Nova Active OTT video monitoring solution

Critical QoS and QoE insight

EXFO

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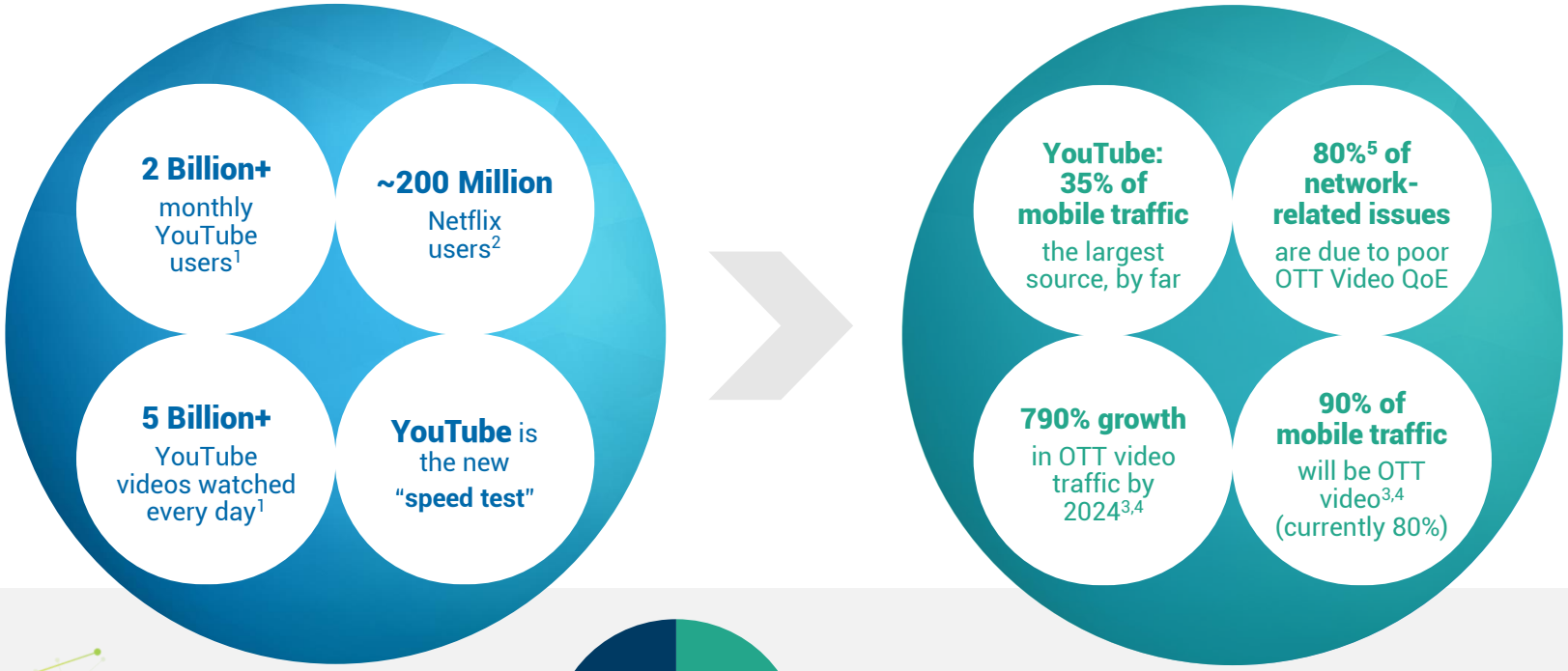
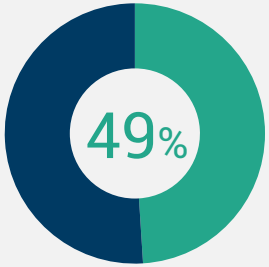
OTT video is taxing network performance





