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CORTORL Hardware Calculator

v1.1.0

To calculate as accurately as possible, the hardware requirement of a CORTORL Recording Server, it is recommended to use the [CORTORL Hardware Calculator](#).

The CORTORL Hardware Calculator has the following components.

1. **Client-Server configuration:** Designate where the CORTORL Client will reside.
 - o Server & Client on separate computers (*Best deployment – Most recommended*)
 - o Server & Client on same computer (*Requires higher spec due to shared resources*)
 - o Server only (*Server dedicated resources, similar to “Server & Client on a sperate computer”*)

2. **Streaming server availability:** Designate if the Streaming Server is enabled/disabled.
 - o Streaming server disabled (*Disabled – No Web browser, nor Mobile app supported*)
 - o Streaming server enabled (*Enabled – Web browser, and Mobile app supported*)

3. Group of video streams:

- Designate the number of like cameras (Same resolution, FPS, Bitrate etc.)
- Enter the quantity of cameras: 1 ~ 10k
 - Example: Quantity of 10, 2.1MP (1920x11080) resolution cameras
 - *Please select "Add Group of Streams" in order to add the next group of cameras*
 - *Example: second group of cameras are 24, 5MP (2592 x 1944) resolution*

Groups of video streams

1

4. Video streams:

- Analog / AHD / TVI
 - Older DVRs and encoders may only offer a high-resolution, or mainstream
 - Newer DVRs and encoders offer both a mainstream, and optionally a substream
- IP cameras support multi-streaming (*Mainstream, Substream, and a potential 3rd stream*)
 - Mainstream: The primary high-resolution stream (*No modification possible*)
 - Substream: Options are "Substream Not allowed" / "Substream Enabled"
 - *It is recommended to enable the substream, in order to capture the hardware impact of monitoring a multi-channel layout in the CORTROL Client*
 - *Recording of the substream is not required for this recommendation*

Video streams

Main Stream

Substream Not allowed ▼

Substream Not allowed

Substream Enabled

5. Compression:

- The compression supported by the camera, DVR, or Encoder to encode the video stream
- Be sure to check the supported compression of the IP camera, and recorder prior to use
- Select the compression, per the expected recording requirement and device supported
 - JPEG/MJPEG
 - MPEG4
 - H.264
 - H.265

Compression

JPEG/MJPEG ▼

JPEG/MJPEG ▼

JPEG/MJPEG

MPEG4
H.264
H.265

6. Resolution:

- Refers to the resolution(s) supported by the IP camera, DVR, or Encoder in use
- Expected resolution to be recorded by CORTORL coming from the camera, DVR, encoder
- Select the expected resolution
 - 1st Resolution: Support for 160x120 ~ 5120x3200
 - 2nd Resolution: Note - if substream is enabled, select the target resolution

Resolution

160 X 120 ▼

5120 X 3200 ▼

1. FPS:

- Related to the frames per second of the video stream being Viewed/Recorded by CORTORL
 - 1st FPS: Supports 1fps, 3fps, 5fps, and then in increments of ten: 10fps ~ 60fps
 - 2nd FPS: Note - if substream is enabled, select the target FPS

FPS

1 fps ▼

60 fps ▼

2. Bitrate:

- Related to the bitrate setting within the IP camera, DVR, and or Encoder
- This is the size of the data of the video stream pulled into CORTORL
- **Bitrate Estimate:** Auto calculated based on Resolution + FPS selection
 - Can be manually entered to reflect scene simplicity, or complexity requirement
 - 1st Bitrate: Supports 64Kbps ~ 44Mbps
 - 2nd Bitrate: Note - if substream is enabled, select the target device bitrate

Bitrate

64 Kbps ▼

44 Mbps ▼

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Examples of average, or a typical bitrate based on resolution, and frame rates per second

Label	Resolution	Res Index	30FPS / BR	15FPS / BR	7FPS / BR
D1	704x480	0.34	0.8	0.4	0.2
0.46 MP	960x480	0.46	1.1	0.6	0.3
0.9 MP	1280x720	0.92	2.2	1.1	0.5
2.1 MP	1920x1080	2.07	5.0	2.5	1.2
3 MP	2048x1536	3.15	7.6	3.8	1.8
5 MP	2592x1944	5.04	12.2	6.1	2.9
6 MP	3072x2048	6.29	14.8	7.4	3.4
8MP	3264x2448	7.99	19.4	9.7	4.5
12MP	3648 x 2736	9.98	24.2	12.1	5.6

