Mobile video – Delivering Scale and Quality

Cisco Knowledge Network

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Why now for mobile video?

Service Providers

- Huge market opportunity - more video enabled mobile devices than TV screens
- Need to monetise video traffic/sweat the network
- 4G/5G/Gb Wi-Fi transition will provide a better network for delivery
- Access to the home/fixed line TV service – Mobile Operators can be the primary Service Provider
- Flexibility to try new business models

Consumers

- Changing viewing habits – increasing video consumption on mobile devices
- Users are now demanding video
- Device and network improvement facilitating more data consumption

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Market Movement

iPhone X

- T-Mobile (US), Three (UK) providing Binge services
- Vodafone providing pan-European uncapped data services
- Reliance launch low-cost Jio 4G phone in India
- Content Providers (BBC, Discovery) creating Mobile specific versions of content
- 1st Olympic Mobile Broadcaster announced (TIM/Italy)

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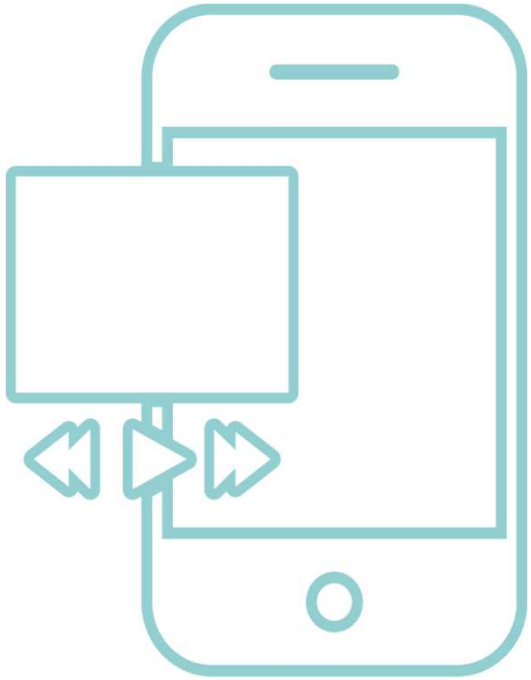
Shifting Video Consumption

9x

MORE MOBILE VIDEO BY 2021

82%

OF IP TRAFFIC WILL BE VIDEO BY 2020



2x

MORE MOBILE VIDEO CONSUMED BY MILLENIALS THAN 25-39 YEAR OLDS

75%

OF MOBILE DATA TRAFFIC WILL BE VIDEO BY 2021

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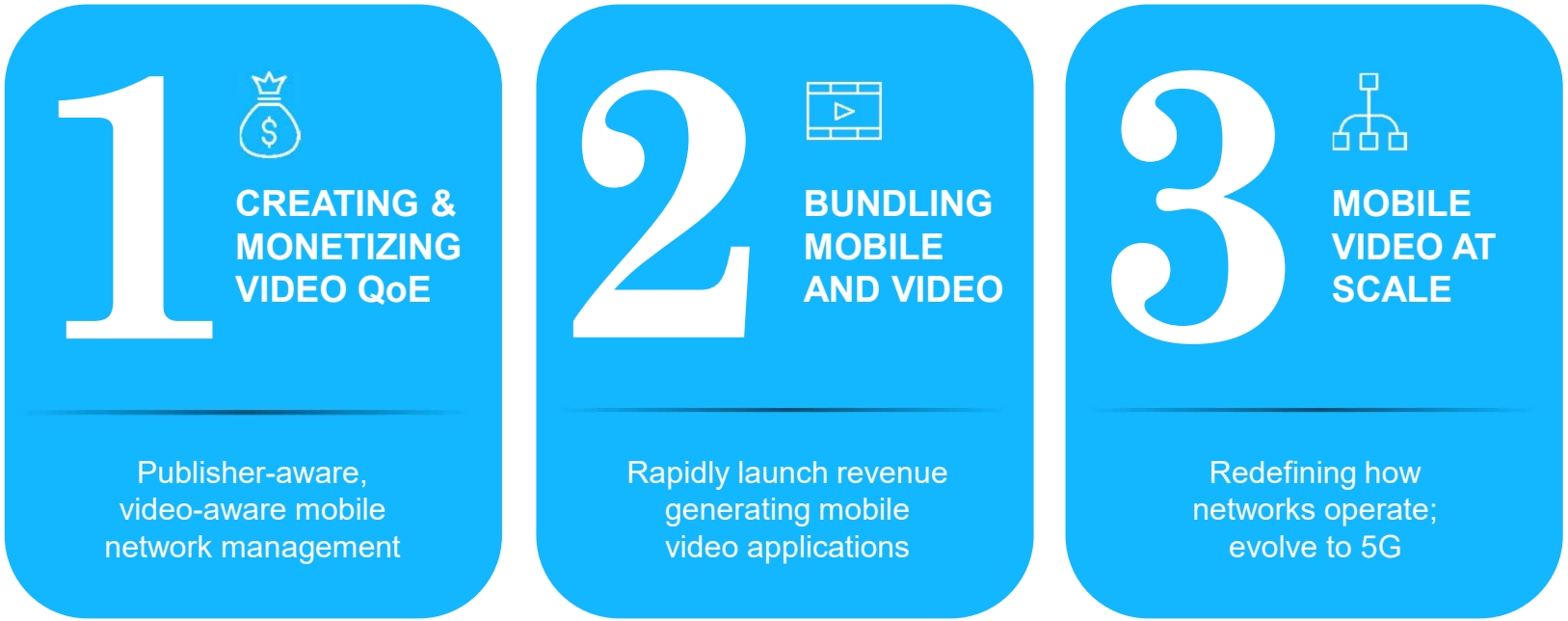
Source: Cisco VNI, Nielsen, Deloitte

The Opportunity for Mobile Network Operators



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Poll 1- Are you going to launch your own video service?