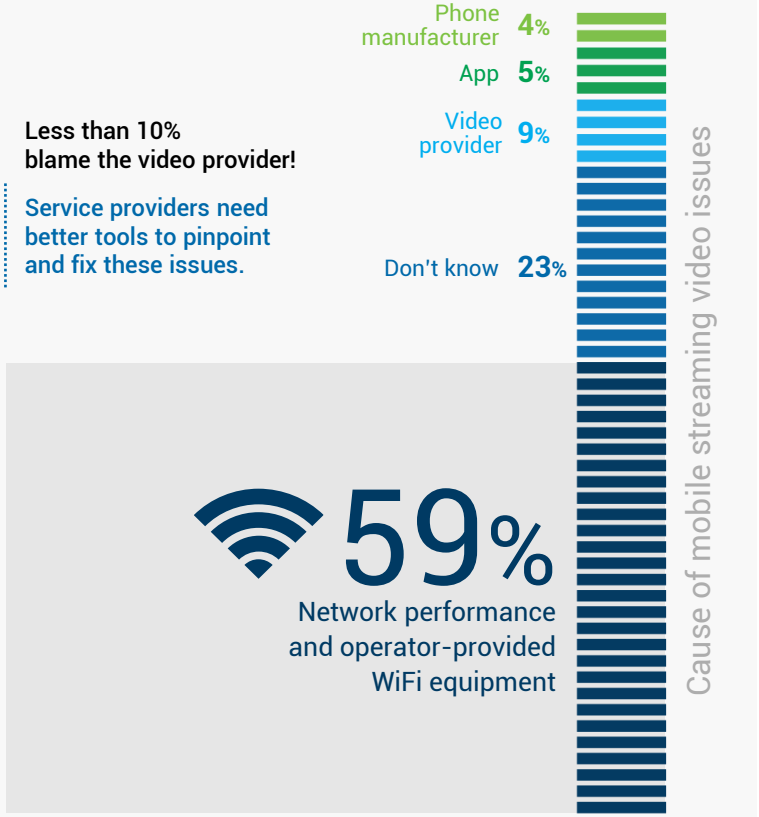
Impact of network experience on Net Promoter Score (NPS)[6]

1. Android Authority YouTube Statistics, August 2019
2. Statista, July 2018
3. Ericsson Mobility Report, Q1 2019
4. TMF 2018, The foundation of intelligent automation
5. EXFO service provider survey, August 2019
6. Portevo inc, 2020

One quarter of consumers regularly experience mobile video streaming problems.

Even a for a small operator with 2 million subscribers, this can translate to potentially tens or hundreds of thousands of subscribers.

Consumers blame service providers for mobile video streaming problems![1]



Less than 10% blame the video provider!

Service providers need better tools to pinpoint and fix these issues.

59%
Network performance and operator-provided WiFi equipment

1. EXFO consumer survey, November 2020

Service provider drivers and pain points

Impact of the new service reality

The massive popularity of OTT video services creates additional challenges in the NOC and SOC. Managing service quality issues for services that are not your own, but are delivered over your network, is problematic.

> **59% of customers blame their service provider when experiencing video quality issues[1].**

Lack of visibility

- Call center volume and duration is taxing operations
- Enormous effort to required to identify and resolve issues

Greater customer expectations

- Video watchers tend to be less tolerant of outages and degradations
- More likely to change providers due to poor quality of experience

Reactive customer management

- Service providers often in the dark with respect to issues impacting OTT
- Don't know about them until their customers complain

1. EXFO consumer survey, November 2020

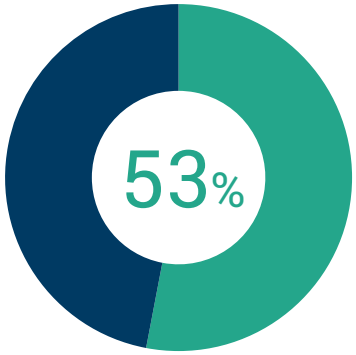
Overcoming legacy limitations

DPI and compute intensive

Unable to scale cost-efficiently

Encryption limits accuracy

Increasingly approximate QoE KPIs



of MNOs would purchase application/ QoE specific Active testing solutions like OTT video monitoring, if available;

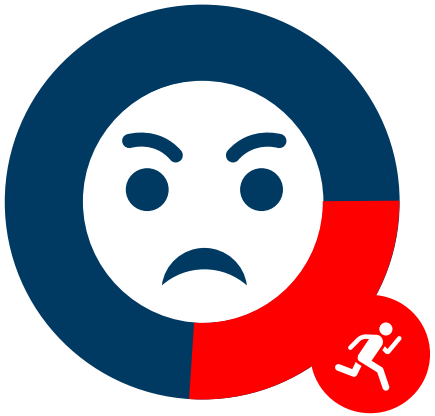
32% within 18 months.[1]

1. Augmented/ virtualized service assurance survey, Ovum custom survey or EXFO, August 2019

Mobile video streaming issues cause significant churn.

