Case | IPX/Wholesale
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

- 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
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
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
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)

<table>
<thead>
<tr>
<th>SP Site 1 &gt; IPXP Site 1</th>
<th>130,883</th>
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</thead>
<tbody>
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<td>SP Site 2 &gt; IPXP Site 1</td>
<td>107,887</td>
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### Load balancing (50:50)

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### Load balancing (50:50)

-18%  
-8%
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
Does not fit to a 25 minute call!
CUSTOMER 3: PROBLEM SOLVED, QUALITY STILL BAD
Carrier 1, IMS network:
Power outage damaged cooling system in one POP during the morning

Problem fixed within hours
Site returned to normal operation
At the same time customer complaints dropped in however not indicating about a specific issue or location

Voice service manager was alerted by a rise of quality impairments

+20%
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
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
- All Calls
- Both Directions
- 5-Second Time Slices
- Network Segmentation/Border Control
- Automated Impairment Detection
- Smart Packet Recording
- Waveform Analysis (Live Traffic)
- Correlation
- Grouping
- Aggregation
- Drill-Down
- Threshold Definition
- Exporting
- Integration
- History
THANK YOU FOR YOUR ATTENTION