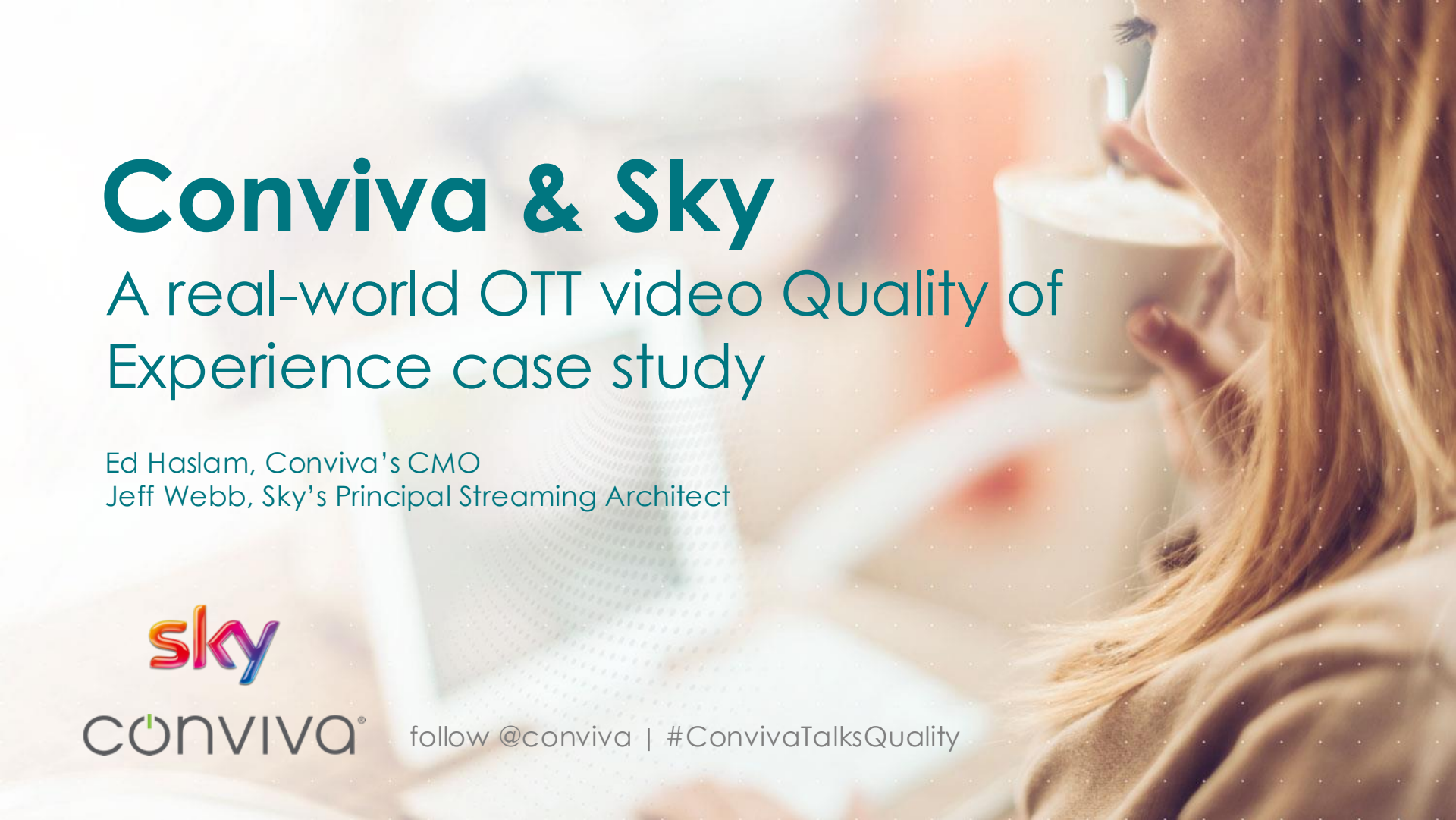