For a mobile operator with 10 million subscribers, the cost of replacing customers who churn because of poor video streaming quality amounts to $30 million annually ($3/customer[1]).

The likelihood consumers will **switch providers** because of mobile **video streaming issues**.



26%
Will, at same or slightly higher cost[2]

Over half of CSPs cite customer churn and reduced NPS as top threats to their market share.

Operators are rightfully worried about the negative effects of streaming video issues.

>50%

1. Portevo Inc, 2020
2. EXFO consumer survey, November 2020

Operators are unable to resolve a third of mobile streaming video problems.

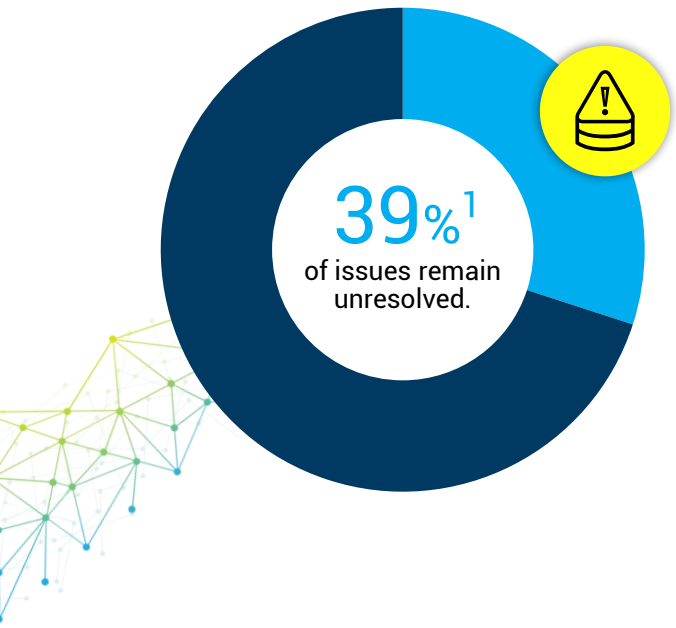
On average…

4 Teams

4 Tools

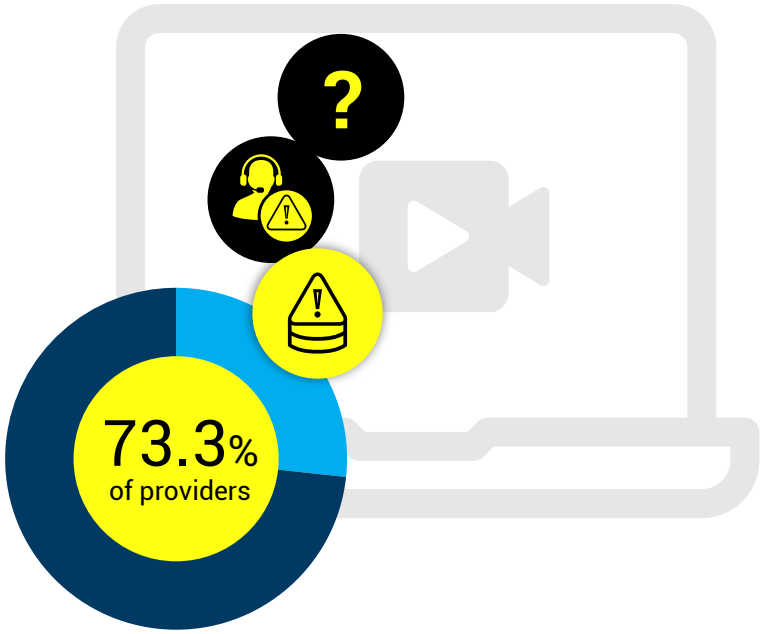
5 Hours

And still…



Most struggle to pinpoint the origin of video streaming issues.

