



QP-Cell2Core

Quantum Path - Cell to Core proactively diagnoses mobile networks, reduces OPEX and subscriber churn and improves subscriber QoE

Problem

Mobile data traffic is growing globally at [69% per year](#). This data explosion is making mobile networks a critical resource for both subscribers relying on data products and government agencies using them for public safety. The increased network complexity requires network management to be divided between different groups and management silos. These silos make it extremely costly, time consuming and prohibitive in rolling out new revenue streams thus stifling innovation and eventually losing out to over the top, OTT, services. The growth in data rates and complexity of mobile networks significantly increases the OPEX for mobile networks.

With complexity comes the inevitable security vulnerability of misconfigured firewalls, open ports, misconfigured IPS/IDS. Subscribers are increasingly concerned about privacy violations. Analysing and storing subscriber VoLTE or public safety traffic infringes on this and even breaks laws in most countries.

All this leads to poor network/service performance, increased downtime and poor subscriber Quality of Experience, QoE. As a result, the subscriber churn rate can go [up to 37%](#).

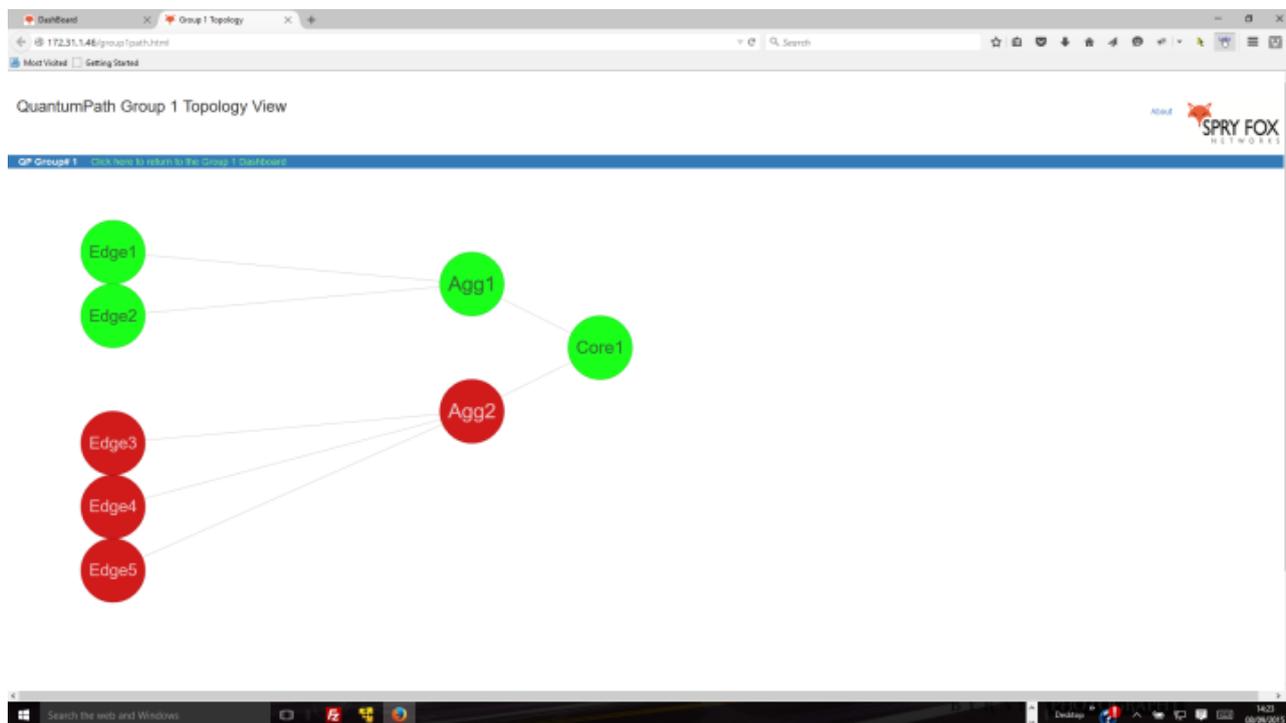
It is becoming increasingly clear that the traditional reactive methods of managing the networks using just the KPIs, equipment alarms and network taps cannot adequately determine the true state of the mobile network and a better approach is needed.

Solution

QP-Cell2Core allows mobile operators and service providers to listen to the needs of subscribers. QP-Cell2Core could be installed as a hardware device (or a software library) that simulates the subscriber traffic at various points in the mobile network: from the cell site, at aggregation points and in the mobile core of operator's 4G network. QP-Cell2Core simulates eNodeB, UE and subscriber behaviour towards the 4G core network to measure the Quality of Experience metrics which cannot be measured using traditional KPI/Alarms approach.

