

Case | IPX/Wholesale

Background

- The industry has grown from roughly 90 LTE networks in 2012 to 500 networks in 2015
 - With Voice over LTE as the next big thing on the agenda, carriers are demanding quality interconnections
 - The need to monitor voice service quality is becoming an imperative
- Our tier 1 customers using Qrystal to monitor IPX traffic today cannot imagine how they lived without it

The Role of Voipfuture Qrystal | A Smart View on Quality

Media Plane
(RTP Streams)

Control Plane
(SIP Signaling)

- Better IPX to support
 - Voice over LTE
 - Voice over Wi-Fi
 - HD Voice
- Best practice for IPX
 - IPX is all about service levels and guarantees
 - SLA parameters need to be assessed for every partner, for every route
 - Control only via quality monitoring
- Full value of IPX only together with real-time quality information

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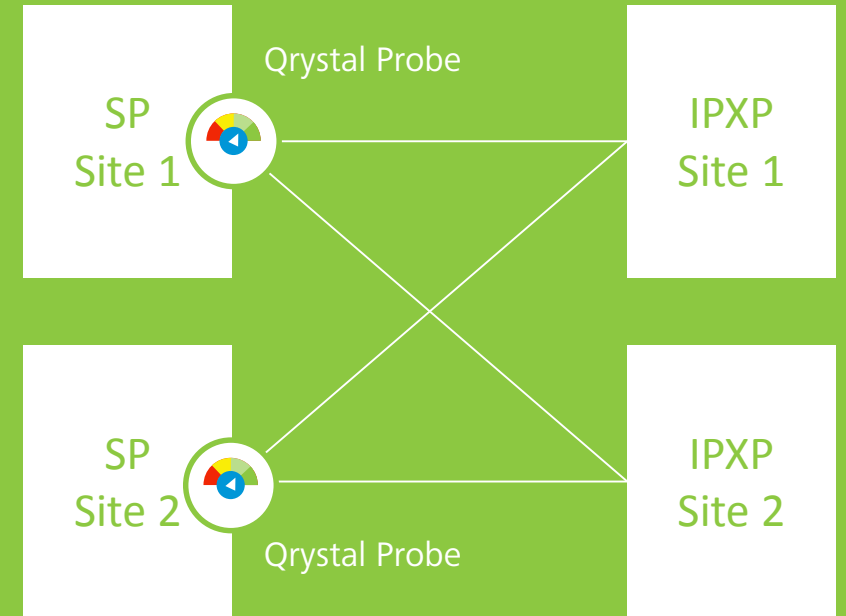
CASE 1: TWO CARRIERS LOOSE TRAFFIC WITHOUT NOTICING IT