Almost three-quarters (73.3%[1]) of service providers cannot determine if OTT video impairments originate with the customer device or home network.



1. EXFO consumer survey, November 2020

Deriving actionable insight from massive data

Right information - Right time - In context

Detecting the undetectable

On average, it takes **4 teams**, using **4 tools** up to **5 hours** to resolve OTT video issues--and even then, **39% of issues remain unresolved**. Additionally, 22% of issues originate in the customer's network but 74% of operators say they have **no way to determine** that the problem is there!

> Having the ability to measure QoE and QoS in real-time, automatically spot QoE issues and correlate these measurements with other external factors provides the foundation for full visibility through automated analytics.

Delivering actionable insight

By automating the correlation of every detected QoE anomaly, the grouping of individual anomalies into common cause cases and delivering a customer impact assessment for each case provides crystal clear clarity for operations teams to prioritize fixes.

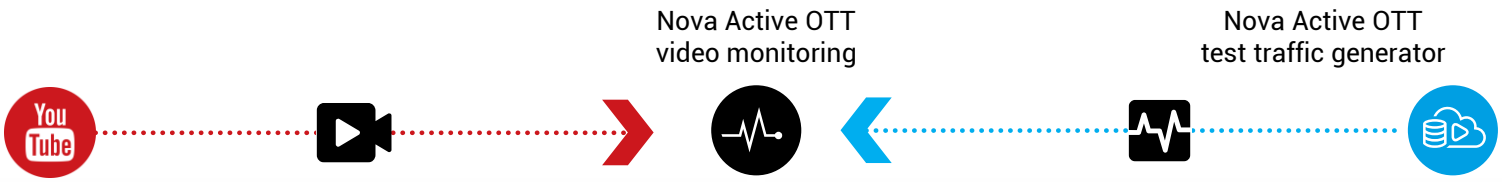
> Visibility, clarity and prioritization are critical for any operations team, but especially for OTT video services as customers are more likely to leave due to poor quality.

Cloud-native solution for a cloud-native service

Reimagining video monitoring for OTT video services

OTT video services are cloud-native services, delivered as an encrypted flow over an increasingly cloud-native network. **Traditional ways of monitoring are simply not agile or scalable enough** for these highly dynamic services and networks.

The Nova µ-Verifier is a lightweight standalone active assurance probe that supports both OTT video QoE monitoring as well as network QoS monitoring--delivering full visibility to OTT services.



PERCEPTIVE QOE MEASUREMENT

Perceptive QoE

Measuring video QoE has **traditionally required deep packet inspection** (DPI) techniques, which are computationally heavy, require lots of storage and typically **not real-time**.

EXFO's **preceptive** QoE **eliminates the need for DPI**. Leveraging IEEE algorithms[1], a **QoE score can be generated in real-time** by simply monitoring the video playout buffer performance.

Lightweight processing and no storage requirements!