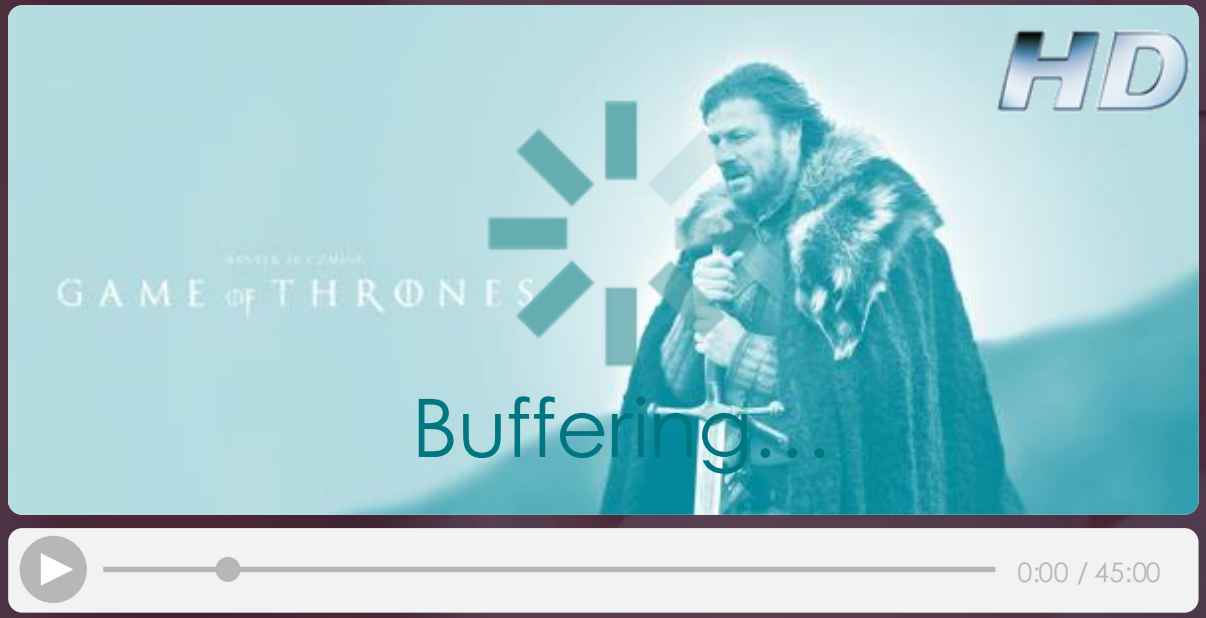
Conviva & Sky