Case 1 | Both Parties Exchanged Bad Traffic – None of them Knew

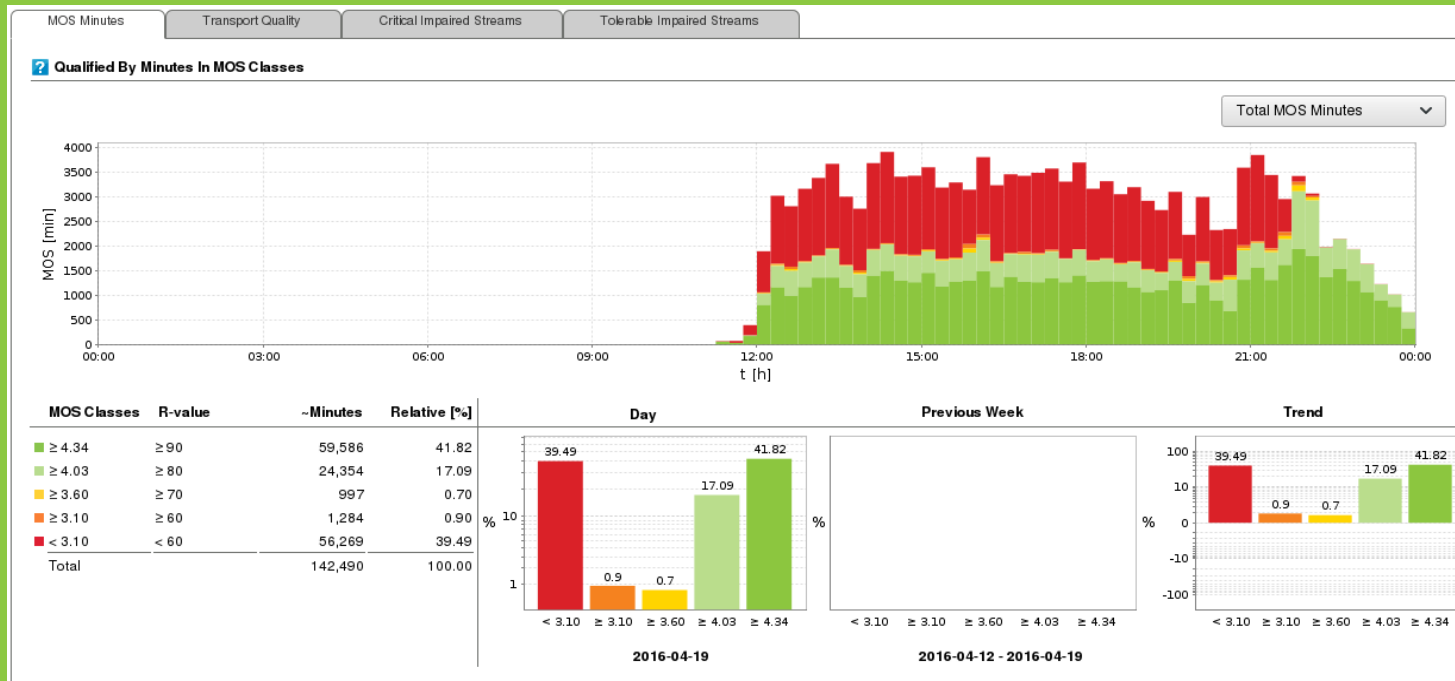
- Two major international carriers were involved
- Both used to exchange traffic for a long time
- Both were perfectly fine with the network setup
- Neither of them was aware that the exchanged traffic was heavily impaired
- And that their customers were suffering from bad quality

Deployment | Two Carriers, Two Sites Each

- To monitor voice quality the Service Provider (SP) deployed Voipfuture Qrystal
- This is the result...



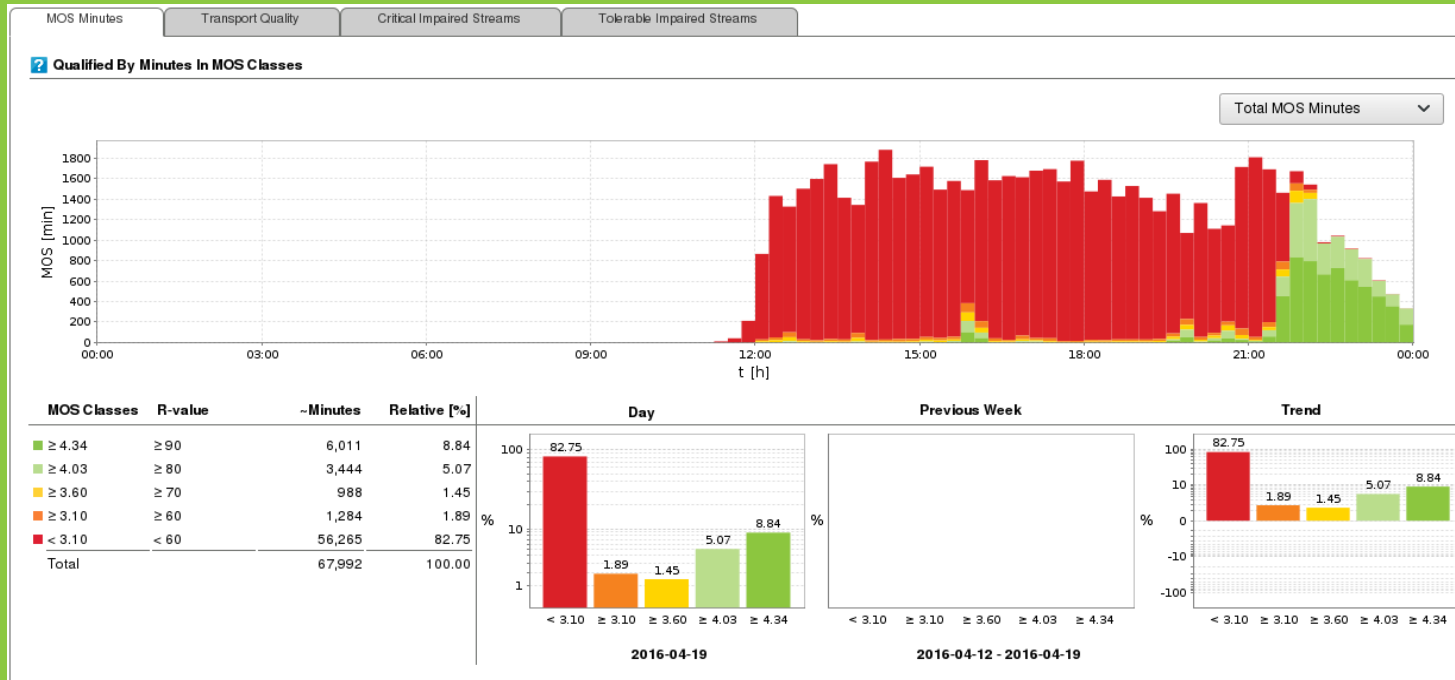
Immediately After Activation | Major Issue Identified



