

QTT Application

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The QTT Application - A system for monitoring DRM encrypted video streams

A successful OTT service deployment relies on several components working flawlessly together. In many cases the overall architecture is geographically dispersed and on occasions also not administrated underneath the same economic entity. This potentially leads to hard-to-pinpoint technical issues as well as possible contention on responsibility. The QTT Application from Bridge Technologies is a solution tailored to help with this, assigning autonomous Workers to playback DRM protected OTT services. The system continuously authenticates itself against the platform's DRM system, receiving license to playback live services, retrieving selected services from the CDN, before playback on powerful Mac-Mini hardware just as a normal end-user would.

This approach to end-device monitoring provides continuous assessment of the correct operation of the OTT Video Platform, but from a centralized and well-known point in the network. The QTT Application works together with the VB330 and VBC for QoE picture analysis, timeline storage of thumbnails, thumbnail mosaics and powerful SLA reporting functionality. The QTT application and its supporting elements, are well suited for cloud deployments or on-premises installations. It also allows for pin-point verification of CDN behaviour at a particular geographic region by aiming the client accesses towards these CDN servers in the network. This is achieved through the use of user-configurable text tokens inside the application.

The QTT Manager – Overall architecture

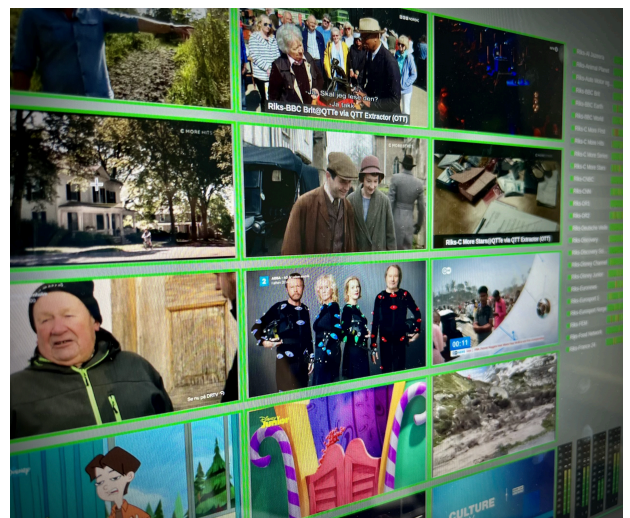
The QTT Application Manager assigns Players to playback DRM protected services automatically, optimizing on factors such as stream load and redundancy. Continuous streams of decrypted thumbnails are retrieved and forwarded to VB330 for further processing, logging and picture analysis.

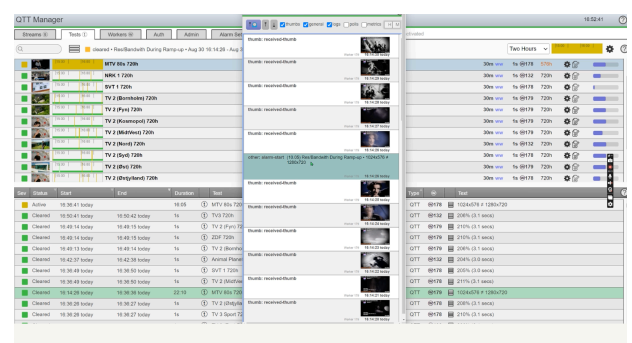
The architecture has natively built-in redundancy, provided sufficient Players units are provisioned during commissioning. Should one Player unit fail, the remaining units will pick up the additional load automatically without any user intervention. For regular H.264 HD-based content it is typical that one Mac Mini worker device can handle up to 15 streams concurrently.



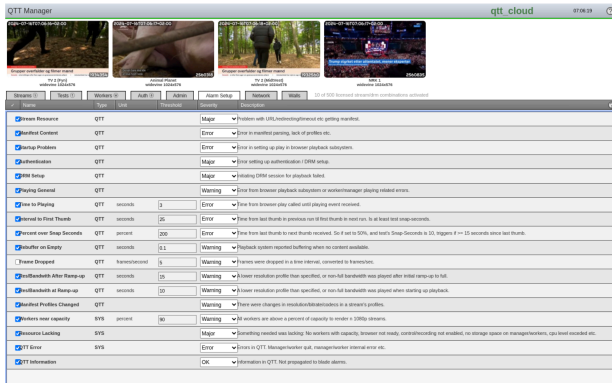
Reference OTT Player Client – The QTT Players

The QTT Application is best deployed operating as a reference OTT client platform at a well-connected and defined point in the customer network. In this manner it behaves as a regular – albeit a very busy – OTT subscriber, negotiating the OTT platform’s Authentication and Authorization system before playing back OTT services for several minutes, then starting the process all over again. During this routine, the system automates verification of several key metrics. Some of the more notable ones include Time to Playing, Authentication issues, Interval to First Thumb and Lowrez after ramp-up. Clever usage of token ID strings makes it possible to also steer traffic to a particular CDN location for load testing during issues investigation, or just regular load monitoring of critical infrastructure during





