

Driving QoE

Managing Traffic to Increase User Satisfaction and Reduce Costs

Telco Smart Trends Report, Q4 2019



The road ahead

Around the world, an enormous amount of money is being spent on bandwidth and network equipment as communications service providers (CSPs) strive to deliver optimal Quality of Experience (QoE) across a range of existing and planned services. To better understand CSP attitudes toward QoE - what they measure, how they augment it, what threatens it, and where it is most important to their customers - we surveyed 106 CSPs around the world.

This report provides critical insights into how CSPs approach QoE today and what they anticipate for tomorrow, as the industry transitions to 5G.

- Discover industry trends and how your peers rate QoE's centrality to their business.
- Understand the impact of intelligent congestion management on assuring QoE.
- Learn how proper implementation can save tens of millions of dollars each year.

During 2018, in the US alone, service providers' broadband CAPEX rose more than **\$2.2B.**

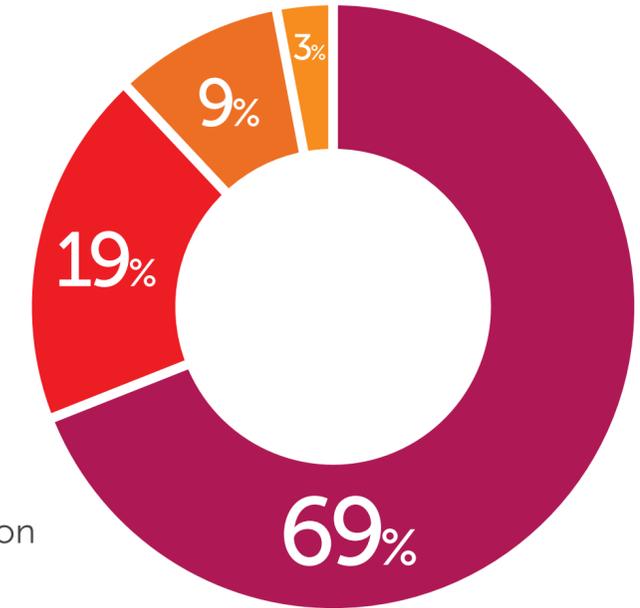


QoE is in the driver's seat

Where does QoE rank among your business objectives?

Asked to explain the importance of tracking QoE, it was clear that the customer is indeed king. The overwhelming reason for measuring QoE is to evaluate Customer Satisfaction. In second place came Customer Retention, which is very closely related.

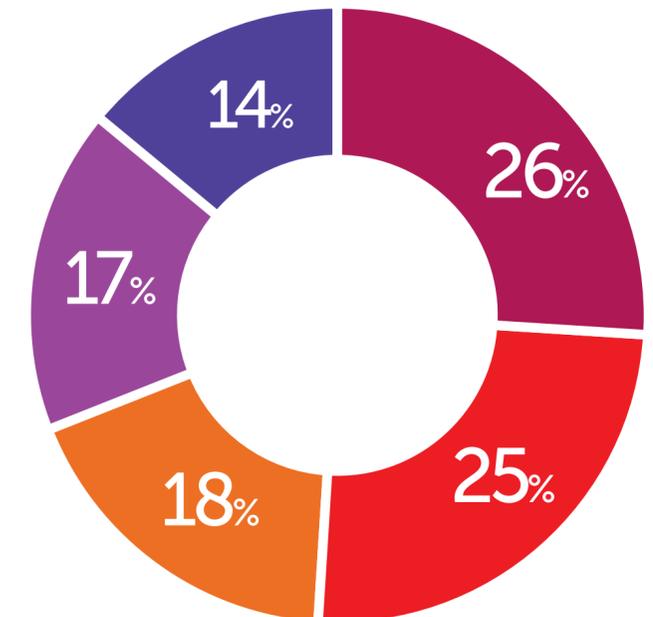
- Evaluate Customer Satisfaction
- Customer Retention
- Regulatory Requirements
- Resource Planning