- Only minutes after go live Qrystal detected a major quality degradation and raised an alarm
- The carrier immediately established a task force to take care of the issue

Go-Live: Tue 2016-04-19 | Filtered traffic between the two carriers

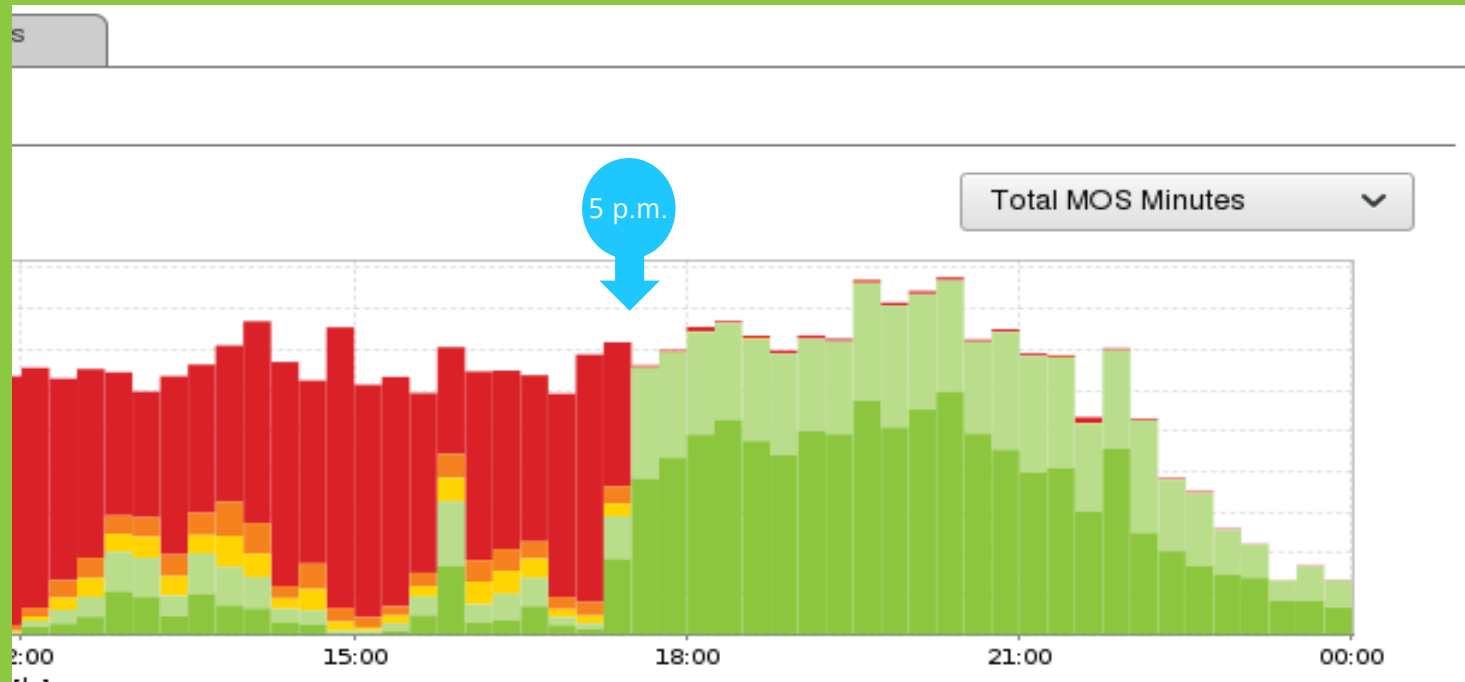
View at SP Site 2 | Quickly the Problematic Link Was Identified