Average bit rates listed. High activity, may require higher bit rates

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3. Motion Detection source:

- Related to the application of a motion detection scene
 - Source of either camera side, or server-side motion detection
- **No motion detection:** No motion detection required, disabled
- **Camera side MD:** Camera side motion detection enabled (*Camera motion zone configured*)
- **Software HP MD:** Server-side high performance-based motion detection enabled
 - *Attempts to balance resources, offering a moderate impact on server performance*
 - Reference the [CORTROL Administrative manual](#) for HA motion detection
- **Software HA MD:** Server-side high accuracy-based motion detection enabled
 - *Requires a high amount of server resources, impacting server performance*
 - Reference the [CORTROL Administrative manual](#) for HA motion detection
- **Main stream's MD:** Substream reflects setting of mainstream detection select

The screenshot shows a dropdown menu titled "Motion Detection source". The menu is currently open, displaying five options: "No motion detection" (selected), "Camera side MD", "Software HP MD", "Software HA MD", and "Main stream's MD".

4. Software VCA:

- Related to CORTROL Premier, and CORTROL Global Recording Server based CVA analytics.
 - 1st Stream: No (*Disabled*) / Yes (*Enabled*)
 - 2nd Stream: No (*Disabled*) / Yes (*Enabled*)

The screenshot shows a dropdown menu titled "Software VCA". The menu is currently open, displaying two options: "No" and "Yes".

5. Recording trigger events:

- Triggered events maybe motion detection, analytic, or even server event triggers
 - 1st Trigger: Select 0 ~ 100 percent (*100% equals continuous recording*)
 - 2nd Trigger: Select 0 ~ 100 percent (*100% equals continuous recording*)

Motion detection-based recording: Motion estimated percentage chart below

- Note: 100% daily motion estimate is equal to one 24 hour day

Recording trigger events

10%
▼

100%
▼

Motion Percentage Break down.						
24 hours	Percentage					
1	100%	75%	50%	25%	12.50%	4.16%
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						

6. Prerecording duration:

- Pre-motion buffered video data, related to camera and or server enabled motion detection
- A typical deployment site default is 3 ~ 5 seconds of premotion video recording
 - 1st Pre-recording: Disabled ~ 60 Seconds (Recordable amount of buffered video)
 - 2nd Pre-recording: Disabled ~ 60 Seconds (Recordable amount of buffered video)

Pre recording duration

disabled
▼

60 seconds
▼

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7. FPS when no motion:

- Related to the frames per second to record upon absence of any motion detected
- Typically used to offer visual confirmation of stream being live, and no change in scene
 - 1st FPS: 0, 0.1 ~ 1 in increments of a tenth of a second
 - 2nd FPS: 0, 0.1 ~ 1 in increments of a tenth of a second
- *Recommended for use with camera resolutions of 2.1MP (1920x1080) and below*
- *Not recommended for use with greater than 2.1MP (1920x1080) due to impact on storage*
 - *Use substream with constrained FPS, and Bitrates for minimum impact on storage*

FPS when no motion

0 fps▼

1 fps▼

8. Days to store:

- Related to the required days of retention as per the application requirement
 - Mainstream: Select 0 ~ 1,825 days for retention
 - Substream: Select 0 ~ 1,825 days for retention
 - *Set substream to 0, if used to measure impact on hardware only*
 - *Set to greater than 0 if recording as alternate to absence of motion detected*

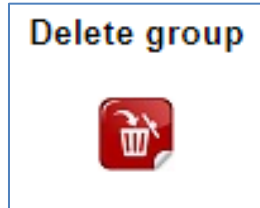
Days To store

0▼

10000▼

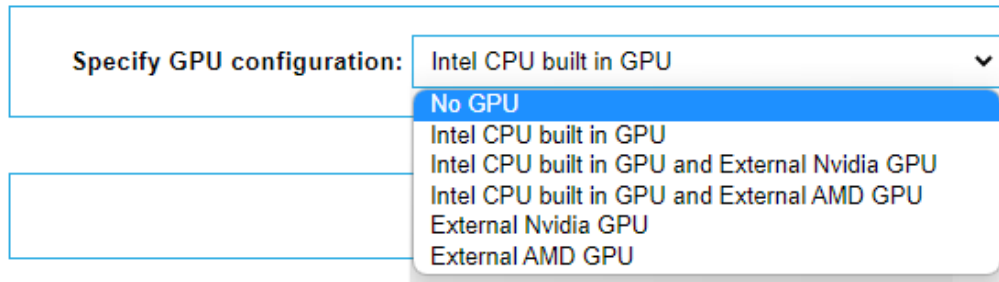
9. Delete group:

- Related to removing an added group of cameras, in addition to the default first group
 - Select “Delete group” for the group of cameras to be deleted from the calculation.