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Will video break the network?

More devices than people	• **8.4 billion** connected video devices by 2020 • Different scale requirements on the network
Video Quality	• 4K, HDR, 60 FPS
Heterogeneous Access	• Licensed – Unlicensed • Marco – Small Cell • Seamless Experience
Infrastructure at Capacity	• Mobile networks not designed for large scale video distribution

The Network is more critical to User Experience than ever before

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Video Aware Mobile Network

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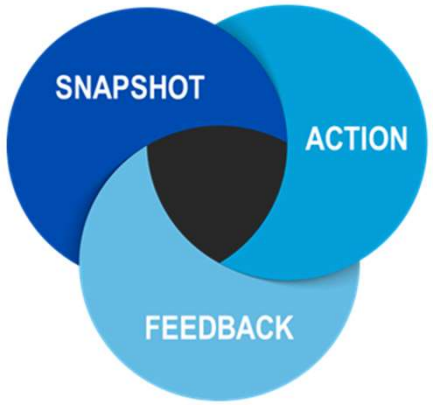


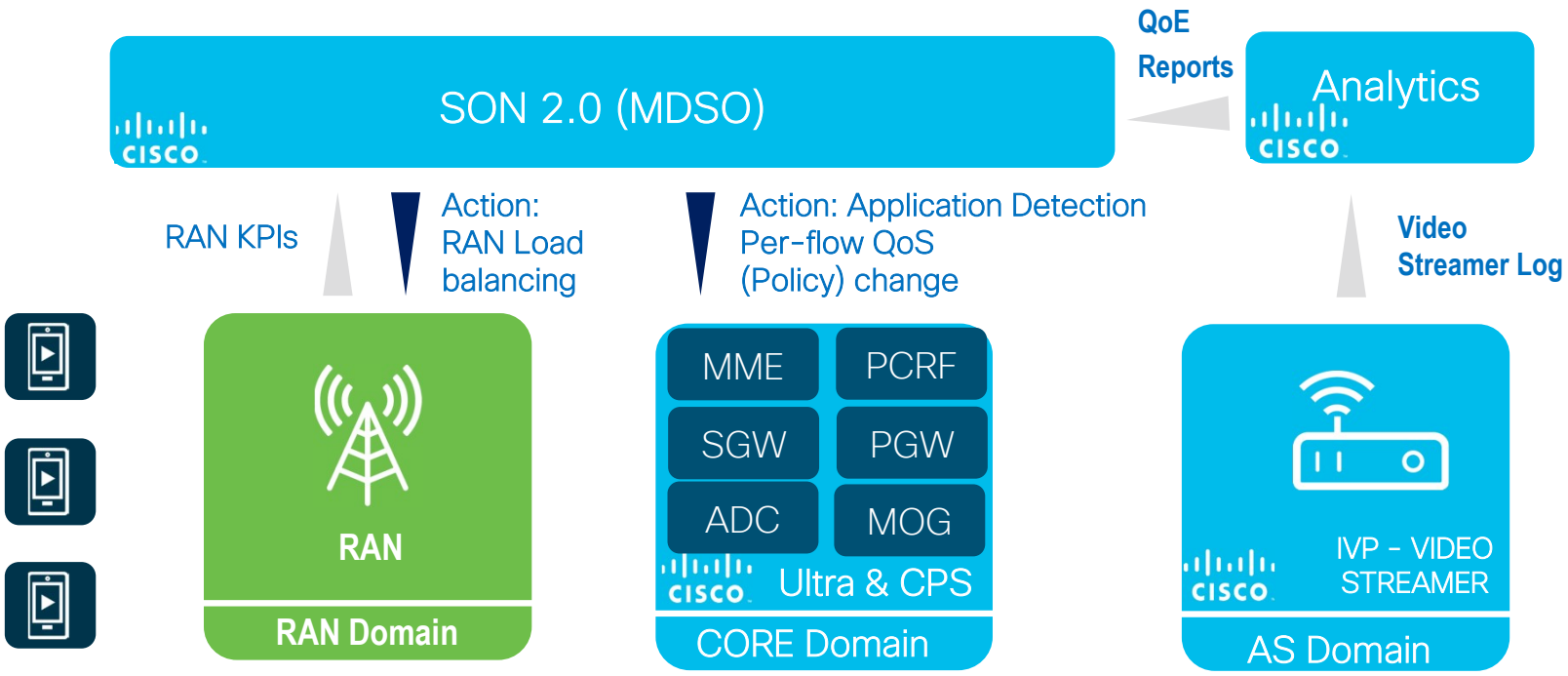
Analytics

- To understand video user experience
- Use video analytics to evaluate performance of Network

Optimization

- Multi=Domain Service Optimization
- Enhance SON application to take video QoE into account