SYNTHETIC QOS MEASUREMENT

Active QoS

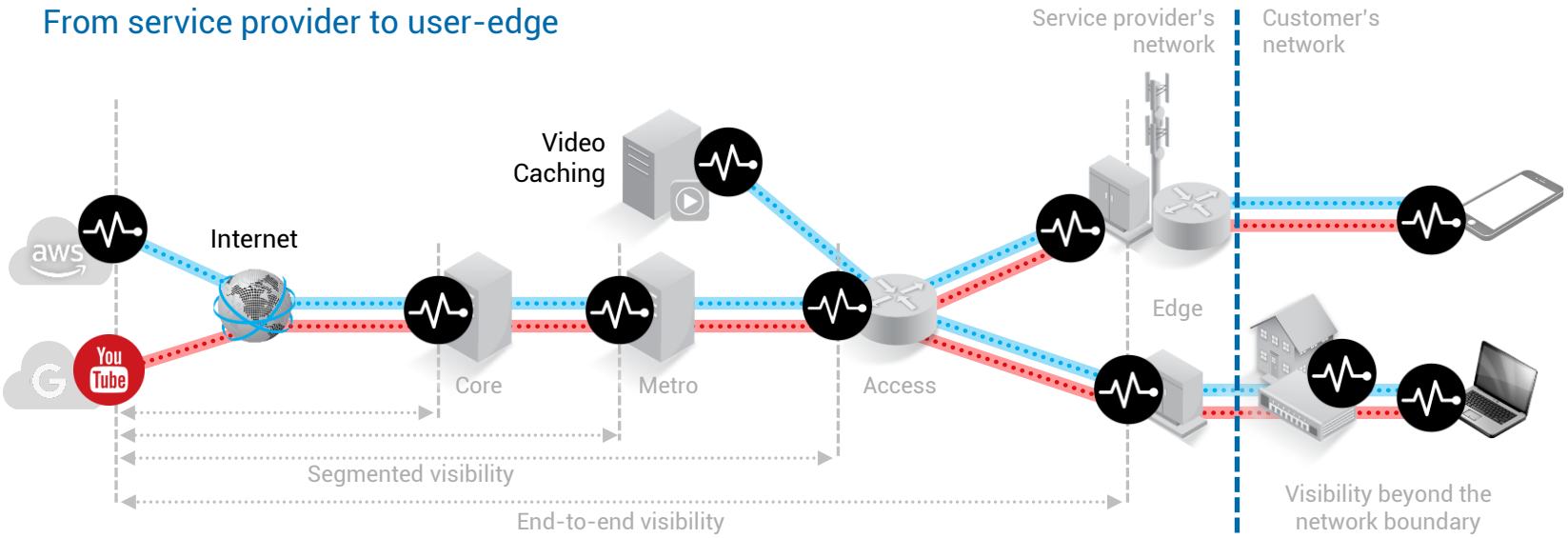
Of course, active QoS monitoring is nothing new. What is new is making this test traffic look and feel like OTT video--traffic which is very 'bursty' and highly dependent upon the specific video profile (SD, HD, 4K, etc.) being streamed.

The Nova Active OTT video monitoring solution can generate synthetic test traffic that mimics various profiles to deliver real-time QoS KPIs, along with QoE KQIs.

1. ITU P.1203.3

Real-time visibility

From service provider to user-edge



End-to-end, real-time visibility

Understanding QoE and QoS performance end-to-end is crucial to being able to see customer issues in real-time - and understanding if the problem lies within your network or not.

OTT video QoE monitoring at the network boundary provides a clear view of the impact to customer experience by your transport network.

Segmented monitoring for fault localization

When issues are detected, being able to orchestrate monitoring end-points along the service path allows for quick localization of the issue.

Automating the localization of faults eliminates the need to assemble multi-domain teams to troubleshoot issues.

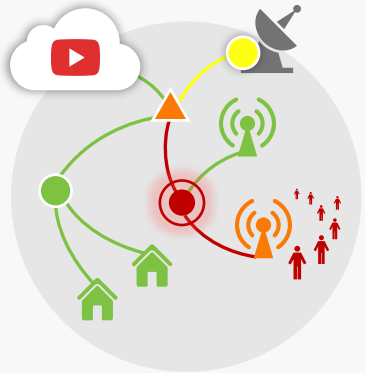
Visibility beyond the network boundary

Video quality issues that originate outside the network have been the bane of many service providers. Being able to deploy a lightweight monitoring solution in CPE or user device provides additional clarity.

Monitoring as a user 'app' or device OSS feature delivers visibility where it has been missing.

Conclusion

Lightweight microservice test agent



Elastic scalability

For core, cloud, edge, handset or set-top / ONT

Segmented results pinpoint distribution bottlenecks and localized QoE-impact

True Perceptive QoE

Directly measures viewing experience

"Watches" videos to assess QoE the way users see them.

Industry standard real-time video QoE for any video stream[1]

Correlated Network QoS

Isolates network contribution

Active, simulated video traffic creates L3/4 benchmark.

Determine where QoE is impacted by network latency, packet loss, jitter or congestion.

1. ITU-T P.1203.3

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