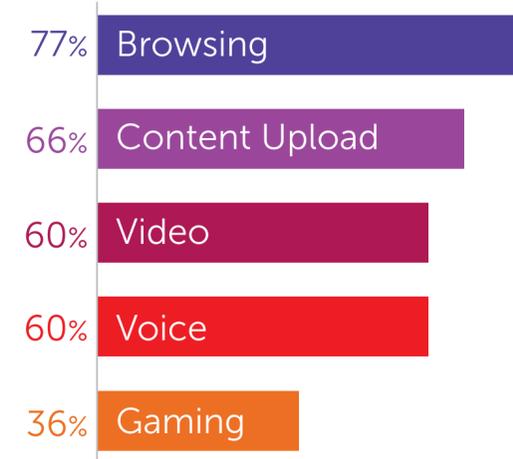
Why is QoE so Important?

Most everyone understands the importance of QoE. Asked to rank the importance of various business objectives, QoE was the clear winner, especially in the mobile arena.

- QoE
- Competitive Pricing
- Churn Reduction
- CAPEX Reduction
- Market Share



...And Browsing is Still “King of the Road”



Where does poor QoE cause churn?

This directly corresponds with where CSPs have tools to measure QoE - where they think QoE has the biggest impact on customer satisfaction, as measured by churn.

Believe it Or Not...

QoE is not just about customer satisfaction. QoE done right can also reduce CAPEX! More about this new finding is included later within this report.

Traffic Bulletin #1

Despite all the hype around video, QoE for browsing was rated a stronger contributor to churn than both content upload and video watching.

CSPs believe that their customers consider browsing to be a basic function, and most everyone expects the experience to be snappy.

