Opera Media Streaming Option

Nothing frustrates users more than trying to watch video content on an Internet-connected device and being hampered by connectivity problems and delays. As users demand the ability to watch video content seamlessly on any of their connected devices, these devices will have to keep up with and adapt to the bandwidth available for streaming content.

The Opera Media Streaming Option can help to provide that smooth, seamless streaming experience and alleviate the stop-and-start frustration that users currently experience in viewing content.

What is adaptive streaming?

Adaptive streaming is an implementation of several technologies that together enable streaming media content to adapt itself to take advantage of network bandwidth and local resource availability.

Where is adaptive streaming used?

Adaptive streaming is already in use in video-on-demand applications inside many cable and IPTV operator networks. With the growing popularity of video-on-demand and live content streaming over the open Internet, adaptive streaming, too, is spreading.

Opera Media Streaming Option

The Opera Media Streaming Option enables adaptive streaming of unprotected and protected video, which can be supported with a handler that extends the HTML5 <video> element with support for MPEG-DASH, Microsoft Smooth Streaming and Apple HLS streaming protocols in the browser.

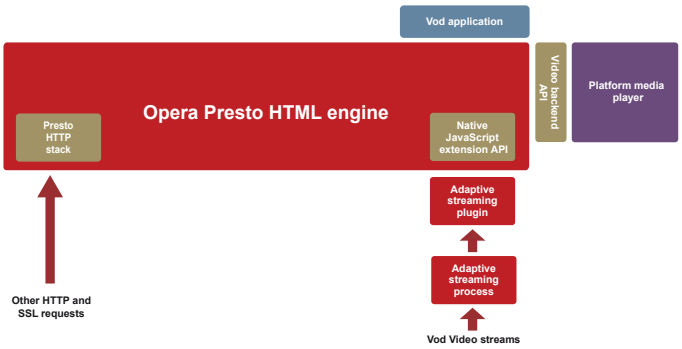
The Opera Media Streaming Option consists of a pre-integrated Native JavaScript Extension (NJSE) that integrates with:

- The network—fetching data from HTTP streams over IP
- The media APIs of the browser—acting as handler for streams in HTML5 <video>
- The platform media player—delivering decrypted video streams

What Opera offers

Along with a technology partner, Opera Software offers a pre-integrated Native JavaScript Extension (NJSE) to use with the Opera Devices™ SDK. This plug-in contains an advanced engine that continuously analyzes network speed and latency and adapts the video resolution to the available resources.

How it works



Supported formats

Adaptive HTTP streaming

- Apple HLS (VoD & live)
- Microsoft Smooth (VoD)
- MPEG DASH (VoD)

Progressive HTTP streaming

- MP4 (VoD)

DRM

- Microsoft PlayReady (authorized to resell)
- Other DRM systems available on a case-by-case basis (e.g., from Verimatrix).

Benefits

Adapts to networks

Service providers do not have to set a common bitrate for all users, but they can deliver a bitrate that is appropriate for each user. In networks where available bandwidth fluctuates, the user will get a lower bitrate before a buffer underrun occurs. Users with a very high bandwidth will automatically get HD content from the same server.

- Reliable: Low bitrates for low bandwidth connections
- HD quality when possible

Adapts to devices

Adaptive HTTP is often seen as an answer to triple-screen convergence. To the extent that the same format is supported on all devices, the same stream can be used for mobiles, PC and TVs or STBs.

- Three-screen convergence

Fast start at a low bitrate

A media stream can start at a low bitrate. This translates to a much faster start, because a low bitrate gets a large enough buffer to start playing much faster than a higher bitrate.

- Low bitrate -> less to buffer

Fits product chain

The adaptive streaming protocols are based on HTTP and segments of H.264 or AAC. HTTP, H.264 and AAC are already widely available. The use of segments and the HTTP protocol in adaptive streaming enables use of standard ISP and CDN network caching. Adaptive streaming is no different from normal web traffic, and most caching servers of both ISPs and CDNs are built to handle such traffic transparently. Even though CDNs often also support specialized protocols like UDP-based Flash streams, this requires a more costly specialized system. Use of the HTTP caches will lower costs for the server provider.

- Standard H.264/AAC codecs
- HTTP: Low-cost caching, no firewall problems

Use cases

Support content built for PCs

Adaptive HTTP allows devices to adjust to the formats used on PCs, eliminating the need for content providers to make changes or set up specialized systems catering to the needs of a specific device. For paid content on PC platforms, adaptive HTTP is used by the most popular portals: Netflix, Lovefilm, Maxdome, etc.

- Uses server-side built for PC players
- Supports formats used by PC players
  - Microsoft Silverlight & Adobe Flash

Operator catch-up and VoD

Adaptive HTTP provides better quality for these catch-up and VoD content services. As with PCs, most major movie portals use adaptive HTTP for streaming media. A wider choice of formats is available because a device's existing media players and codecs are employed.

- Adaptive HTTP for high quality service
- Apple HLS or Microsoft Smooth Streaming often used
- MPEG DASH: New contender

Internet TV

Potential for live adaptive streaming to replace or augment broadcast.

- Internet instead of broadcast
- Apple HLS Live used

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