QP-CELL2CORE is scalable: It can be a low cost single board computer at the cell site or a server at aggregation and core locations. This allows QP-CELL2CORE to scale in terms of cost and performance as it is deployed in the network. At the edge small amount of traffic is required so as not to affect the cell site. At aggregation and core locations large amount of traffic may be needed to test system upgrades, multiple traffic cards in systems or for multiple IPsec registrations to test IPsec gateways.

QP-CELL2CORE tests networks end-to-end by treating QP-CELL2CORE clients at the network edge, aggregation and core locations as nodes in a path, QP-CELL2CORE is aware of the network topology and can test at multiple points in the network.



QP-CELL2CORE isolates faults quickly in the network by running tests along a QP Client path to determine which part of the network has the issue. Large networks can be analysed in minutes rather than hours; in fact usually before one standard eNodeB KPI report is generated.

QuantumPath Main Dashboard

QuantumPath System Status: OK



QP Group# 1 Topology view of group 1

Client	Type	Location	Op State	Test Mode	Test State	QoE	Last Run	Client Test Configuration
Core-1	Core	Swindon	Online	Scheduled	Running	Happy	08/04/2015 9:00AM	<input type="radio"/> Immediate <input checked="" type="radio"/> Scheduled Scheduled Tests Configure Test
Agg 1	Aggregation	Swindon	Online	Scheduled	Running	Happy	08/04/2015 9:00AM	<input type="radio"/> Immediate <input checked="" type="radio"/> Scheduled Scheduled Tests Configure Test
Edge1	Client	Swindon	Online	Scheduled	Running	Happy	08/04/2015 9:00AM	<input type="radio"/> Immediate <input checked="" type="radio"/> Scheduled Scheduled Tests Configure Test
Edge2	Client	Swindon	Online	Scheduled	Running	Happy	08/04/2015 9:00AM	<input type="radio"/> Immediate <input checked="" type="radio"/> Scheduled Scheduled Tests Configure Test
Agg 2	Aggregation	Swindon	Online	Scheduled	Running	CHURN	08/04/2015 9:00AM	<input type="radio"/> Immediate <input checked="" type="radio"/> Scheduled Scheduled Tests Configure Test
Edge3	Client	Swindon	Online	Scheduled	Running	CHURN	08/04/2015 9:00AM	<input type="radio"/> Immediate <input checked="" type="radio"/> Scheduled Scheduled Tests Configure Test
Edge4	Client	Swindon	Online	Scheduled	Running	CHURN	08/04/2015 9:00AM	<input type="radio"/> Immediate <input checked="" type="radio"/> Scheduled Scheduled Tests Configure Test
Edge5	Client	Swindon	Online	Scheduled	Running	CHURN	08/04/2015 9:00AM	<input type="radio"/> Immediate <input checked="" type="radio"/> Scheduled Scheduled Tests Configure Test

QP-CELL2CORE works 24x7x365: QP-CELL2CORE is constantly scheduling testing the network. When faults are found QP-CELL2CORE will automatically generate faults to a dashboard and send fault reports/graphs to support personnel

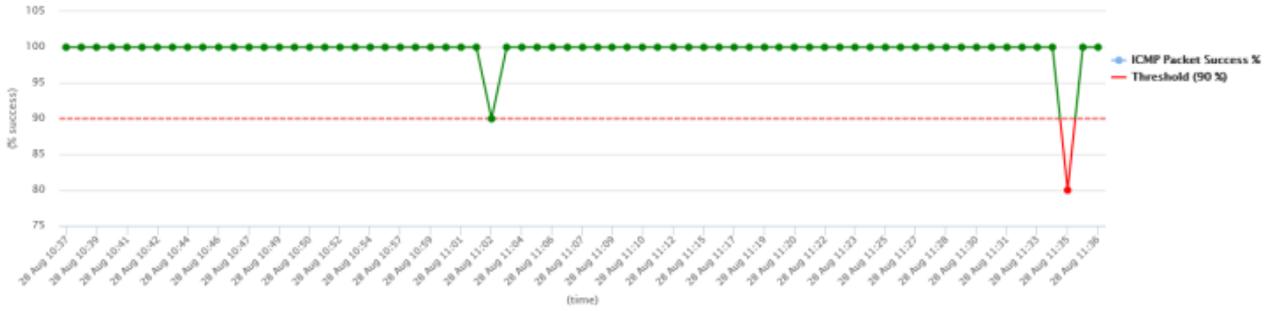
QC-5 Quality of Experience Report (ICMP)