Furthermore, people apparently have higher demands regarding uploading their own content, than about viewing someone else's.

It's more about sharing my content - and less about seeing yours.

But, Video is Catching Up & Don't Underestimate Gaming

Video is growing rapidly and nearly 80% of the world's mobile data traffic will be video by 2022*

Video only came in third in our QoE churn ranking. But given its predominance in network traffic, video is what's slowing down everything else. Video is increasingly encrypted – and you can't easily measure what you can't easily see. And if you can't see it, you can't improve it!

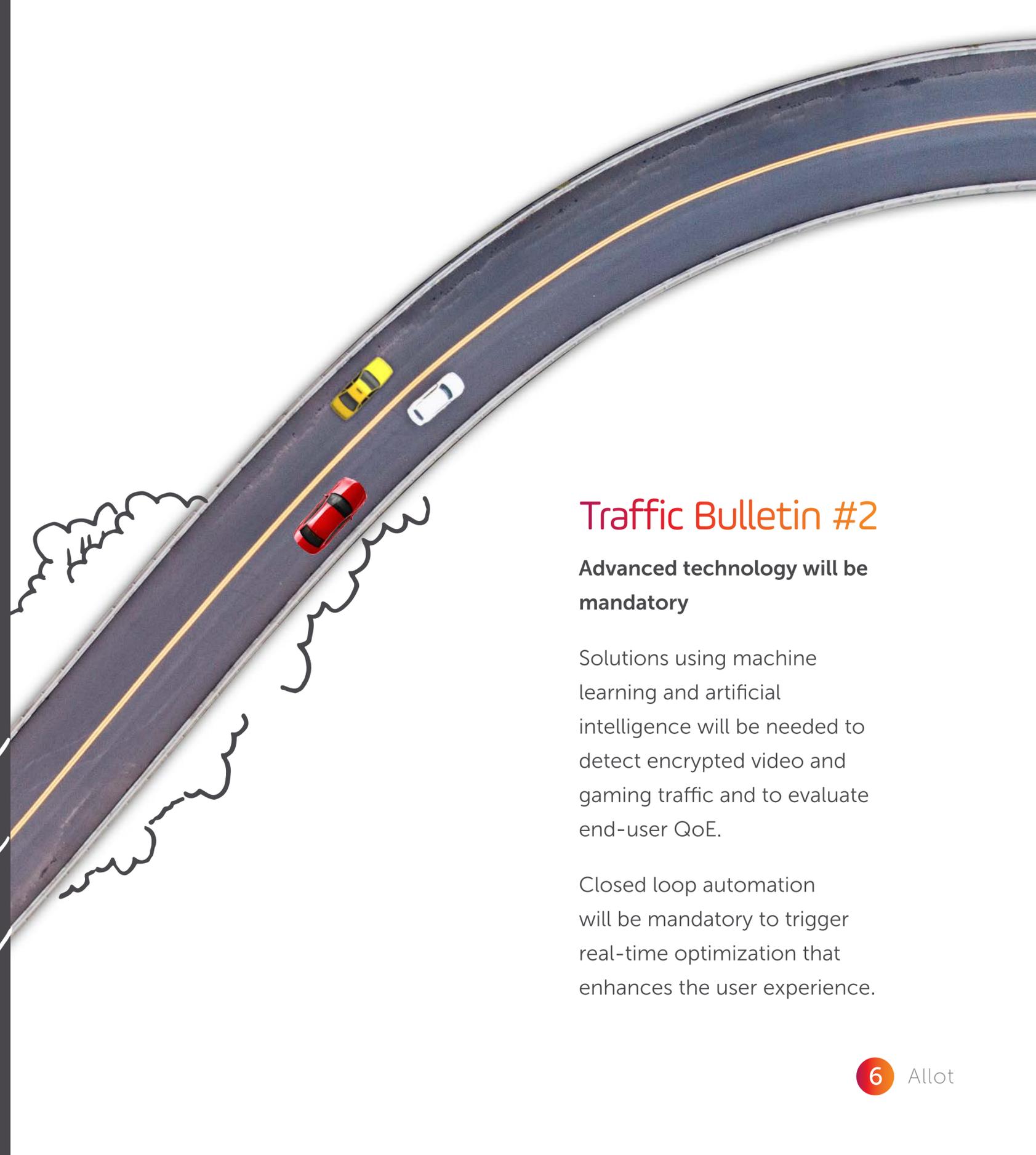
To make matters even worse, video is very much a busy hour phenomenon. Cisco predicts that "between 2017 and 2022, global busy hour Internet use will grow at a CAGR of 37 percent, compared with 30 percent for average Internet traffic."