A real-world OTT video Quality of Experience case study

Ed Haslam, Conviva's CMO
Jeff Webb, Sky's Principal Streaming Architect



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Great Content Requires a Great Experience

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Conviva / Sky Solution



SKY NOW TV SUBSCRIBERS

Video start
Bit rate
Buffering

Conviva Platform

Real Time

30 sec

Process – Cleanse - Analyze

Best in class analytics and accuracy

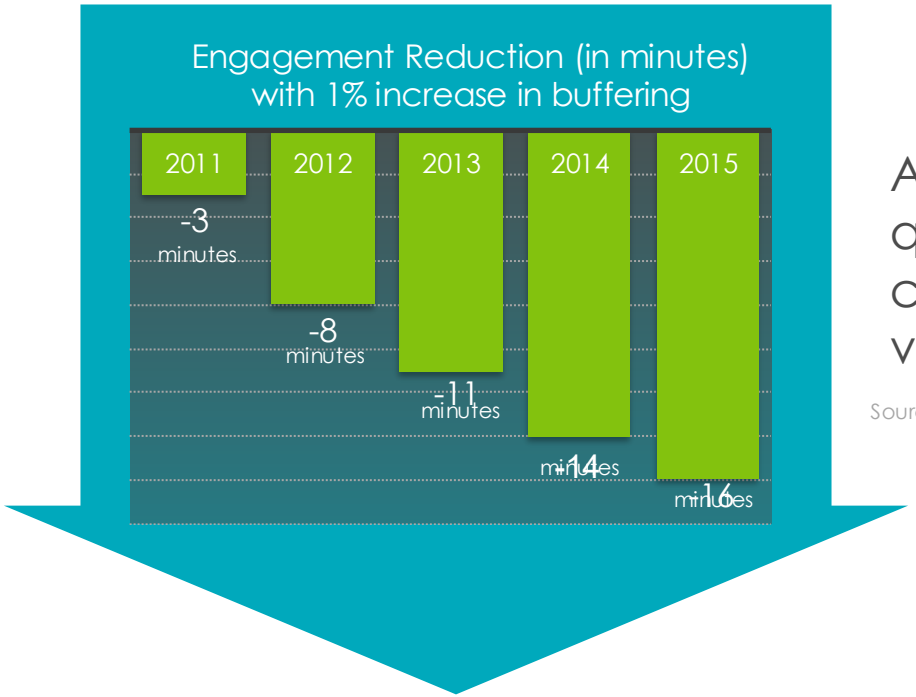
Sky's Network Operations Center

QoE issues identified and resolved in seconds

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Critical To Engagement



A **1%** change in quality of experience can decrease video views by **16 minutes**

Source: Conviva, "2015 Consumer Survey Report"

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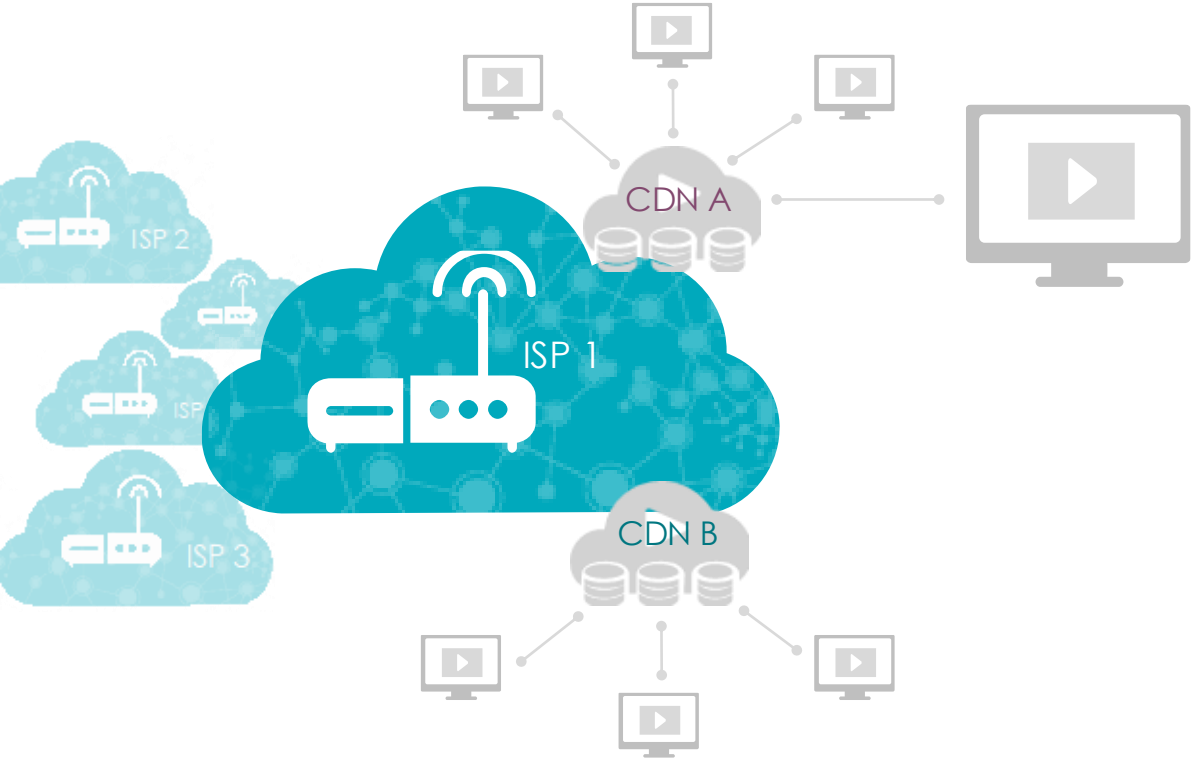
Precision Delivery Intelligence

Provides OTT providers the power to tailor and optimize the viewing experience with automated resource decisioning