10. Specify GPU configuration:

- Entry level Ganz ZNR servers utilize an “Intel CPU with built in GPU”
- Entry level ZNR servers, select “Intel CPU built in GPU”
- Raid based ZNR servers, select “Intel CPU built in GPU and External AMD GPU”
 - In most cases, ZNR Raid servers include an AMD based GPU
- Customer servers, select the appropriate GPU selection, Intel, Nvidia, or AMD



11. Specify Server CPU:

- Related to calculating the Server and Client CPU required to meet hardware calculations
- Recommend me CPUs: Leave checked if looking for a recommended CPU spec
- Recommend me CPUs : Uncheck in order to set a target CPU spec
 - Specify the Server CPU: Select either Intel or AMD
 - Specify the Client CPU: Select either Intel or AMD
 - *Typically used if existing hardware is available*

Recommend me CPUs <input type="checkbox"/>		
	Specify Servers CPU	Specify Clients CPU
Manufacturer:	Intel ▼	AMD ▼
Series:	Xeon X ▼	Sempron ▼
Model:	Intel Xeon X5270 @ 3.50GHz ▼	AMD Sempron 240 ▼

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12. **Intel CPU Index:** Order of performance with lowest CPU performance at top, highest at bottom
- AMD CPU index not currently available

CPU Index	Cores	Threads
Intel Celeron G5905	2	2
Intel Pentium G6400	2	4
Intel Core i3	4	8
Intel Core i5	6	12
Intel Core i7	8	16
Intel Core i9	12	24
Intel Xeon (Dual CPU)	20	40

13. **Add Group of Streams:** Adds a new camera group below the default first camera group.
- Select for each group addition as required.

ADD GROUP OF STREAMS

14. **Calculate:** Upon completion of changes to the CORTROL Hardware Calculator, select “Calculate” to get a Server, Storage, and Client recommendation.

CALCULATE

15. **Calculate and make PDF:** Upon completion of changes to the CORTROL Hardware Calculator, select “Calculate and make PDF” to generate a PDF of the calculated results.

CALCULATE AND MAKE PDF

Example of a full Hardware Calculation

Hardware Calculator for CORTORL VMS

Client - Server configuration

Server (recording) & Client (live view) on separate computers

Streaming server availability

Streaming server enabled

Groups of video streams	Video streams	Video streams specification (Recording and Live view)				Motion Detection source	Software VCA	Recording settings			Delete group
		Compression	Resolution	FPS	Bitrate			Recording trigger events	Pre recording duration	FPS when no motion	
100	Main Stream	H.265	2592 X 1944	15 fps	4 Mbps	Camera side MD	No	40%	3 seconds	0 fps	90
	Substream Enabled	H.265	640 x 360	30 fps	384 Kbps	Main stream's MD	No	100%	disabled	0 fps	0

Specify GPU configuration:

Intel CPU built in GPU

Recommend me CPUs

Recommended licence type:

CORTORL Global

Server Hardware Recommendations							
Number of Servers	CPU model	Server OS	Number of cameras per Server	RAM per Server	Network bandwidth per Server	Storage size per Server	Storage write speed
1	Intel Core i3-10105 @ 3.70GHz	64bit Windows® OS mandatory	100	14 GB	954 Mbit	171.1 TB	55 MB/s

Client Hardware Recommendations						
Number of Clients	CPU model	Client OS	Number of cameras per Client	RAM per Client	Network bandwidth per Client	Graphic board
1	Intel Core i3-10300T @ 3.00GHz	64bit Windows® OS mandatory	100	5 GB	39 Mbit	Intel® UHD Graphics 630

ADD GROUP OF STREAMS
CALCULATE
CALCULATE AND MAKE PDF