Gaming to grow 900%*

Gaming will become 4% of global IP traffic by 2022, up from 1% in 2017.

CSPs would be well advised to acquire tools that can measure and improve QoE for gamers.

*Cisco 2019 VNI



Traffic Bulletin #2

Advanced technology will be mandatory

Solutions using machine learning and artificial intelligence will be needed to detect encrypted video and gaming traffic and to evaluate end-user QoE.

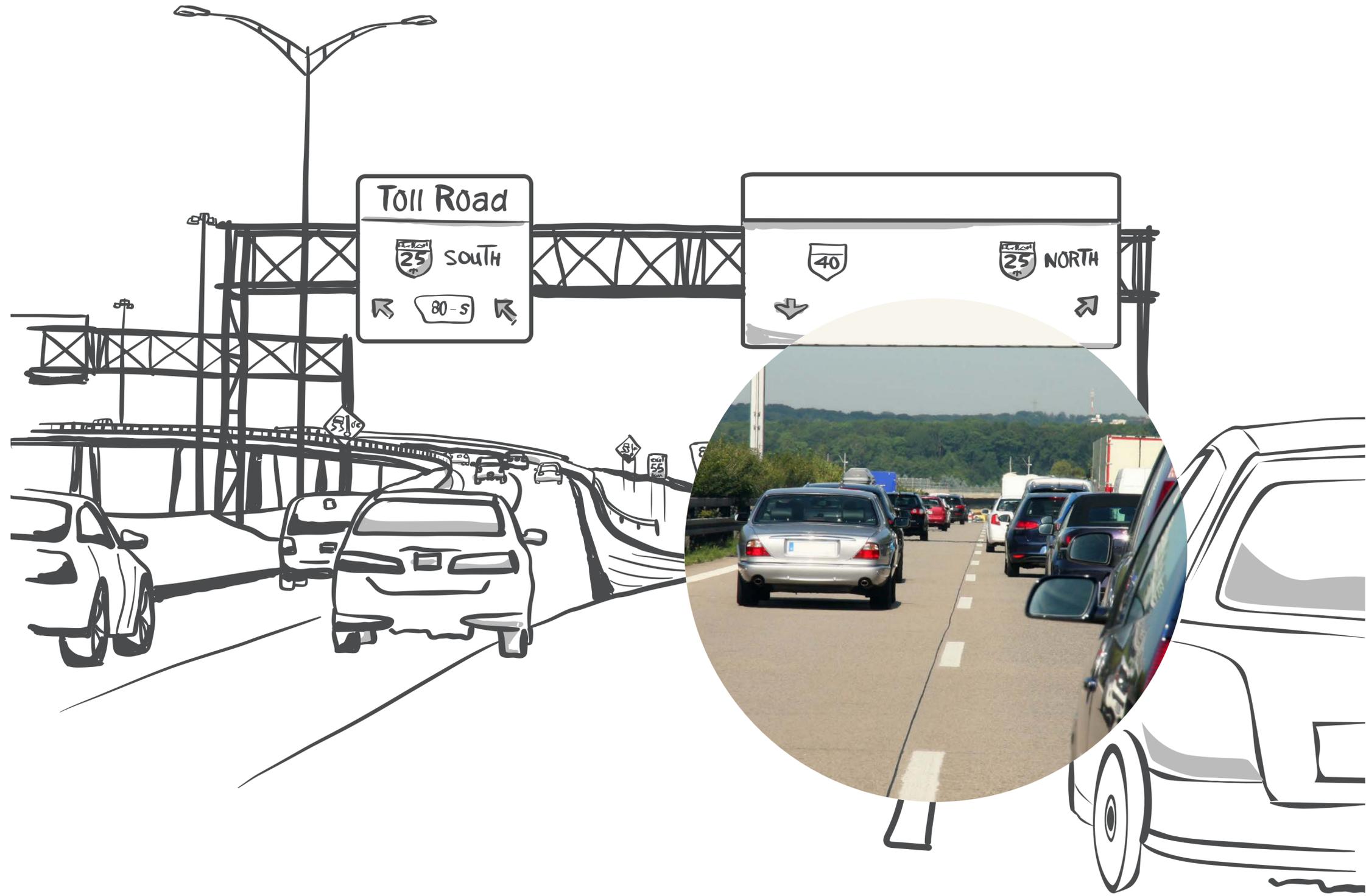
Closed loop automation will be mandatory to trigger real-time optimization that enhances the user experience.

CSPs are Navigating to Avoid Tolls

Bandwidth is both leased and sub-leased, even in Tier 1s, and this can drive up costs

The Allot QoE survey showed that many CSPs lease a significant portion of their bandwidth from other service providers – 60% of CSPs surveyed lease more than 20% of their bandwidth. It is therefore not surprising that fully **84% of CSPs consider optimizing leased bandwidth to be important.**

Presumably, this is to avoid overage penalties, performance degradation, or both, when exceeding thresholds.



Traffic jam ahead:
**Congestion is
the QoE Killer**

When CSP networks are congested, Quality of Experience suffers. The main reason is that common solutions for congestion do not distinguish between different applications and services. Some applications, like real-time voice, are highly sensitive to performance levels. Others, like file transfer, are barely sensitive at all but are more sensitive to packet loss. Yet, typically, all services are impacted “across the board” when a network becomes too congested. Everything slows down, data packets get randomly dropped, and quality suffers.

...and DDoS is a road hog!