Video Aware Network Solution



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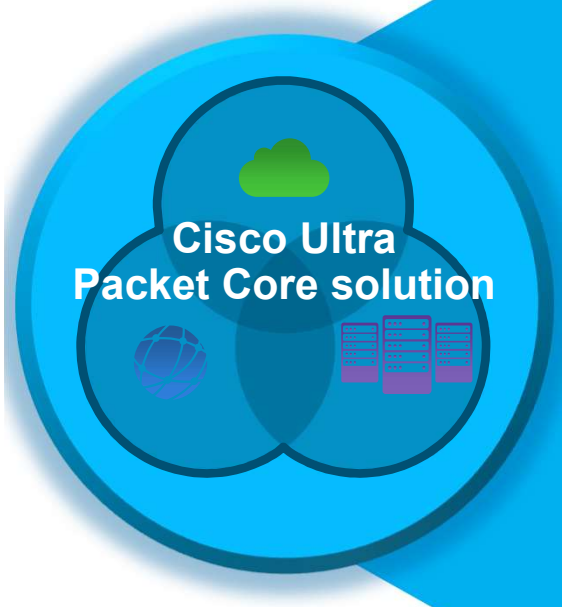
Cisco Ultra Service Platform



- USP – Industry's most complete virtualized mobile services platform – based solution.
- Packet Core for 4G and 5G.
- New Ultra Packet Core Architecture.
- Support for Peak per PDN Data rates of 10 Gbps (POI).
- Hybrid CUPS option to reuse existing ASR5500
- CUPS Control and User Plane as separate independent Network function..
- Based on StarOS, thus leverages many existing features.

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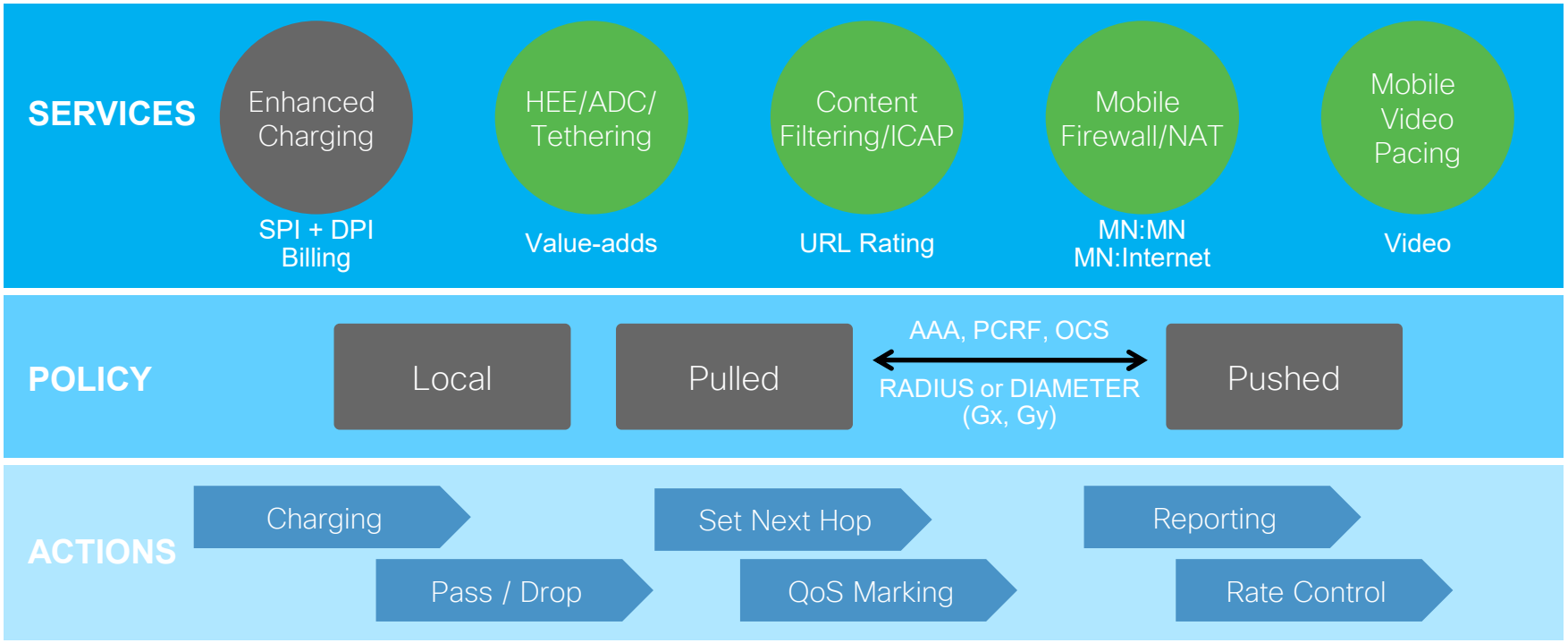
Ultra Policy Suite Capabilities and Services



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Cisco Application Detection Control (ADC)

Detection Algorithms:

- ✓ Deterministic
  - ✓ Port based, HTTP Headers, Hex Patterns
  - ✓ SNI/CNAME
- ✓ Statistical/Behavioral Analysis
- ✓ Heuristics
- ✓ DNS Snooping

Sub-classifications:

- Audio, Video, File transfer, IM, Ads, Streaming, Unclassified

Groups:

- P2P, Gaming, Tunnel, VoIP, IM, Streaming, Video, Audio, Mail

Applicable policies: Throttle, Block, Allow, Differential charging

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The need for Traffic Optimization

- Unprecedented Video growth in the mobile market, drives CAPEX and OPEX for mobile network operators
- Subscribers craving for HD video quality of experience
- Mobile data growth making congestion more frequent
- Current video optimization techniques are rendered unusable in the face of increasing encrypted traffic
- Current optimization solutions require deployment of large amount of additional HW and complicate deployments – need for a simple to deploy, SW only solution that improves the QoE of subscribers

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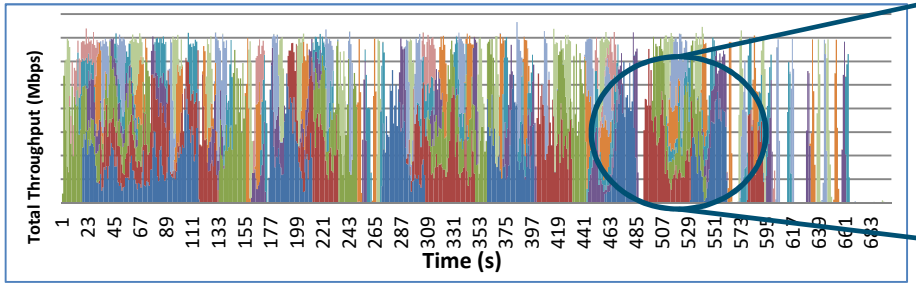
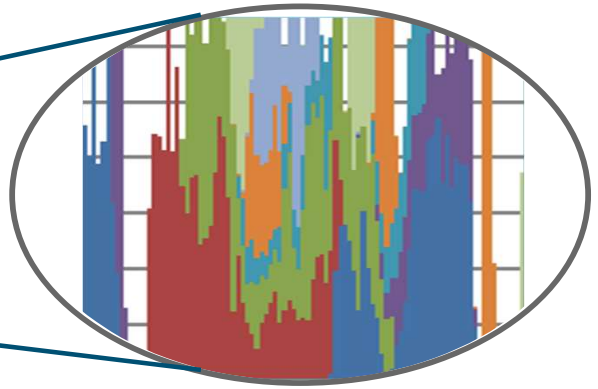
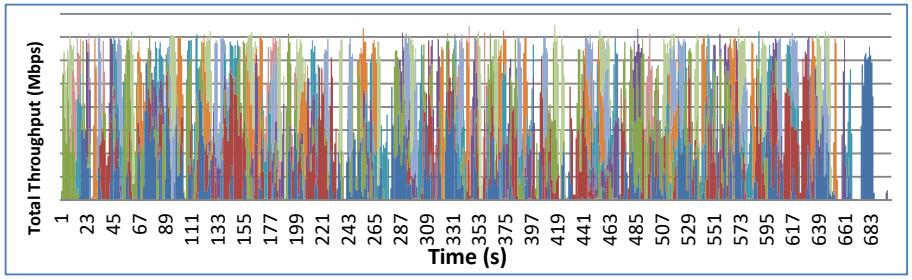
Traffic Optimization Effect on Traffic in Congestion

Cisco Traffic Optimization OFF





Cisco Traffic Optimization ON



Cisco Traffic Optimization manages large flows (e.g. video) when **heavy congestion** is present, breaking up congestion blocks and allowing small flow traffic more instantaneous bandwidth

- Increases the capacity available in an existing cell for new traffic growth
- Increases QoE for all users
- Maintains video streaming performance and decreases video startup latency

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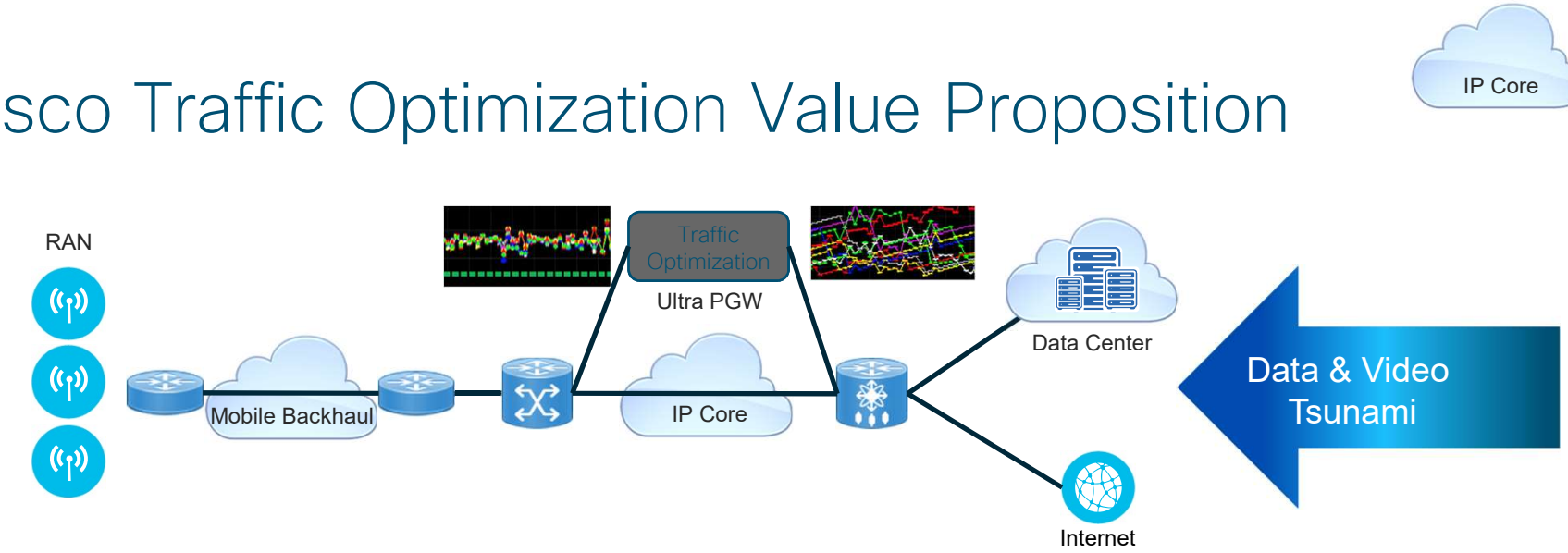
Cisco Traffic Optimization Value Proposition