- The full amount of quality degradation was caused by SP/Site 2
- Showing a disastrous quality during peak hours
- After peak, traffic moved back to normal quality

Go-Live | Tue 2016-04-19

Tuesday, 5 p.m. | Return on Investment

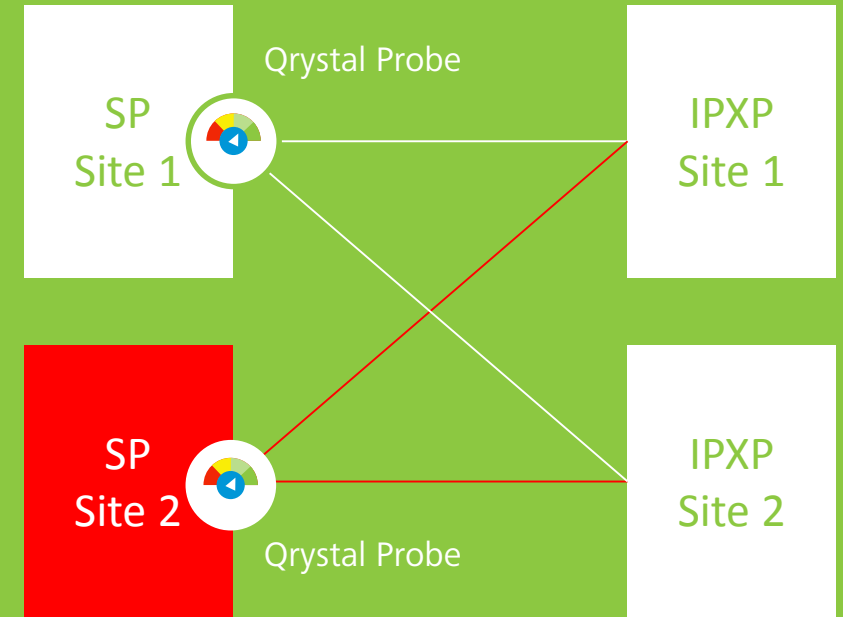


- The operational team was able to fix the issue at 5 p.m.
- Problem was solved and the solution verified
- After the fix, traffic became good and volume of traffic increased

Voice Quality Issue | Impact on Revenue

	Traffic (Minutes)	
SP Site 1 > IPXP Site 1	130,883	-18%
SP Site 2 > IPXP Site 1	107,887	
SP Site 1 > IPXP Site 2	74,810	- 8%
SP Site 2 > IPXP Site 2	68,765	

Load balancing (50:50)