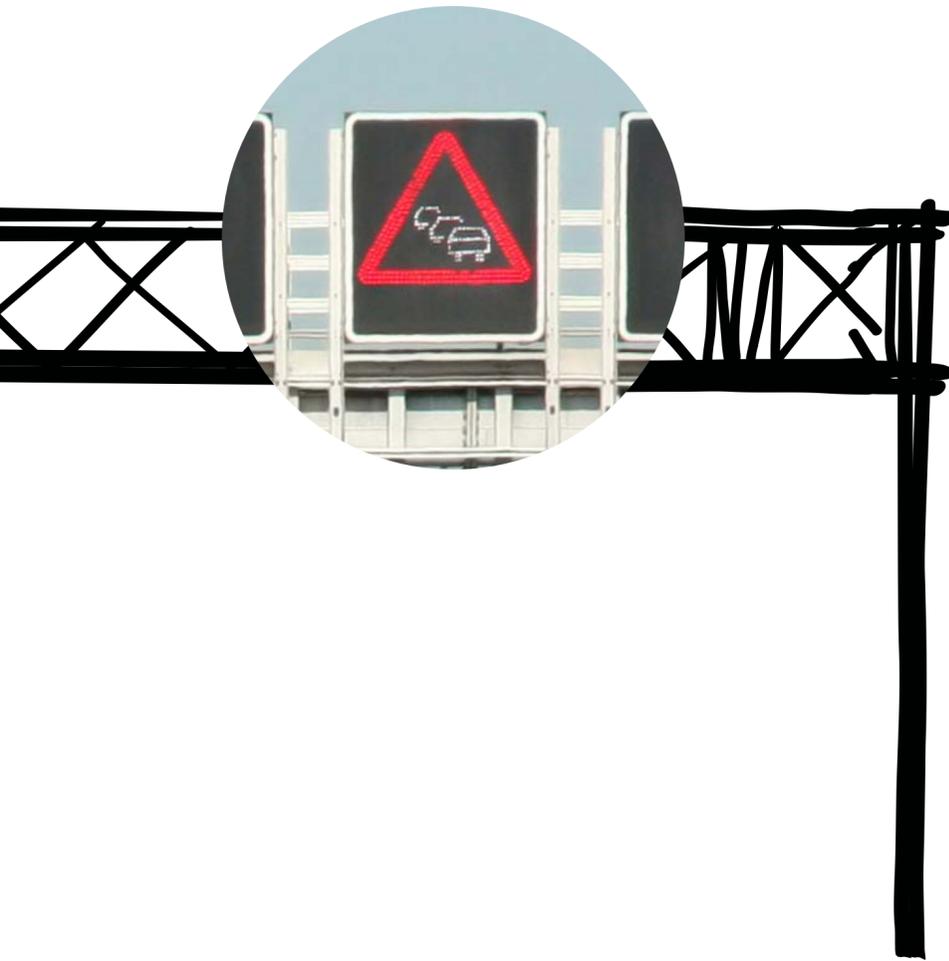
Our survey reveals that 48% of CSPs report that DDoS accounts for 3-5% of their traffic and another 11% report it accounts for 6-10%. There is high concern that growing IoT deployment will make it even worse. More than half of surveyed CSPs anticipate that 5G is going to further increase DDoS traffic.

DDoS is costing CSPs money, even when they are not under direct attack. Resources are being wasted and QoE is being impacted. Keeping DDoS off your network is an overlooked aspect of ensuring QoE.



DDoS attacks can represent up to 25% of a country's total Internet traffic while they are occurring

Cisco VNI report
February 2019



Using the right tools for the job

CSPs are aware of the impact of congestion on QoE and overwhelmingly report having tools to deal with it. However...

Many CSPs choose not to use the traffic shaping capabilities of infrastructure vendors due to performance issues. Meanwhile others rely on the limited capability of switches and routers to drop traffic in response to crossing congestion thresholds. The problem with this approach is that while it is "fair" in the sense of not discriminating against specific services, applications or users, it harms the QoE of performance-sensitive applications.

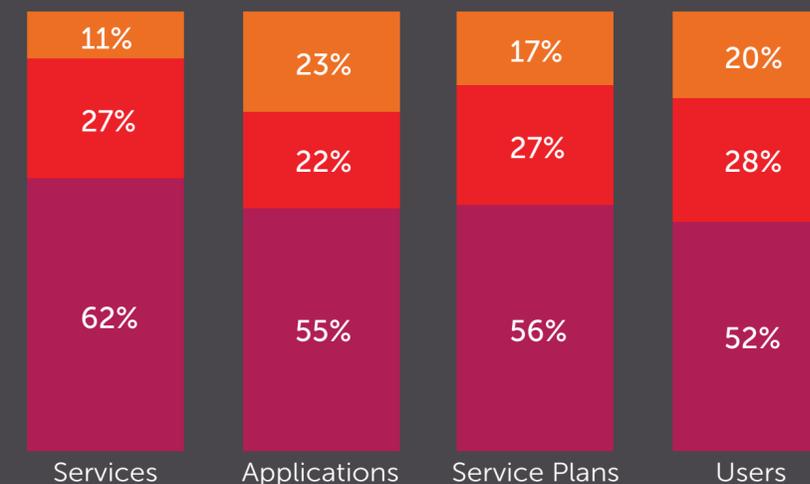
CSPs need visibility of both network performance and customer experience, as well as control of their bandwidth consumption. If they could combine real-time QoE visibility with the ability to prioritize traffic to deliver optimal QoE at minimal bandwidth cost, they could protect their bottom-line profitability while keeping their customers happier.

