

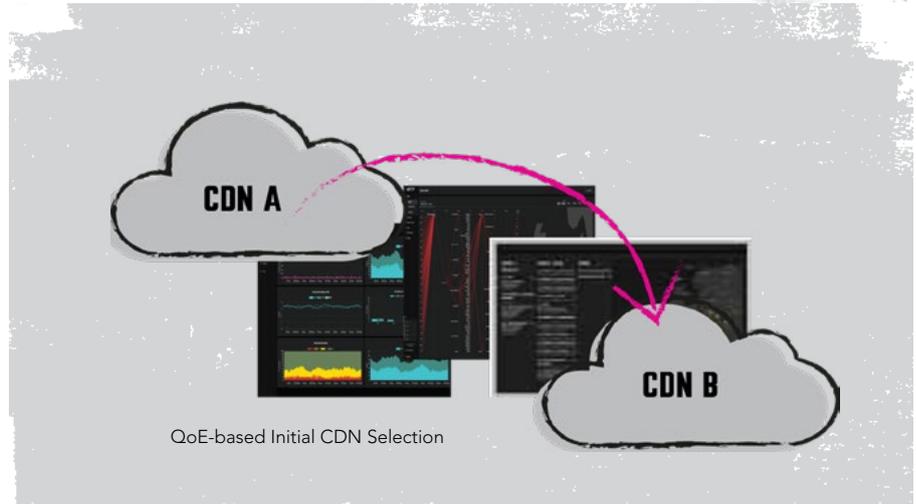
**STREAMPILOT OVERVIEW**

StreamPilot is Edgware's cloud-based delivery control platform for multi and single CDN environments. The platform enables a number of services, all of which are delivered as managed services, hosted and operated by Edgware.

StreamPilot is a server-side system controlling the delivery of streaming media from the CDN to the requesting client. Its position in the network - between the client and the CDN - makes it 100% agnostic to both client and CDN.

Current services and service packages offered on the StreamPilot platform:

- Initial CDN Selection
- QoE Monitoring
- **QoE-based Initial CDN Selection**
- QoE-based In-stream CDN Switching



## USING QOE MONITORING TO SELECT THE BEST CDN AND OPTIMIZE QOE AT STREAM START!

QoE-based Initial CDN Selection is a cloud-based service available on Edgware's StreamPilot delivery control platform. It offers extensive and real-time QoE and network performance metrics as well as initial CDN selection. The session and network metrics are processed using Edgware's Algorithmic Session Tracker (AST) which provides real time and highly granular actionable data dictating which CDN to select. The service, which is offered as a managed service hosted and managed by Edgware, enables streaming providers to diagnose experienced quality problems, control the delivery and optimize the QoE.

**OVERVIEW**

QoE-based Initial CDN Selection offers real-time QoE monitoring and CDN selection in one service.

The real-time QoE metrics dictate which CDN the next session request should be directed to.

The service can measure the QoE for all – or parts of – the traffic using Edgware's AST capability and the concept of QoE agents.

By using QoE agents you can select the sessions you want to measure, such as certain subscribers or content, clients within a particular location, randomly selected for a statistical representation or in combinations.

With the powerful AST capability, the data collected by the QoE agents coupled with artificial intelligence (AI), hotspots and intelligent alarms, the

QoE-based Initial CDN Selection service will direct the next session request to the CDN offering the best suited level of performance, and optimize the viewer's QoE.

The service offers deep insights into what is causing quality issues faced by the viewers. The QoE metrics can be grouped and categorized based on the level of severity, and by the actions recommended to mitigate the quality issues.

For example, by using active A/B testing, all new sessions can be directed to another CDN to determine if such an action eliminates the quality issue or not. Using QoE monitoring for different combinations of CDN and Internet Service Provider (ISP) can detect and mitigate quality problems due to ISP peering congestion. Allocating video sessions to an alternative CDN could correct the experienced quality drop for the viewer.

**KEY FEATURES & BENEFITS**

- ✔ Selects the optimal CDN at stream start based on real-time (less than 3 sec) QoE and network performance metrics, or by combining QoE metrics with geography, ISP, content type etc
- ✔ Identifies quality problems and selects another CDN to avoid problem hotspots and optimize the delivery path
- ✔ Gives visibility of traffic patterns, potential network problems and viewing trends with AI technology and machine learning
- ✔ QoE data monitoring and CDN Selection in one seamless service, avoiding unnecessary delay and complexity when switching between tools
- ✔ Client and CDN agnostic avoiding complex client integration and CDN vendor lock-in
- ✔ Fast set-up and time to service (TTS) in a SaaS manner with 24/7 monitoring

## ALGORITHMIC SESSION TRACKER (AST)

AST is a key enabler of the QoE Monitoring service. The powerful combination of real-time session data, AI/machine learning to process the vast amount of session data along with intuitive and intelligent alarms helps streaming providers to diagnose and troubleshoot quality-affecting issues. By correlating and processing session data, the common denominator for a quality problem can be identified. For example, session length can be

one early indicator that end users are experiencing quality problems. By correlating this with other parameters, the common determinant can be identified, e.g. a corrupt source file, ISP congestion or CDN performance.

By identifying "hot spots", problem free or problematic areas in the network are found.

A problem hotspots can be caused by CDN performance issues, or network issues outside the CDN, such as ISP network congestion.

With this information, the best delivery path across the network can be identified.

The challenges that many QoE monitoring systems face, such as huge amounts of and complex data, or delayed problem reporting, are addressed with Edgware's real-time monitoring service.

The combination of the powerful AST capability and integrate CDN selection capability, gives streaming providers the means to control the delivery ensuring an optimized QoE.

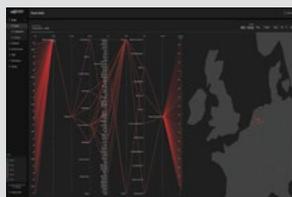
### ALGORITHMIC SESSION TRACKER (AST) ELEMENTS

#### REAL-TIME DASHBOARD



Real-time session data incl integration with existing data lake.

#### AI PROCESSING/MACHINE LEARNING



Recognize and analyze traffic patterns to identify clients experiencing quality issues.

#### HOTSPOTS/RECOMMENDED ACTIONS/ALARMS



Alarms designed using a "Dark NOC" concept, only showing alarms requiring immediate actions, and directing traffic based on network "hotspot" intelligence.

## SERVICE DETAILS - QOE-BASED INITIAL CDN SELECTION

### QOE-BASED CDN SELECTION PARAMETERS

Bitrate delivered  
Bitrate trends

### OTHER CDN SELECTION PARAMETERS

Client geography  
ISP/ASN  
IP address  
Content  
Live  
VoD  
User agent (url)  
Time of day

### VIDEO FORMATS SUPPORTED

HLS  
Live  
VoD  
MPEG-DASH  
Live  
VoD  
MSS  
Live  
VoD

### CLIENTS SUPPORTED

Client agnostic - HTTP redirect required on clients  
Tested against all major players

### OPEN API

REST APIs for integration and control

FOR MORE INFO ON THE STREAMPILOT PLATFORM, PLEASE SEE:

- [StreamPilot Solution Brief](#)