- Uses existing RAN more efficiently delaying/reducing RAN investments
  - Enables 40% more traffic to be transmitted over a given band of spectrum and via existing cell sites
  - Reduces retransmissions and latency during congestion
  - Increases number of users connected to eNodeB
- Improves QoE for all subscribers and data flows
  - Stabilizes and improves subscriber/flow throughput. A stable flow is key to serving customers within available overall bandwidth.
  - Higher improvement for lowest performing sessions/flows in the presence of big data flows
  - Instantaneous subscriber throughput improvement at high load

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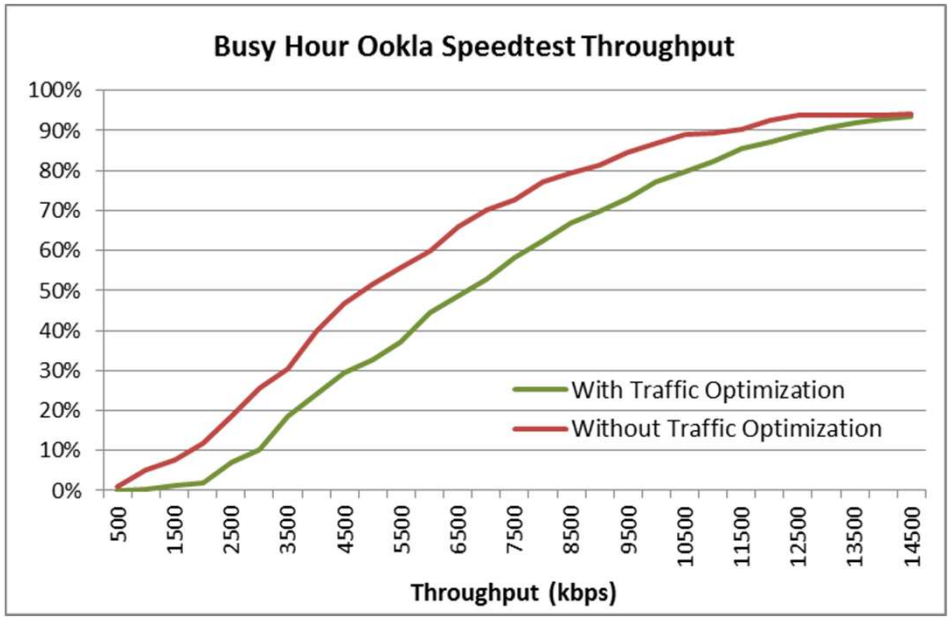
Faster Traffic per User at High Load

Network performance improves with Cisco Traffic Optimization managing large traffic.

- Ookla Speedtest gets around 35% faster
- Standard Flow speed with Traffic Optimization at 85% cell load meets or exceeds speed at non-optimized 60% cell load



Distribution of Speed Test results during busy hours.

