



QScan 2021 Release

Hardware Guidelines

Introduction

The following hardware specifications are given as guidelines because the number of different variables for automatic quality control hardware and software are too numerous to document exhaustively.

The make, model, specification and build of any hardware combined with the 83 different test types and their user selectable variables means that there is no one size fits all approach to selecting the right platform.

It is important to take, codec, wrapper, resolution, bit-rate into account as much as the number of tests to perform and the amount of content to be processed.

As a general rule, in order to be able to estimate the size of the system needed, it can be estimated that a 16 core machine (see **recommended specification for QScan Pro**) can analyze at least 96 hours of content per day, assuming worst case as **Real Time** speed.

Formats such as **J2K, DCP, DPX** would need special attention, since increasing the number of cores would not generally result in optimizing speed, given the special nature and characteristics of these codecs.

Time of analysis is optimized when long files are analyzed, since some initial/final tasks (detecting files, queueing files, opening files, preparing buffers, reading codec parameters, format checks evaluation, etc) might take some time, thus these initial tasks will have a greater impact on shorter files than in long files

QScan Free & QScan One:

Minimum Specification

- 4 Core, 4GB RAM, 500GB HDD
- Windows OS (from Windows 7 up)
- Google Chrome browser

NOTE: This hardware is suitable for MPEG2 and H264 formats. MPEG2 will generally be analyzed at least 2x Real Time Speed. H.264 will generally be analyzed at Real Time Speed (worst case).

Parameters to test will make these metrics vary significantly, but Real Time Speed should be worst case for a dedicated QScan machine that's running no other (non O/S related) services.

Recommended Specification

- 8 Core, 4GB RAM, 1TB HDD
- Windows OS (from Windows 7 up)
- Google Chrome browser

NOTE: Worst case would be analysis at **Real Time** Speed. This would apply for formats such as: AVC intra, DNxHD 185, mp4, P2 DVCPro, MPEG2 TS, H.264 in MPEG2 TS, XDCAM 50 and other similar formats.

High Specification

- 16 Core, 8GB RAM, 1TB HDD
- Windows OS (from Windows 7 up)
- Google Chrome browser

NOTE: Should be faster than Real Time in most situations and most post-production and broadcast formats.

QScan Pro & QScan Max (with 4 simultaneous Files)

Minimum Specification

- 8 Core, 4GB RAM, 1TB HDD
- Windows OS (from Windows 7 up)
- Google Chrome browser

NOTE: Analyzing 4 simultaneous files will result in lower than Real Time Speed. This would apply for formats such as: AVC intra, DNxHD 185, mp4, P2 DVCPro, MPEG2 TS, H.264 in MPEG2 TS, XDCAM 50 and other similar formats.

Recommended Specification

- 16 Core, 8GB RAM, 1TB HDD
- Windows OS (from Windows 7 up)
- Google Chrome browser

NOTE: Most standard post-production and broadcast formats should be analyzed in Real Time, worst case. But since up to 4 files at a time can be analyzed, the selection of parameters to check is of high importance here.

High Specification

- 32 Core, 16GB RAM, 1TB HDD
- Windows OS (from Windows 7 up)
- Google Chrome browser

NOTE: Most standard post-production and broadcast formats should be analyzed faster than Real Time with 4 files at a time. Once again, the selection of parameters to analyze will impact on the analysis speed.

QScan Max & Nodes

Since QScan Max can use additional worker nodes to spread the workload over several different machines, specifications for each of the machines is important here.

Generally, the Base (or Master) machine will need more processing power, to handle analysis tasks and be able to process the information coming from the nodes.

The minimum HW specifications for each of the machines would be:

Base machine

- 16 Core, 8GB RAM, 1TB HDD
- Windows OS (from Windows 7 up)
- Google Chrome browser
- 10Gb ethernet connection to repository

Additional nodes

- 16 Core, 8GB RAM, 1TB HDD
- Windows OS (from Windows 7 up)
- No browser needed.
- 10Gb ethernet connection to repository

General Recommendations and Tips

- Make sure no other processes are running in the background and that analysis is running on a dedicated machine.
- Adapt your parameters to the workflow stage that you are at, so analysis speed is optimized. Some examples:
 - If you are not analyzing content coming from tape ingest processes, you may disable Digital Betacam Channel Condition Errors, and Digital Dropouts (VIDEO QUALITY PARAMETERS).
 - If you are analyzing content coming from encoding, it is always useful to disable BASEBAND analysis (luminance/chrominance analysis) provided that they were already checked for after production/post production/edit phases.
- Assuming you are not considering analysis of frame statistics such as frame types, or keyframes, you can disable all frame related content.
- Noise detection, and Digital Drops need additional computing operations to analyze the images in the frequency domain, so disabling these, if not needed, is recommended.
- New PSE algorithms in version 2.14 up might require some more CPU bandwidth than in older versions.
- If waveform generation and thumbnail generation are enabled for the PDF report, the total time from “detected” to “analyzed” will vary depending on the amount of events detected, since all events will need a waveform and thumbnail to be generated, thus consuming more time to reach the “analyzed” state.
- Set analysis to high speed for servers up to 12 cores.
- Set analysis to very high speed for servers 12 cores and higher.
- Higher processing power machines (12 core or above) guarantee effective time saving in analysis of several simultaneous files, but not so much for sequential analysis of one file at a time. So, it is recommended to run simultaneous (concurrent) analysis when you have more than 8 cores in your processor.
- SSD Disks are recommended, to prevent bottlenecks due to disk reads/writes. This would apply mainly for local repositories.
- RAID Disk configuration is recommended.
- Other Disk architectures are also recommended: NAS, SAN, etc.

- It is always wise to use more than one node for simultaneous analysis of several files when you run QScan on machines with 8 cores or fewer.
- Analysis using several nodes will require high speed network connections (GB or 10GB networks) specially between nodes and the repositories. As a generic example, if a speed of 2x Real Time is desired, the network should be able to handle a sustained bandwidth of 2x the file bitrate x 4 (files), for each node.

User Examples

The following are real life metrics based on measurements taken from live systems in the field.

User Example 1:QScan Pro

System configuration

1 Base Machine Running 4 files at the same time

- 16 core Machine with 8GB RAM
- 10Gb connection between QScan and repository (shared folder in the network where files are read from)

Results

Template analyzing all parameters except for frame statistics

- Approx. 15 minute XDCAM HD File
 - Analysis of 4 files would take approx. 10 minutes per file. I.e. approx 1.5x Real Time Speed
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User Example 2:QScan Max

System configuration

1 Base Machine + 4 Nodes. Each machine running 4 files at the same time for a total of 20 files at a time

- 16 Core machines with 54GB RAM

- 10Gb connection between nodes and repository (shared folder in the network where files are read from)
- 1Gb connection between nodes and base machine

Results

Template analyzing all parameters except for frame statistics

- Approx. 15 minute XDCAM HD File
 - Analysis of 20 files at a time would take approx 10 minutes per file, which result in approx. 1.5x Real Time Speed.
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