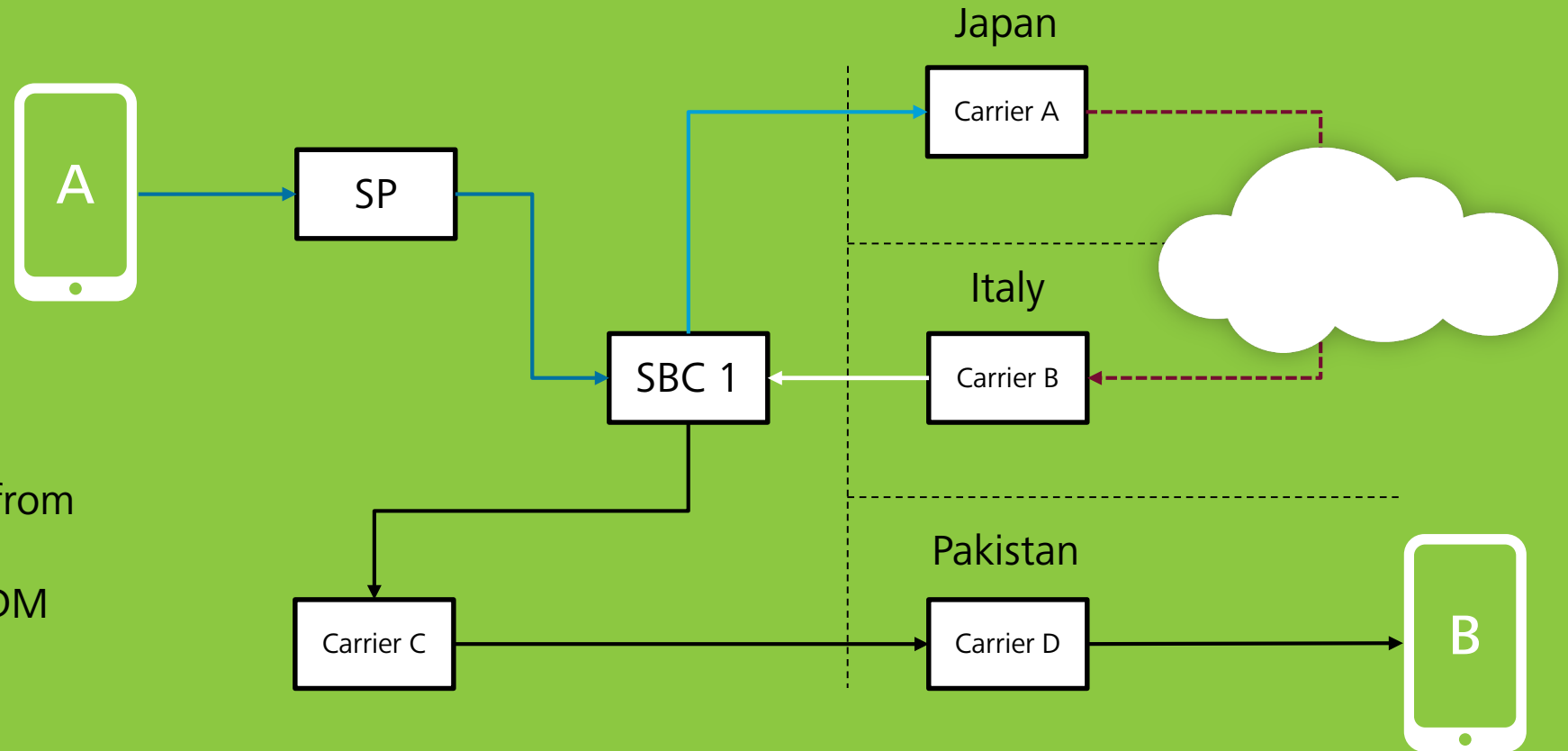


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CUSTOMER 2: SPOTTING LOOP ROUTES

Loop Routing | Knowing the details lowers costs and raises quality

- Local call
- IP to Japan
- Received it back from Italia
- To Pakistan via TDM



Loop Routing Side Effect | Billing Problems

The screenshot displays the 'xDR Detail Information' interface, which is divided into three tabs: 'xDR Detail Information', 'xDR Quality Information', and 'Related Media Streams'. The 'xDR Detail Information' tab is active and shows two main sections: 'General Information' and 'Signaling Information'. The 'General Information' section includes fields for xDR ID, Signaling Hash, Probe Hostname, Probe Interface, Transport Protocol, Tunnel Source IP, Tunnel Destination IP, and VLAN. The 'Signaling Information' section includes Start, End, Duration, Connect Time, Post Dial Delay, Call ID, Session ID, SIP-Trunk, SIP-Trunk-Direction, Signaling Protocol, and State at Call End. Below these sections, there are two columns of call details, including Calling IP and Port, Calling MAC, P-Asserted-Identity, Calling Number Normalized, Calling Numbering Plan, SIP From, Calling User Agent, Calling Media IP and Port, Calling Media, Called Numbering Plan, SIP To, Called User Agent, Called Media IP and Port, and Called Media. A red box highlights the 'Hang-up Cause' field, which is '(27) Destination out of order'. Another red box highlights the 'Call States' dropdown menu, which is set to 'Proceeding'. A third red box highlights the text 'Does not fit to a 25 minute call!'.