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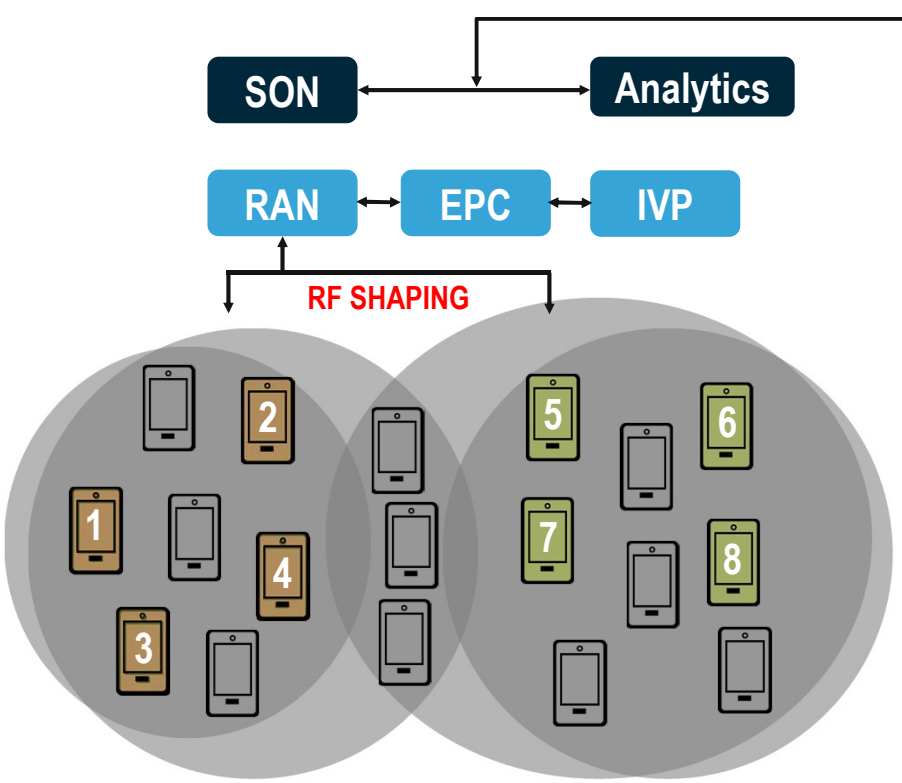
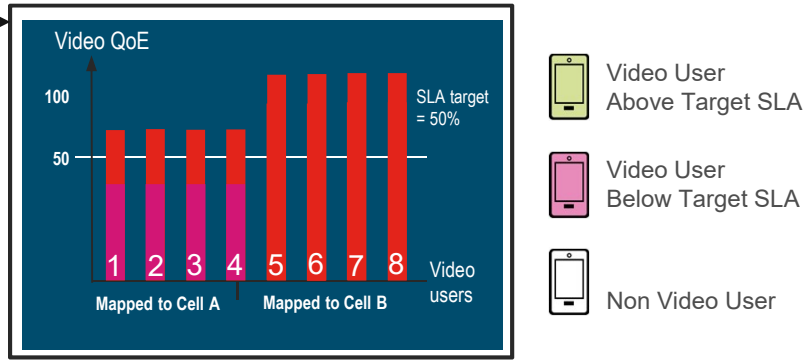
VIDEO Aware Load Balancing– RAN OPT. (SON)





Video User
Above Target SLA

Video User
Below Target SLA

Non Video User

- SON maps clients to cells and aggregates to new cell level Video KQI
- SON detects degradation in Cell A Video KQI
- SON triggers offload to Cell B
- SON performs RF shaping to improve Cell A Video KQI

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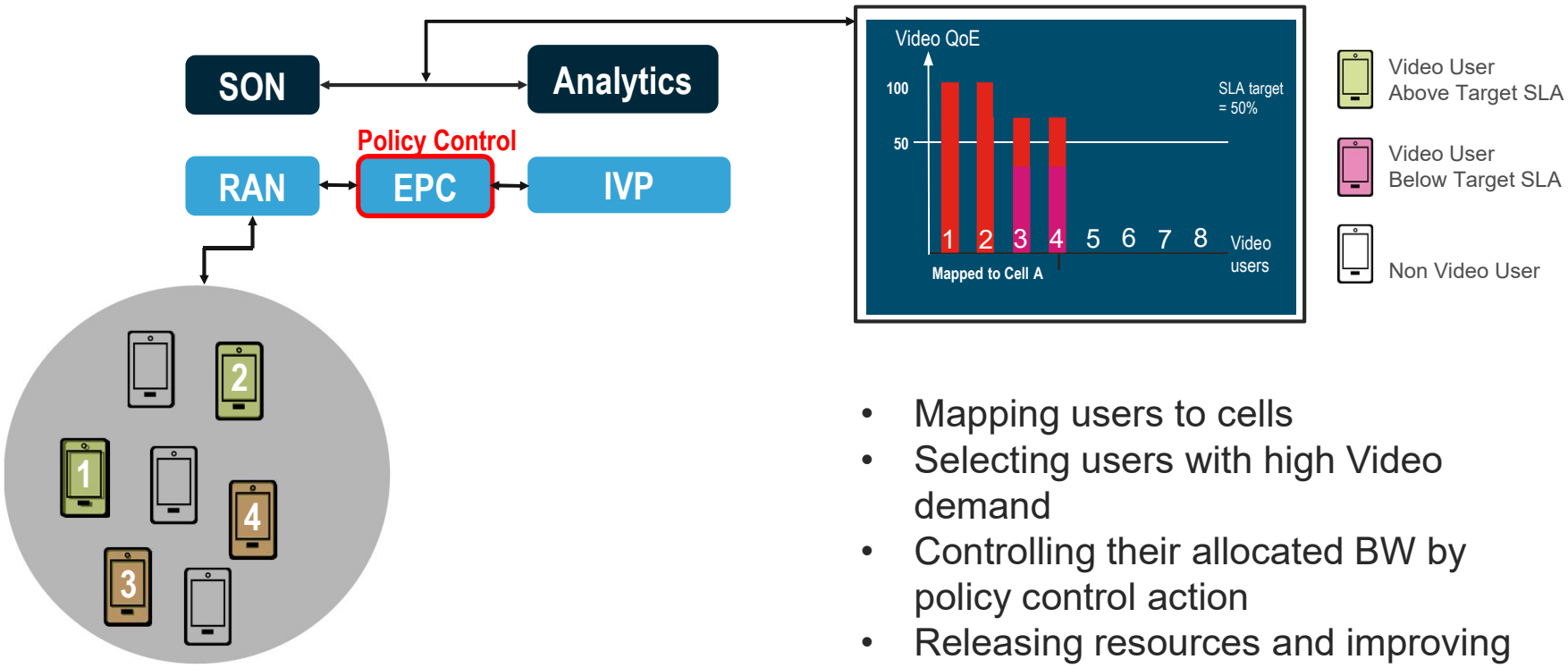
Video QoE Aware – Users Traffic Shaping



