Systems & Network Training

HTTP streaming methods

A 2 day Hands on training course

Save on expenses. This course is also available on your premises.

Description

This course looks at the delivery of video streams using HTTP adaptive streaming the technology used in Over The TOP TV. Both MPEG DASH and HLS are investigated. Hands on sessions primarily involve using Wireshark to analyse streams.

Key outcomes

By the end of the course delegates will be able to:

- ✔ Explain what OTT TV is, and how it works.
- ✔ Describe the OTT TV architecture.
- ✔ Use Wireshark to analyse and troubleshoot OTT TV video streams.
- ✔ Explain how HTTP adaptive streaming works.
- ✔ Evaluate and compare MPEG DASH and HLS.
- ✔ Use tools to create OTT TV adaptive streams.

Training approach

This structured course uses Instructor Led Training to provide the best possible learning experience. Small class sizes ensure students benefit from our engaging and interactive style of teaching with delegates encouraged to ask questions throughout the course. Quizzes follow each major section allowing checking of learning. Hands on sessions are used throughout to allow delegates to consolidate their new skills.

Details

Who will benefit?
Anyone working in the broadcast industry.

Prerequisites
TCP/IP foundation for engineers.

Duration: 2 days

Overall rating: ★★★★★

Generic training	Small class sizes	Hands On training	Our courseware	Customise your course
Generic training complements product specific courses covering the complete picture of all relevant devices including the protocols "on the wire".	We limit our maximum class size to 8 delegates; often we have less than this. This ensures optimal interactivity between delegates and instructor.	The majority of our courses use hands on sessions to reinforce the theory.	We write our own courses; courseware does not just consist of slides and our slides are diagrams not bullet point text.	Please contact us if you would like a course to be customised to meet your specific requirements. Have the course your way.
"*Friendly environment with expert teaching that teaches the why before the how.*" G.C. Fasthosts	*"Excellent course. The small class size was a great benefit..."* M.B. IBM	*"Not many courses have practice added to it. Normally just the theoretical stuff is covered."* J.W. Vodafone	*"Comprehensive materials that made the course easy to follow and will be used as a reference point."* V.B. Rockwell Collins	*"I was very impressed by the combination of practical and theory. Very informative. Friendly approachable environment, lots of hands on."* S.R. Qinetiq

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Course content

What is HTTP streaming?

Broadcast vs OTT TV. Delivery over the Internet. Video providers vs ISPs. What is HTTP streaming? How is it kept secure? HTTP, not HTTP streaming, streaming protocol vs HTTP streaming, TCP vs UDP, not UDP and RTP for delivery, ABR streaming, standards.
Hands on: Using Wireshark for HTTP streams.

HTTP protocol stack

The whole stack, IP, TCP, UDP, IPv6, HTTP versions, HTTP packet structure, HTTP example GET and RESPONSE, HTTPv1.1, HTTPv2.0, HTTPv3.0, HTTP vs Flash, HTML 5.
Hands on: Analysing HTTP streams.

Adaptive bitrate streaming principles

Transcoding - transizing and transrating, bit rate encoding ladder. Video chunks, fragments, segments. Switching streams, manifest files - overview and examples, URLs.
Hands on: Client behaviours on a stream.

HTTP streaming architecture

IPTV, OTT, The Internet. content providers, peering and transit, IX, peering arrangements, CDN, CDN servers, CDN providers, nearest servers, HTTP caching, Name resolution, DNS and multiple addresses, GSLB, anycast.
Hands on: Analysing CDN and Internet delivery.

TCP and HTTP streaming interactions

TCP connections, 3-way handshake, TCP and broadcasts, acknowledgments, sliding window, window size, the problem with TCP and HTTP, persistent and concurrent connections, performance of HTTPv1.1 and HTTPv2.
Hands on: TCP and HTTP.

MPEG DASH

Overview, stakeholders, architecture, codec agnostic, XML files, media presentation (MPD) XML files, segments, example MPD.
Hands on: MPEG DASH MPD analysis.

HTTP live Streaming and others

HLS introduction, HLS overview, playlists, example playlist, Microsoft Smooth Streaming.
Hands on: HLS manifest analysis.

Tools

Bento4, Apple developer tools for HLS.
Hands on: Creating segmented content.

Security

TLS/SSL protocol, HTTPS, TCP and TLSv1.2, example TLSv1.2 client and server hello, TCP and TLSv1.3, QUIC timeline, QUIC layers, QUIC connections, QUIC streams, QUIC packets and frames, QUIC headers, QUIC encryption, QUIC acknowledgements, QUIC congestion control, QUIC handshake, content protection.
Hands on: Analysis of TLSv1.2, v1.3 and QUIC.

Summary

Streaming priorities, IPTV vs OTT, VOD vs live stream, HLS vs MPEG-DASH vs low latency, WebRTC.

What our customers say

"Absolutely brilliant, very knowledgeable and helpful trainer would recommend to teach anyone. Kept me interested 100% of the time which is very impressive as this does not happen often, if at all!"

O. B. Network Rail

"The best technical course I've been on!."

L. W. Fujitsu Telecoms Europe

"Very well thought out and structured course. Would recommend 100%. Lots of equipment, good quality."

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