General Information

xDR ID : 00000149bc085f75:2871ad6c3088f1bd
Signaling Hash : 0x62d3601b09e66b8b
Probe Hostname : vfprobe01
Probe Interface : nt3g7
Transport Protocol : UDP
Tunnel Source IP : --
Tunnel Destination IP : --
VLAN : 107 / Best effort

Signaling Information

Start : 2014-11-17 08:35:05.717
End : 2014-11-17 09:00:54.457
Duration : 00:25:48.740
Connect Time : 2014-11-17 08:35:12.507
Post Dial Delay : 00:00:05.211
Call ID : SDu330601-03c31f04bb380eaa4576b9aa1a9fa240-vrvfv3
Session ID : --
SIP-Trunk : Huawei SBC1 <-> [redacted]
SIP-Trunk-Direction : B → A
Signaling Protocol : SIP/2.0
State at Call End : Regular call termination

Call States : Proceeding
Ringing
Established

Hang-up Cause : (27) Destination out of order
Final Response : 200
Authentication Mode : none
FAX Support : none

● Established Call
● Successful Call

Calling IP and Port : Telecom [redacted]
Calling MAC : ac:85:3d:98:80:6c
P-Asserted-Identity : sip:+971562089481@89.221.44.207
Calling Number Normalized : [redacted]
Calling Numbering Plan : United Arab Emirates
SIP From : sip:+971562089481@89.221.44.207;user=phone
Calling User Agent : --
Calling Media IP and Port : Telecom [redacted]
Calling Media : m=audio 12318
a=18 G729/8000
a=4 G723/8000

Called Numbering Plan : Pakistan (Islamic Republic of)
SIP To : sip:+923319922128@86.96.241.227;user=phone
Called User Agent : --
Called Media IP and Port : SBC1 (Telecom [redacted])
Called Media : m=audio 59442
a=18 G729/8000

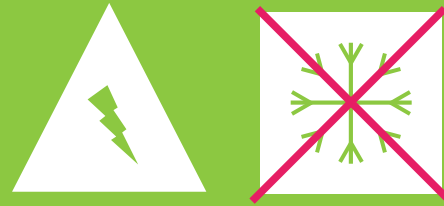
Hang-up Cause : (27) Destination out of order

Does not fit to a 25 minute call!

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CUSTOMER 3: PROBLEM SOLVED, QUALITY STILL BAD

September 1st



Carrier 1, IMS network:

Power outage damaged cooling system in one POP during the morning

Problem fixed within hours
Site returned to normal operation

September 1st

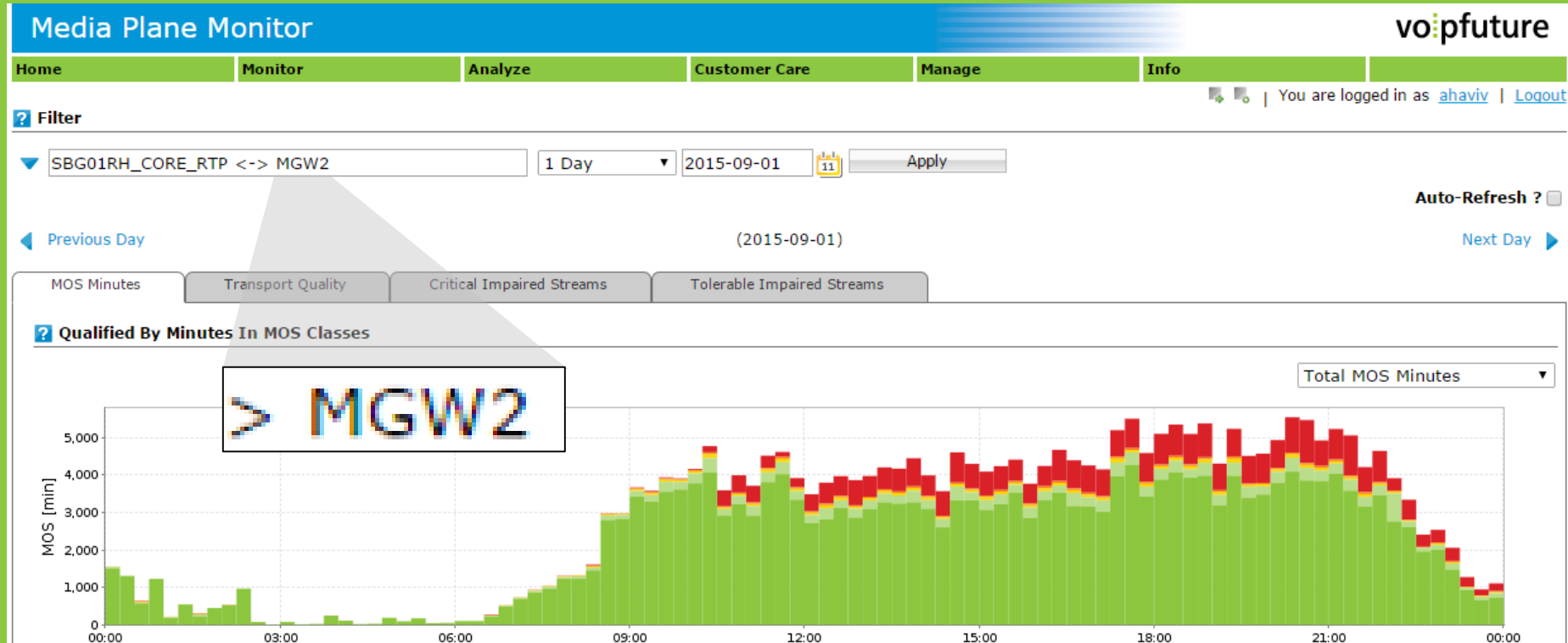


At the same time customer complaints dropped in however not indicating about a specific issue or location

+20%

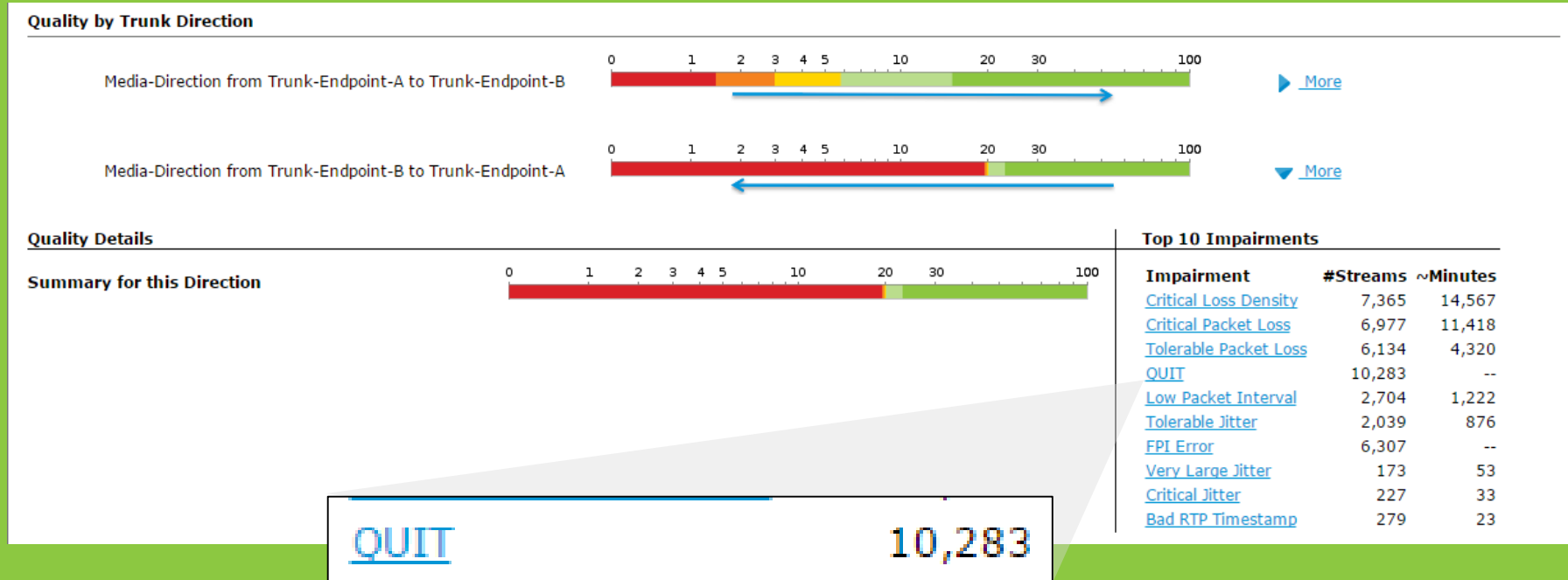
Voice service manager was alerted by a rise of quality impairments

Drill down revealed:



Within seconds troubleshooting process ended
Problems were caused by media gateway 2

To express it in user experience:



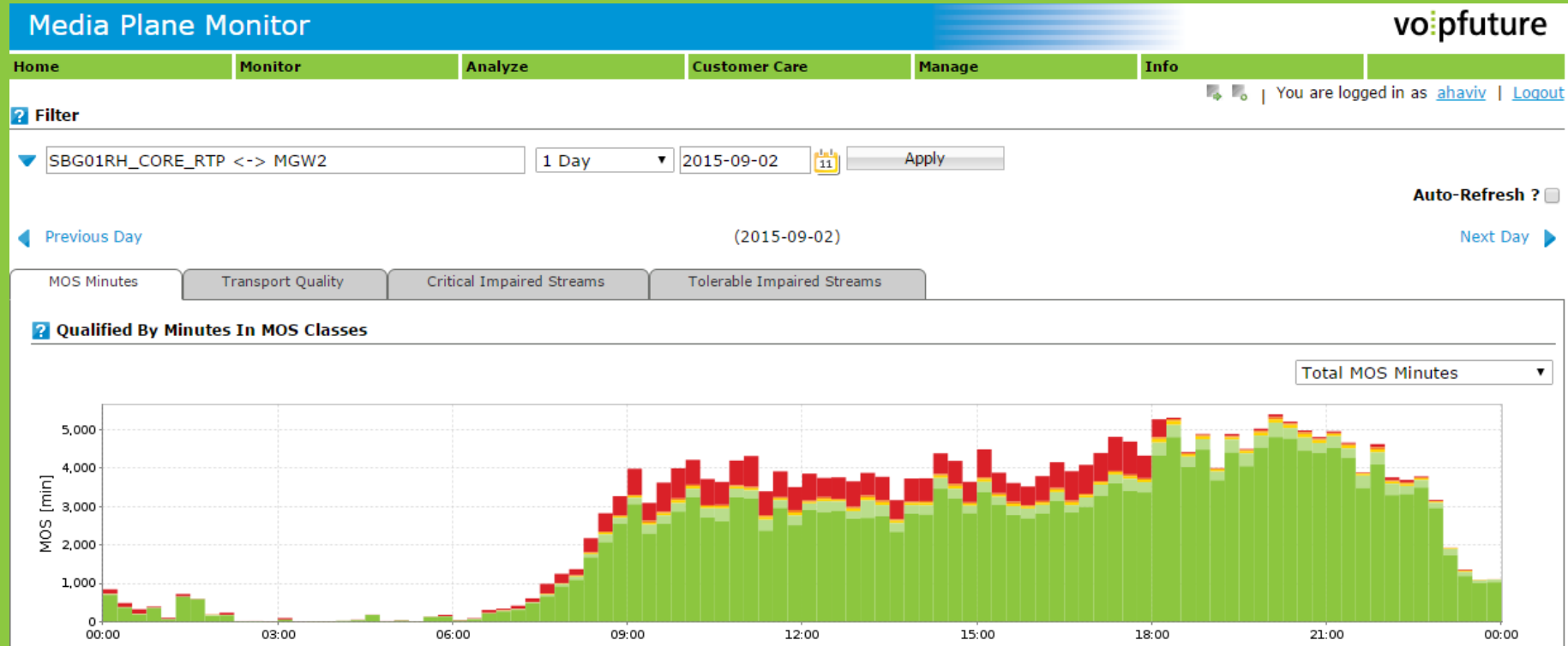
10,283 call quits during the day caused by bad speech quality

September 2nd



Hardware vendor was called to investigate,
after one day he was able to fix single board in the MGW
responsible for about 20% of the total site traffic

Fast Resolution



Problems were solved within 30H

Overall Result

Immediate detection of degraded voice quality

- Effective troubleshooting with fast problem source isolation
- Fast return saving 10.000 customers per day from bad user experience

Summary

- Qrystal gives fact on voice service quality and control over IPX
- Whatever the strategy: it pays to know which quality we buy or sell
- Tier 1 Service Providers are pushing for VoLTE roaming and HD voice which requires high quality interconnects

Voipfuture Qrystal | Features



Full Traffic



Network Segmentation/
Border Control



Correlation



Threshold Definition



All Calls



Automated Impairment Detection



Grouping



Exporting



Both Directions



Smart Packet Recording



Aggregation



Integration



5-Second Time Slices



Waveform Analysis
(Live Traffic)



Drill-Down



History

THANK YOU FOR YOUR ATTENTION

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