- Mapping users to cells
- Selecting users with high Video demand
- Controlling their allocated BW by policy control action
- Releasing resources and improving NW and users vQoE

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Infinite Video Platform for Mobile

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One Platform

Deliver best-in-class video experiences for all devices across cable, DTH, telco, and OTT. Identify new opportunities with data and business insights. Protection with video content and service security.

IP Video Better than Broadcast

Leveraging a converged video core and intelligent edge, with cloud recording and smart streaming technologies.

Cloud Scale

Cloud native platform, public cloud deployment, provided with ongoing service assurance, DevOps, and collaborative innovations.

Poll 2 – What do you see as the Primary benefit of video services?

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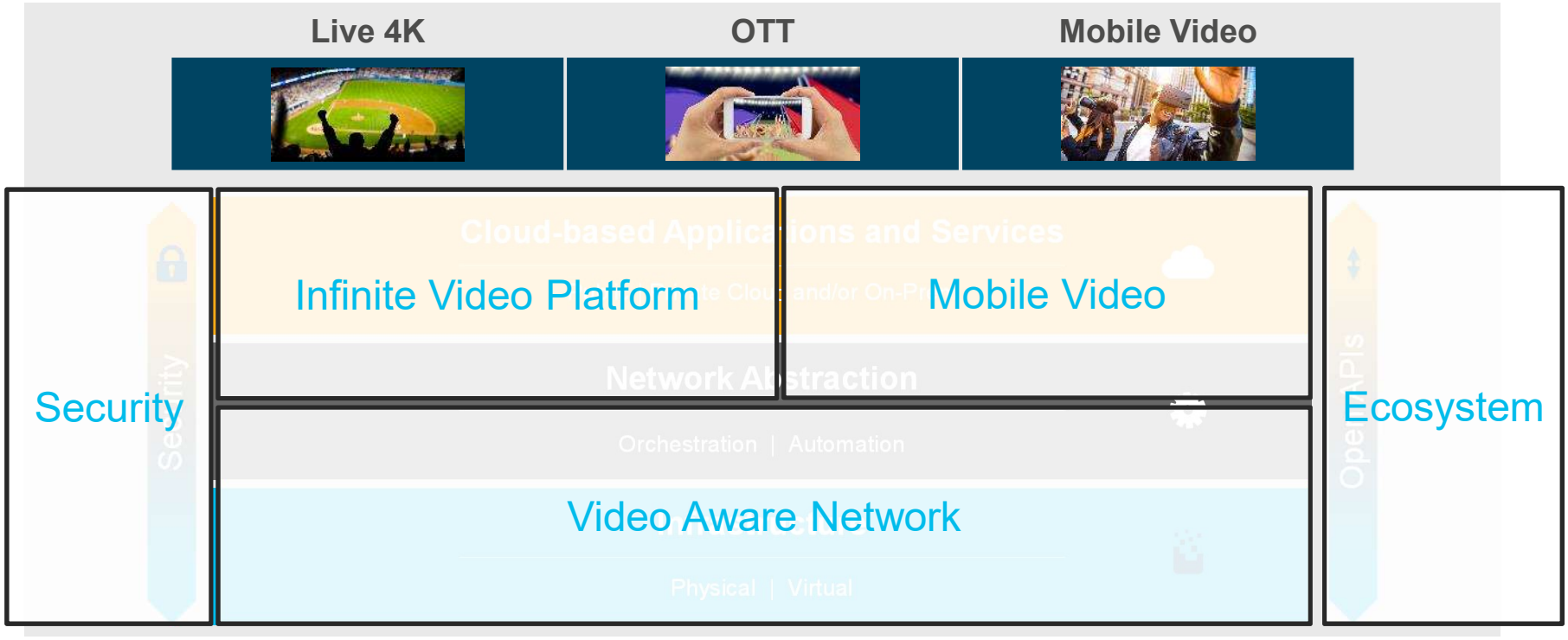
SP Video Solutions