The rules of the road: Government regulation and net neutrality

It's all well and good to talk about regulating bandwidth consumption and prioritizing performance-sensitive applications and services to protect end-user QoE as well as the bottom line. But is it legal?

To find out, we asked CSPs around the world whether, and under what conditions, they could legally prioritize traffic.

■ Can prioritize anytime ■ Only during congestion ■ Never

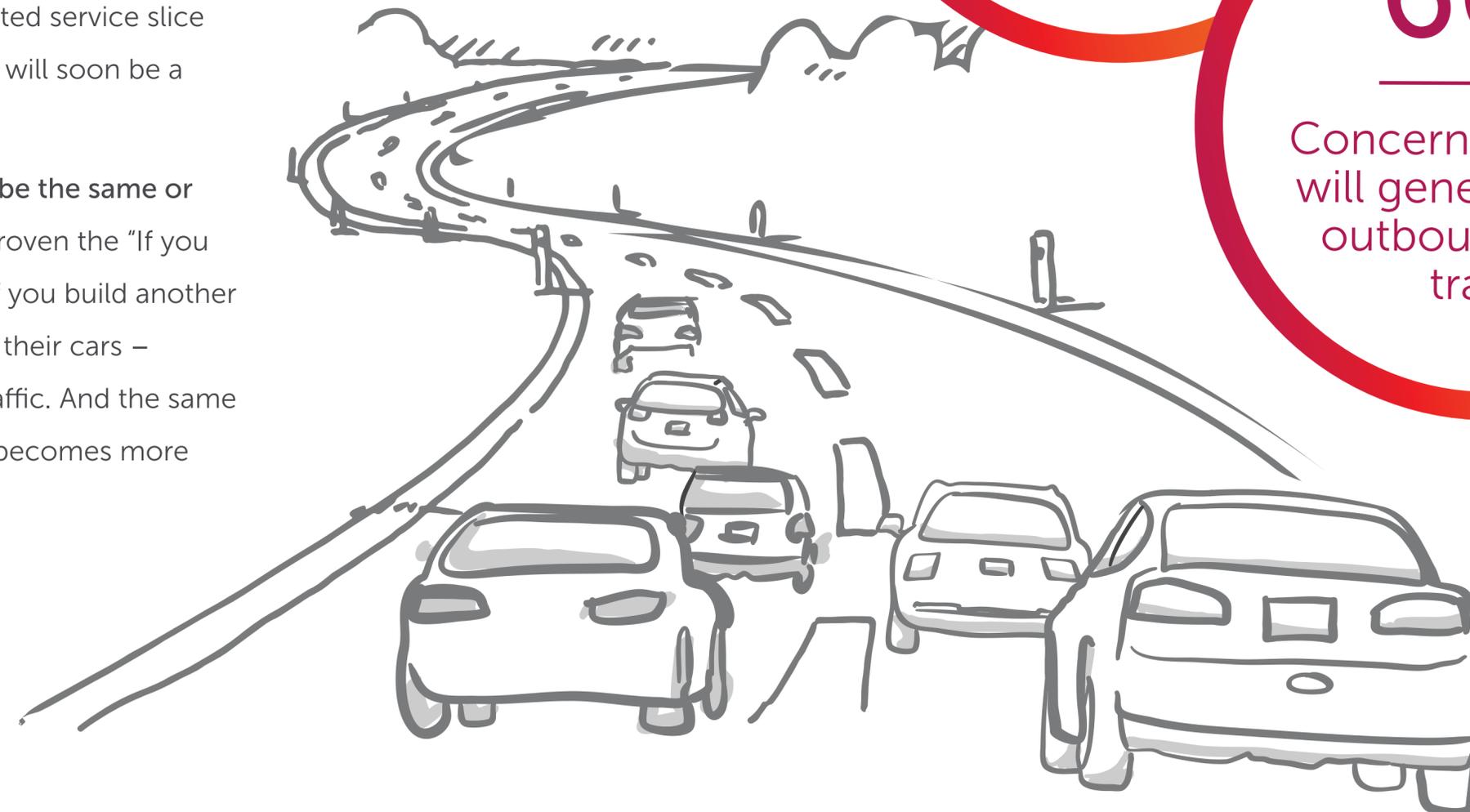


80% of CSPs around the world can prioritize traffic when it's needed the most.

5G: If You Build it, They Will Drive

The 5G hype wagon is rolling, promising Enhanced Mobile Broadband, Mission Critical IoT, and Massive Machine Communications. The pipes will be so big, the latency so low, and the services so compelling, with dedicated service slice resources, that maybe congestion and QoE will soon be a thing of the past.

On the contrary, Allot firmly believes it will be the same or worse! Mobile technology has repeatedly proven the “If you build it...they will come” model to be true. If you build another highway or add lanes, more people will use their cars – increasing demand and generating more traffic. And the same has been true for Telecom – as bandwidth becomes more available, consumption rises.



50%*

Feel that congestion will continue to be a problem

51%*

Fear that DDoS traffic in 5G will be higher

66%*

Concerned that IoT will generate more outbound DDoS traffic

*of CSPs surveyed

The ROI of Intelligent, QoE-Sensitive Congestion Management

Congestion management is required for optimal QoE. But there's also a huge financial bonus for optimal congestion management. Although CSPs rated Resource Planning (i.e., knowing when and where infrastructure must be added) as, by far, the lowest driver for measuring QoE, Allot has found that, if you can accurately measure QoE and fix the congestion issues that are degrading it, then **you can save a lot of CAPEX by deferring network expansion, while improving QoE.**