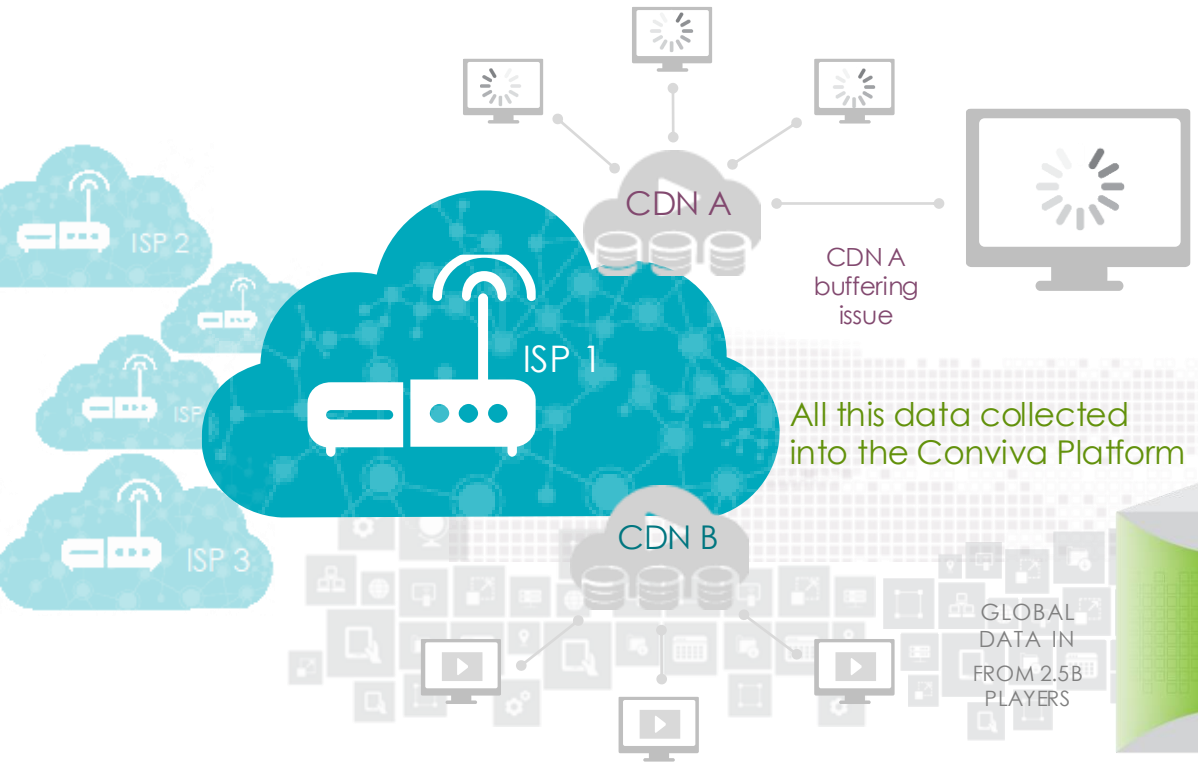
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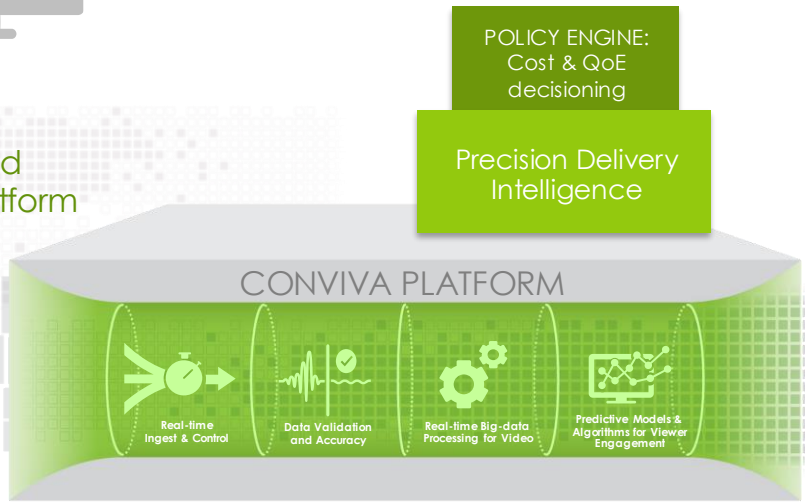
Precision Delivery Intelligence