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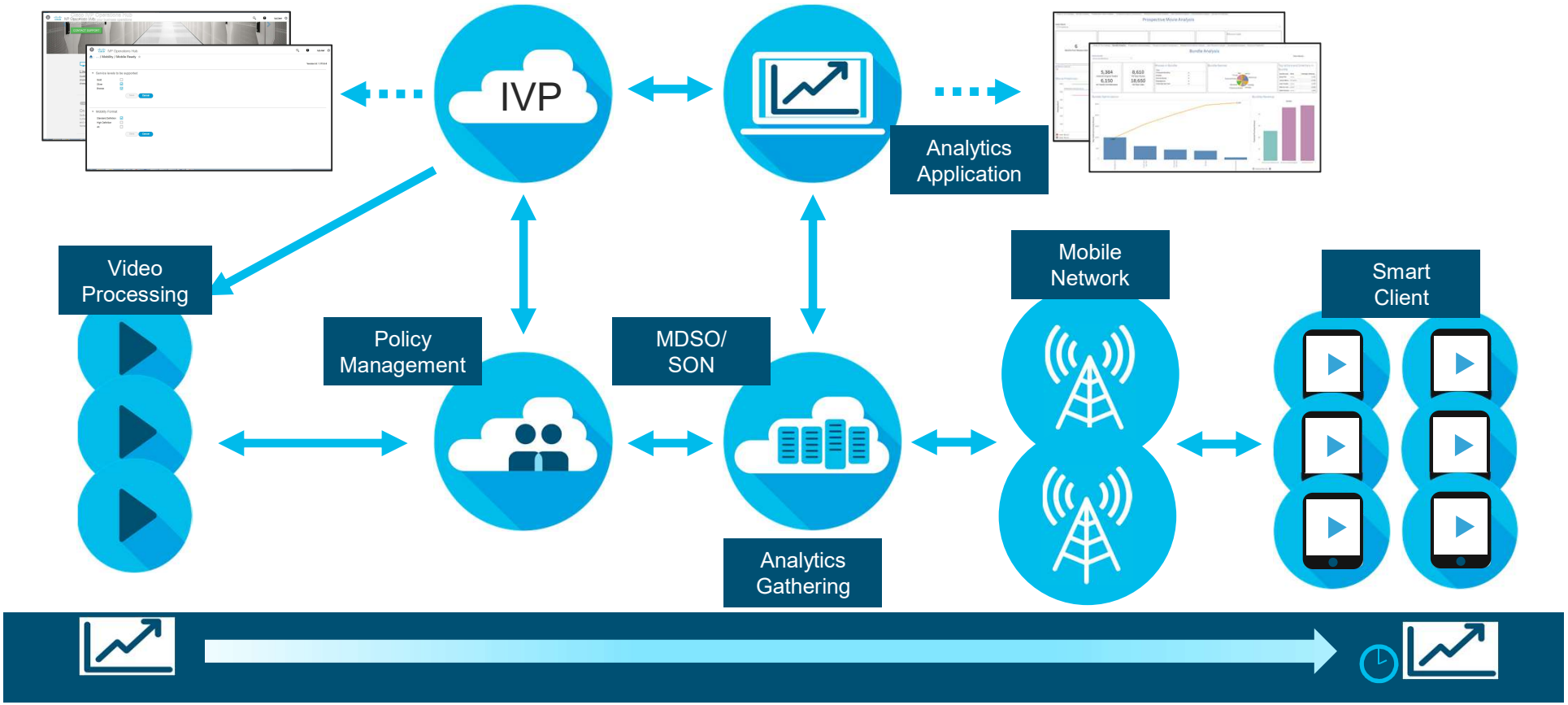
Integrated Mobile Video Platform



All IP Mobile Video Transition

Mobile Ready

- Create mobile specific products as part of your service
- Mobility is part of the function of IP transformation
- On ramp - Prepare for 5G by using 4G/wifi today

Quality Assured

- Optimize your mobile network for video delivery
- Processing and Network integration to pro-actively configure the network using content analytics
- Analytics – mobile specific data gathering and analysis

Simplify

- Efficiency – integrated mobility functions as part of Service creation
- Automation – Service to service communication to automate content flows
- Single interface for Service management

Uncompromising Security

- World's leader in video security and cyber security
- Protect mobile infrastructure from all threats
- Best of breed and architectural approach

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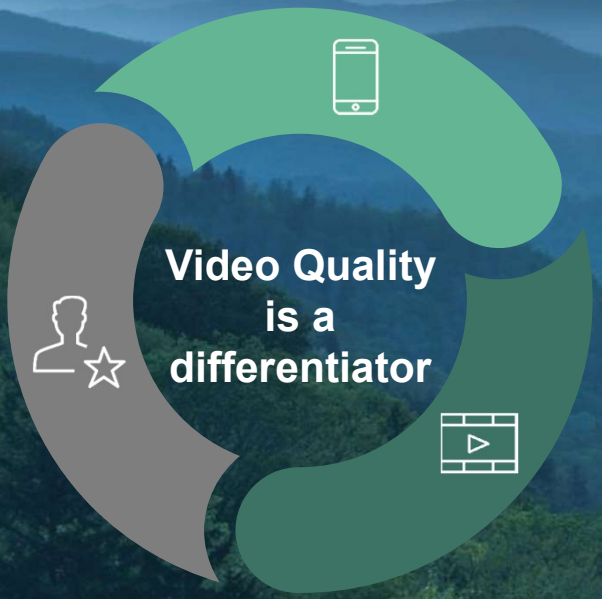
Use Mobile to re-define relationships



MNOs looking for service differentiators and new revenue sources

Content Owners are looking for better distribution and viewing experience

Subscribers looking for content – anywhere, anytime, all the time

Benefits

1. Consumer Satisfaction – Deliver more video at quality, and provide bundled services
2. Customer retention – Provide customers with services specific to your network
3. Revenue acquisition - Reach more customers using the existing network
4. Manage Opex - Easily create content and connectivity bundles
5. Wholesale - Expose video capability to capture more B2B MVNO customers
6. Start now – Build services and loyalty for 5g roll-out

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