QTT Playback alarms



Category	Severity	Message	Action
Device Resource	QTT	Major	↓ Problem with QTT Authentication or getting metadata
Device Content	QTT	Error	↓ Error in metadata parsing, lack of profile etc.
Device Problem	QTT	Error	↓ Error in setting up play in browser playback containers
Authentication	QTT	Major	↓ Error setting up authentication / DRM setup
DRM Setup	QTT	Major	↓ Invalid DRM session for playback failed
Playing General	QTT	Warning	↓ Error from browser playback subsystem or contentmanager playing related errors
Live in Playing	QTT	seconds	↓ Error from browser play called until playing event received
Interval to First Frame	QTT	seconds	↓ Error from first frame in previous call if first frame is not seen, in at least first 100 milliseconds
Interval over Sleep Seconds	QTT	seconds	↓ Error from first frame in next frame received. On start to 50%, and next Sleep Seconds is 20, trigger if > 10 seconds since last frame
Interval over Sleep	QTT	seconds	↓ Invalid playback session (stopping video no content available)
Frame Drop	QTT	seconds	↓ Error when dropped in a time interval, connected to hardware
Playback After Run-up	QTT	seconds	↓ Error resolution profile than specified, or no full bandwidth was played after initial run-up to full
Playback at Run-up	QTT	seconds	↓ Error resolution profile than specified, or no full bandwidth was played when starting up playback
Invalid Profiles Changed	QTT	Warning	↓ There were changes in resolution/bandwidth in a stream's profile
Problems over capacity	SYS	percent	↓ 50 percent or above a percent of capacity in order to 100% stream
Problems Loading	SYS	Warning	↓ Something needed was lacking. No workers with capacity, browser not ready, contentmanager not enabled, no storage space on manager/browsers, cap limit exceeded etc.
QTT Error	SYS	Error	↓ Error in QTT Manager/browsers, quit, manager/browsers internal error etc.
QTT Information	OK	OK	↓ Information in QTT, not propagated to other alarms

The QTT Application generates several Alarms based on events and errors coming in from the players, browser play system and manager itself. The alarm severity can be configured into 5 different severity levels. The checks possible by operating in much the same manner as an end-device ensures a much deeper overall system verification than would otherwise be possible by just looking at the video asset itself. Typical faults captured range from authentication login issues, delayed playback, DRM decryption through to access issues with the stream URL itself. All the alarms from the QTT Manager are forwarded to the VBC for further aggregation and logging with alarm sources from other devices. All the alarms from the QTT Manager are forwarded to the VBC for further aggregation and logging with alarm sources from other devices.

VBC Integration, Timeline and Licensing

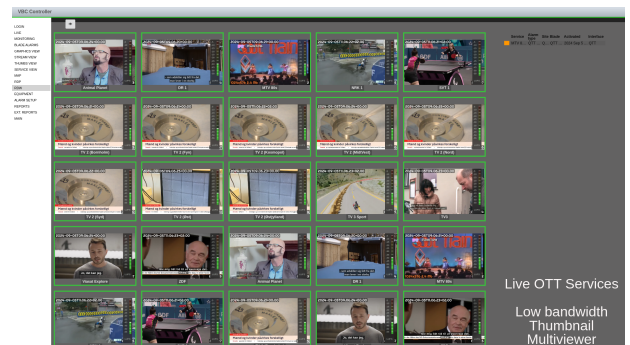
The QTT Application generates decrypted thumbnail versions of the content being monitored. These are then transferred to a regular VB220/VB330 Appliance/Software probe for blackframe/freeze-frame analysis and timeline logging. This allows for content issues such as frozen content to be discovered and logged in time using the Content timeline option on the VB330

Since the QTT Application is inherently tied to the DRM system in use, there is a need for a certain level of initial integration work to get the system operational. The complexity of this integration will depend on the customer application, but it is typically not a large task since it involves many of the same steps that an end-client browser player integration would have to go through. Currently, successful integrations have been done in systems built with Castlabs and Verimatrix with more to come. The system offering includes a predetermined amount of engineering development and support time to cater for a successful integration in cooperation with the customer.

The QTT Application is licensed on a per-stream basis in steps of 50 streams. Each QTT Worker can handle around 15 streams, depending on the content resolution and type.

Remote Data Wall (RDW)

The QTT manager integrates with the VBC and allows the Remote Data Wall functionality to be used for building up a low bandwidth thumbnail multiviewers; accessible from anywhere via a web browser instance.



VBC Integration and SLA Reporting



The VBC allows for Extended Reports to be automatically or manually generated and distributed as PDF's. These have applications either internally in the organization as discussion material for the technical team, or externally towards customers or suppliers when there is a need to prove carriage quality over time. Each report can be customized with logos. The operator decides what tests to include in the report as well as the SLA level in the form of a percentage.

Technical specifications

DOCUMENTATION

For manuals, specifications and ordering codes, please contact your sales representative.

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