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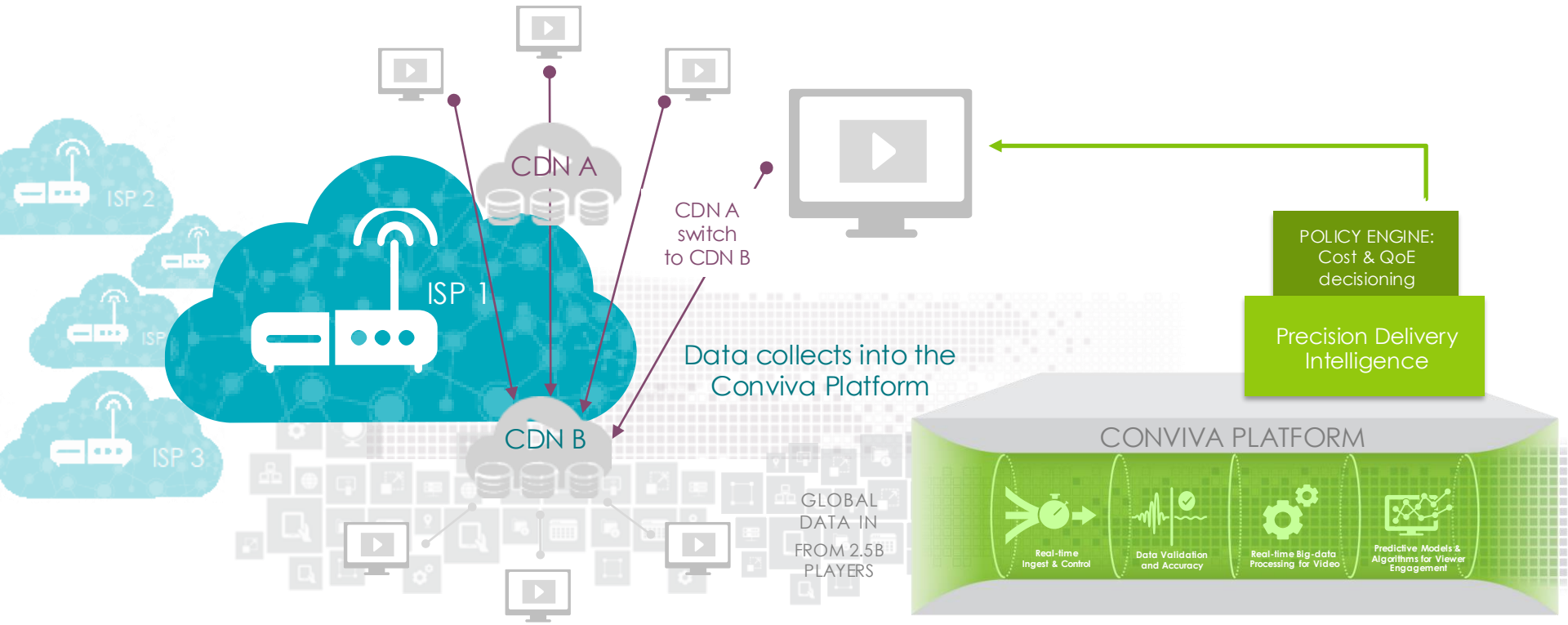
Precision Delivery Intelligence





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Precision Delivery Intelligence