QP-5 Location: Swindon
SW Ver: 1.9
QP-5 Status: Churn



ICMP Packet Success % (downlink)

QoE measured at 28 Aug 2015 11:37



ICMP RTT (downlink)

QoE measured at 28 Aug 2015 11:37



ICMP jitter (downlink)

QoE measured at 28 Aug 2015 11:37



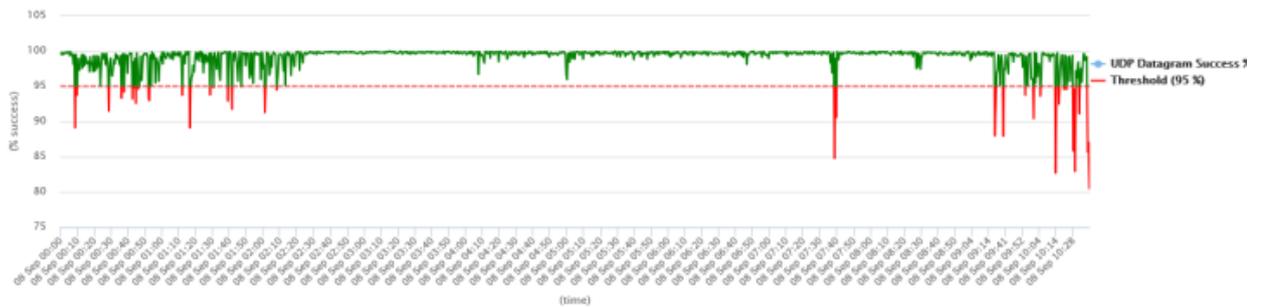
QC-5 Quality of Experience Report (UDP)

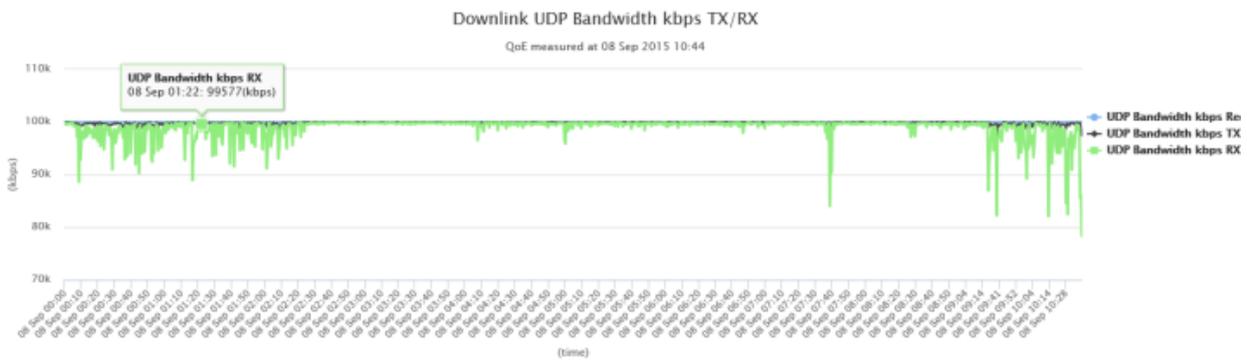
QP-5 Location: Swindon
SW Ver: 1.9
QP-5 Status: Churn



Downlink UDP Datagram Success %

QoE measured at 08 Sep 2015 10:44





Benefits:

By focusing on the mobile networks Quality of Experience from the outside-in, QuantumPath can:

Reduce OPEX: Reduction in truck rolls to perform E2E network tests as testing is performed automatically and network errors are isolated.

Reduce Subscriber CHURN: By quickly isolating problems with individual services/bearers and reducing network down time, QP increases network performance and helps in subscriber retention.

Increase revenue by testing out and supporting new services live across the mobile network to ensure the network is ready to cope and is coping. The need for this is essential to ensure network readiness for VoLTE or public safety features.

Increase SECURITY/PRIVACY: By generating its own traffic, QP avoids the privacy concerns without compromising the quality of network testing.

Additional services:

- Network optimization and recommendations for improvement based on QP-Cell2Core data
- Complete turnkey: we configure QP-Cell2Core, provide guidelines to place QP-Cell2Core apps and provide reports to you
- Customized tests can be developed

Contact us for your initial **Quantum Path** Consultation:

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