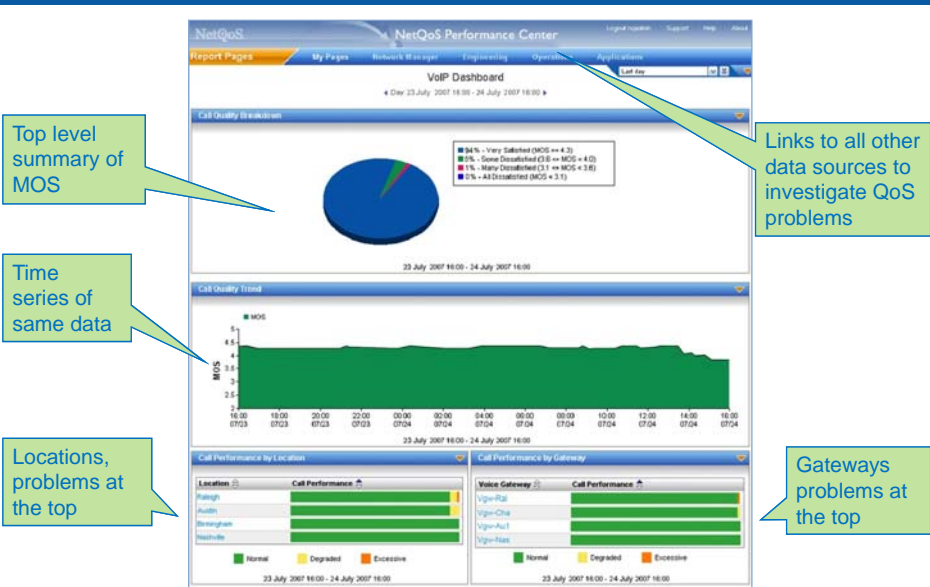
NetQoS  
Performance Experts



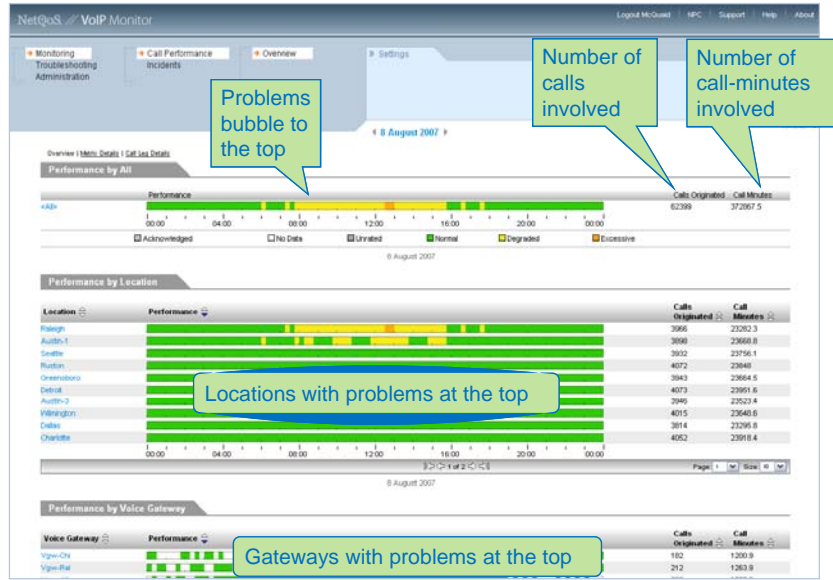
# NetQoS® VoIP Monitor



## NetQoS® Performance Center VoIP Report



# Top Level Metrics

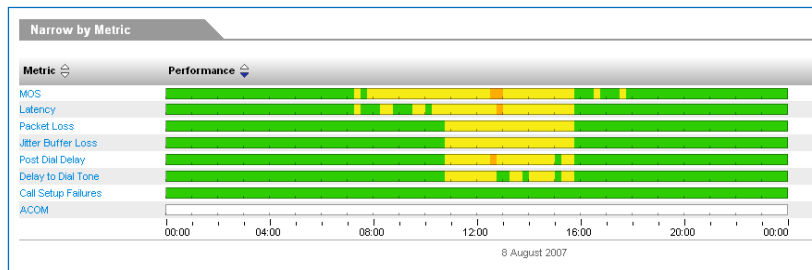


Pg. 19 © NetQoS, Inc. 2007. All Rights Reserved.



# Quick Drill Down

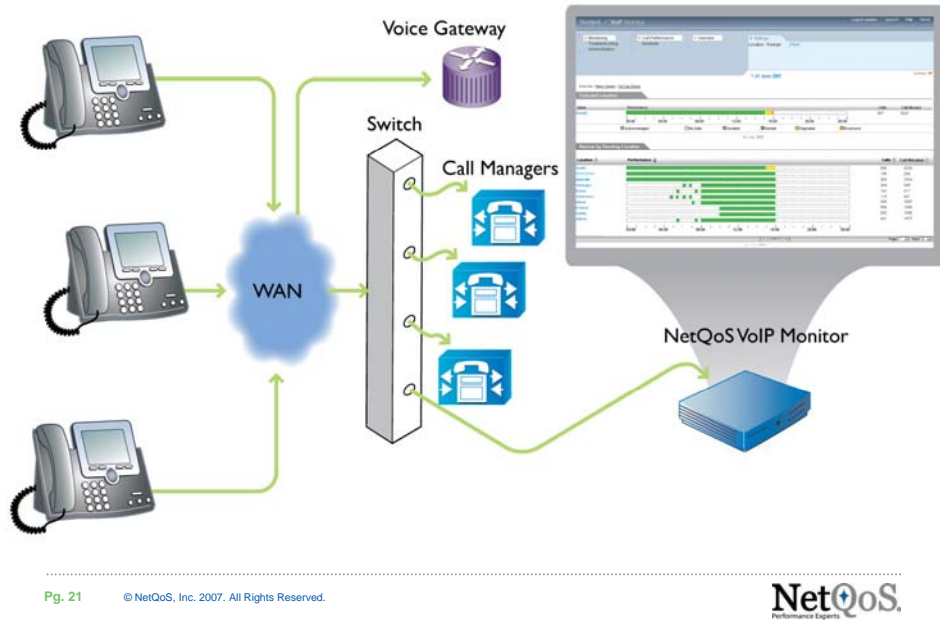
- See call quality, call setup in conjunction with key network QoS impairments:
  - Latency
  - Packet Loss
  - Jitter Buffer Loss



Pg. 20 © NetQoS, Inc. 2007. All Rights Reserved.



## How NetQoS® VoIP Monitor Works



## The Call Watch Feature

- Gathers additional data from a potential problem area to use in troubleshooting
  - Real-time data
  - Active polling
- Based on the directory number (DN) of a single phone
- Configure Call Watch when needed



Pg. 22 © NetQoS, Inc. 2007. All Rights Reserved.

NetQoS  
Performance Experts



## Subscribe to the new ebook

VoIP: Do You See What I'm Saying?  
Managing VoIP Quality of Experience on Your Network

[www.netqos.com/ebook](http://www.netqos.com/ebook)