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CASE STUDY

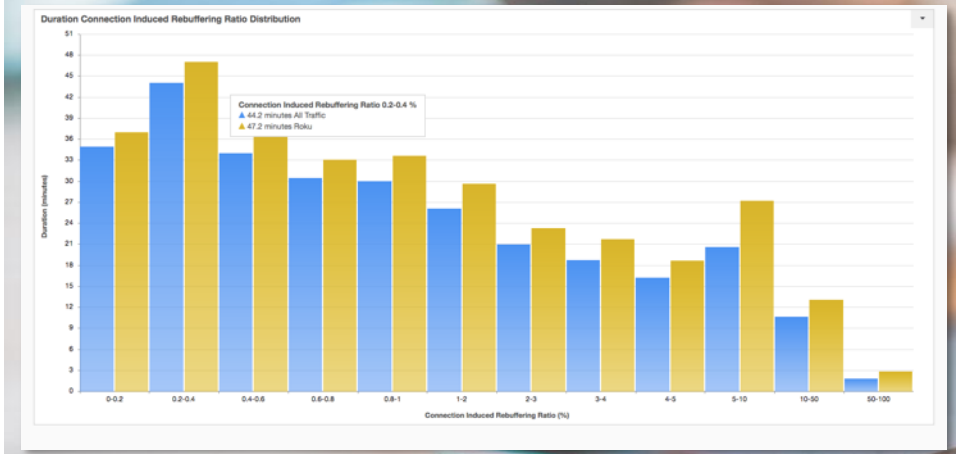
Sky & Conviva Case Study



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Case Study

- Conviva and Sky partnered to develop an innovative way of delivering the highest OTT video quality possible for Sky viewers while minimizing CDN costs.
- Conviva's quality of experience (QoE) analytics helped Sky discover a direct correlation between viewer engagement and buffering.
- Sky realized that viewer engagement dropped significantly when the buffering ratio hit or exceeded 0.4%.



Precision Setup and Situation

In Sky case, Precision is configured to analyze real time data grouped by the following dimensions:

- ISP, CDN, Live or VOD, Streaming Protocol
- For every minute, Precision Computes Buffering for example for:
  - CDN a – ISP 1 - VOD HLS
  - CDN b - ISP 1 - VOD HLS
  - CDN c - ISP 1 - VOD HLS

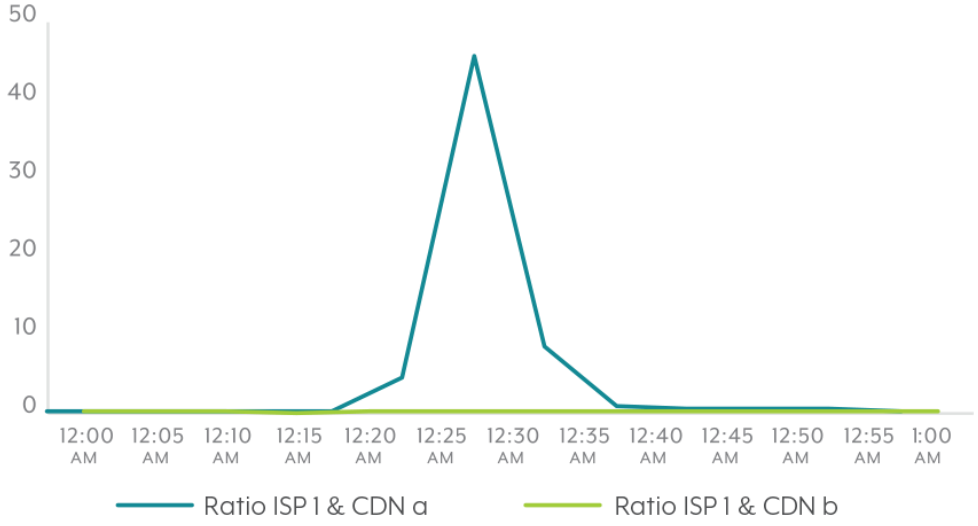
Earlier this year there was an issue affecting **Now TV** viewers connected through Sky's primary CDN that caused a buffering spike and an increase of terminated sessions.

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Buffering Ratio

Time	ISP 1 and CDN a	ISP 1 and CDN b
12:00 AM	0.23	0.39
12:05 AM	0.21	0.3
12:10 AM	0.22	0.2
12:15 AM	0.21	0.05
12:20 AM	0.23	0.19
12:25 AM	4.7	0.15
12:30 AM	45.72	0.32
12:35 AM	8.67	0.17
12:40 AM	0.85	0.19
12:45 AM	0.7	0.14
12:50 AM	0.58	0.19
12:55 AM	0.56	0.18
1:00 AM	0.37	0.22

FIGURE 1: REBUFFERING RATIO (%)