The savings are significant, and the potential is even bigger if you add in 5% bandwidth savings from DDoS mitigation plus OPEX savings on leased bandwidth, backhaul, and core, as well as ongoing savings during 5G rollout and upgrades.

Handle More Users While Delivering High QoE!



Survey Findings

- 25% of cells require capacity upgrade every year
- \$26K is the average capacity expansion cost per cell.



Intelligent Congestion Management

- Enables 15-20% more users per given bandwidth

- The Solution -
With the same or better QoE



Defer Network Expansion CAPEX

- Save \$20M-\$30M annually
- *On a mobile network with 30K cells

Beat Congestion, Save Money and Enhance QoE

Operational Challenges

- The Cost of Capacity Expansion
- QoE of Business Critical Applications
- Top Tier Customer Satisfaction
- Content Specific SLA and QoE Assurance
- The Next BIG DDoS Attack
- Enterprise Customer SLAs
- Reallocating resources for migration to 5G

These are challenging times for service providers. Costs are up, revenues are down and demand keeps growing.

An intelligent, holistic traffic management solution can assure QoE and reduce costs significantly. Dynamic, policy-based prioritization of critical traffic, combined with efficient DDoS mitigation solves many operational challenges and improves QoE and customer satisfaction.

Intelligent Traffic Management Solution

- Congestion management & DDoS mitigation
- Application detection and prioritization
- Service plan-based, equitable prioritization
- Content detection and prioritization
- Attack traffic detection & mitigation
- Throughput policy enforcement
- All of the above

Key Takeaways



Congestion threatens QoE and appears to be getting worse

QoE is widely viewed as critical to customer satisfaction

CSPs are starting to measure QoE but need tools to enhance it

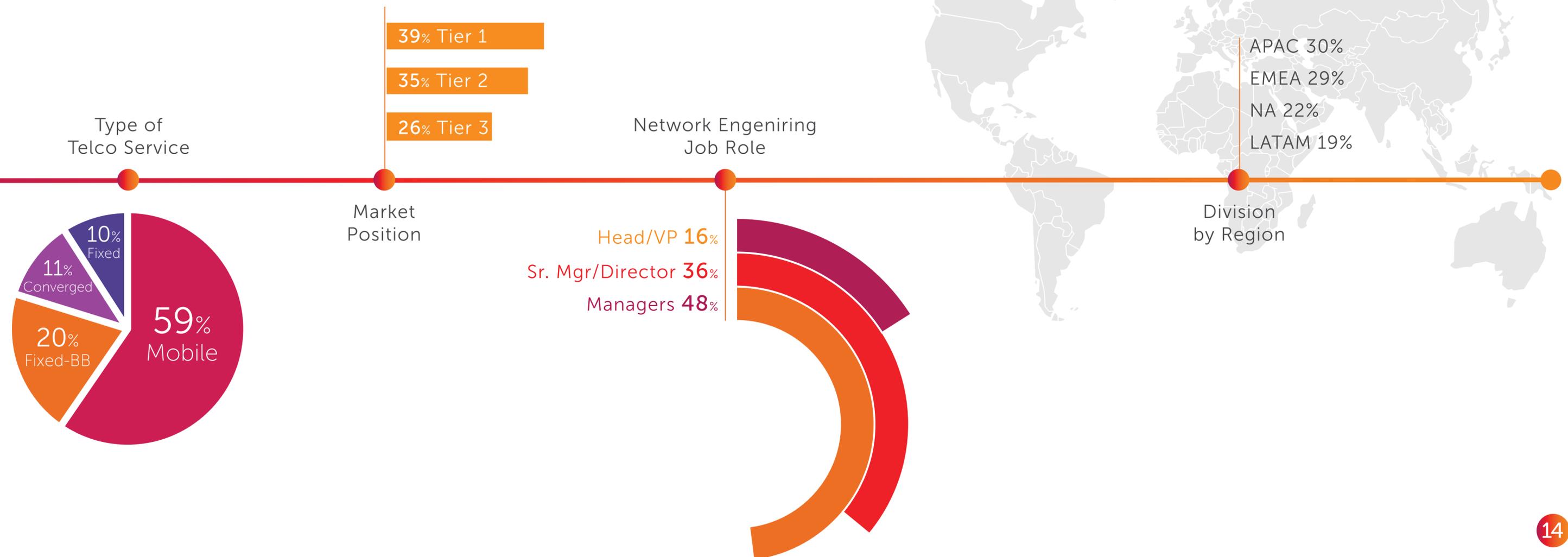
When networks are congested, prioritization is allowed

Intelligent congestion management improves QoE and brings significant additional savings

Survey Methodology

To better understand CSP attitudes towards QoE, in August 2019, we asked engineering managers at 106 CSPs a series of questions on the topic.

This Telcom Smart Trends (TST) report features their answers, and highlights some of the interesting conclusions drawn from the data.



Resources

In addition to 1st-hand research collected by Allot in the August 2019 QoE survey, the following resources were referenced in this report.

- » US broadband investments continue to rise
- » McKinsey projects that 5G will make networks more expensive
- » Cisco 2019 Visual Networking Index
- » Allot Closed Loop Automation Telco Smart Trends Report – Q1 2019
- » Frost & Sullivan: Closed-Loop Automation - A Strategic Imperative for Today's CSPs
- » Frost & Sullivan: Optimize QoE with Automated Intelligence
- » Allot: QoE Assurance through Automated QoS & DDoS Mitigation

Allot is a leading provider of innovative network intelligence and security solutions that empower communications service providers (CSPs) and enterprises worldwide to enhance the value they bring to their customers. With over 20 years of proven success, our solutions turn network, application, usage and security data into actionable intelligence that make our customers' networks smarter and their users more secure.

Allot's multi-service platforms are deployed globally, in the most demanding environments, by over 500 mobile, fixed and cloud service providers and over a thousand enterprises. We support evolving network architectures by offering the most flexible platforms in the market, including COTS hardware, software only and field-proven, fully NFV compliant solutions.

Learn how you can implement automated QoE

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sales@allot.com | www.allot.com