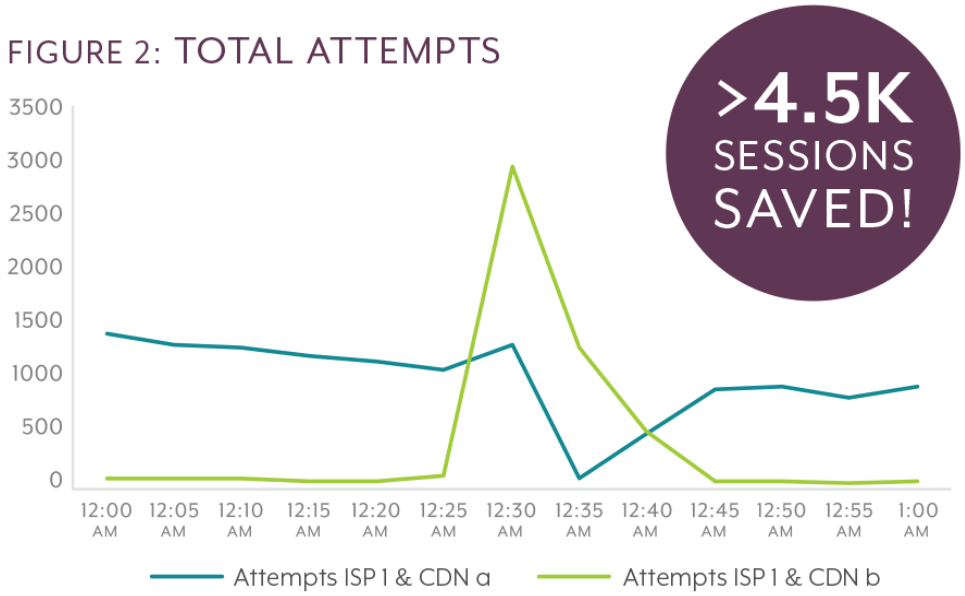


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Total Attempts

Time	ISP 1 and CDN A	ISP 1 and CDN B
12:00 AM	1470	101
12:05 AM	1359	101
12:10 AM	1334	96
12:15 AM	1252	87
12:20 AM	1196	86
12:25 AM	1111	117
12:30 AM	1345	3035
12:35 AM	102	1324
12:40 AM	523	541
12:45 AM	930	64
12:50 AM	964	70
12:55 AM	871	57
1:00 AM	971	66

FIGURE 2: TOTAL ATTEMPTS



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Total Attempts

Sky receives a periodic blacklisting log which shows exactly what CDN was blacklisted, where (delivery pattern) and why (QoE metrics). This is the extract from this incident:

TABLE 1: VERY GRANULAR LEVEL (SUCH AS ISP, CDN AND PROTOCOL) COLLECTED WITHIN SECONDS

TIME	ISP	ISP	BLACKLISTED CDN	POLICY	BLACKLISTED CDN BUFFERING	BEST CDN BUFFERING
2/2/17 **0:33**	ISP X	ISP Y	CDN a	VOD Smooth	27.65%	0.20%
2/2/17 **0:33**	ISP X	ISP Y	CDN a	Live HLS	16.43%	1.02%
2/2/17 **0:33**	ISP X	ISP Y	CDN a	Live Smooth	50.20%	0.13%
2/2/17 **0:33**	ISP X	ISP Y	CDN a	VOD HLS	17.88%	0.49%
2/2/17 **0:34**	ISP X	ISP Y	CDN a	Live HLS	14.85%	0.61%
2/2/17 **0:34**	ISP X	ISP Y	CDN a	Live Smooth	53.23%	0.08%
2/2/17 **0:34**	ISP X	ISP Y	CDN a	VOD HLS	21.02%	1.08%
2/2/17 **0:34**	ISP X	ISP Y	CDN a	VOD Smooth	36.93%	0.18%
2/2/17 **0:35**	ISP X	ISP Y	CDN a	Live Smooth	54.53%	0.12%
2/2/17 **0:35**	ISP X	ISP Y	CDN a	VOD HLS	17.99%	0.95%
2/2/17 **0:35**	ISP X	ISP Y	CDN a	Live HLS	14.12%	0.41%
2/2/17 **0:35**	ISP X	ISP Y	CDN a	VOD Smooth	42.17%	0.16%

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Questions?



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