

## ZM HWACCEL RPI3 Testing: Amovision Q630M

**Objective:** To test capabilities of RPI3 with HWACCEL (mmal) enabled, and with a few cameras. This test will be an Amovision.

**Preface:** I've already covered the install, and introductory testing in an ascii file. See those for more details in the repo. In this guide we will be testing the Amovision Q630M IP camera. I've detailed its good and bad specs at [https://wiki.zoneminder.com/Amovision\\_AM-Q630M](https://wiki.zoneminder.com/Amovision_AM-Q630M). Compared to the Foscam, it seems to run at a much higher FPS when in RTSP mode. The foscam gave only 3 FPS, the Amovision gives 20-30FPS. With the higher FPS comes more load, however.

**Test:** The Amovision is setup with FFMPEG source, and rtsp path. The path used was found via onvif. One can use either Onvif Device Probe (windows) or the built in ZM Onvif probe. Paths are also available via ispy website.

The configuration is:

Source Path:rtsp://:@10.8.9.223/user=admin\_password=SECRET\_channel=1\_stream=0.sdp

Width: 1280

Height: 720

It was tested and confirmed to work in VLC or Mplayer before trying in ZM. Your password will be different.

After adding the camera, using FFMPEG, but no h264 passthrough, in RECORD mode we get a resulting load of 3.9 or so, and 23 or 22 FPS. This is a 1280x720 camera.

See image:

```
dev@raspberrypi ~$ top
 1  [|||||] 64.7% Tasks: 62, 51 thr; 5 running
 2  [|||||] 94.1% Load average: 3.11 1.32 0.57
 3  [|||||] 83.6% Uptime: 01:45:20
 4  [|||||] 82.4%
Mem [|||||] 483M/927M
Swp [|||||] 0K/100.0M

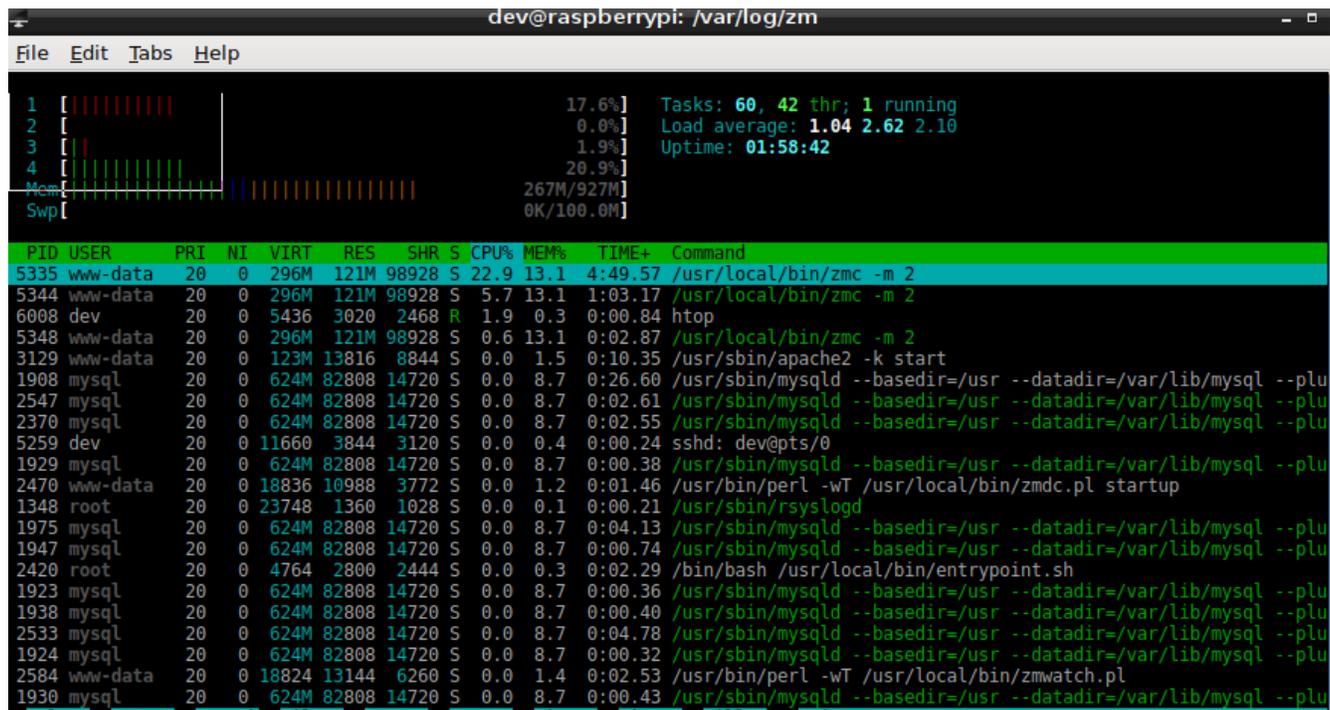
PID USER      PRI  NI  VIRT   RES   SHR  S  CPU% MEM%   TIME+  Command
5507 www-data  20   0  625M  301M  97328 R 211. 32.5  2:30.29 /usr/local/bin/zma -m 2
5528 www-data  20   0  285M  99688 92984 R 69.7 10.5  0:41.59 /usr/local/libexec/zoneminder/cgi-bin/nph-zms
5335 www-data  20   0  296M  121M  98928 S 28.7 13.1  1:20.46 /usr/local/bin/zmc -m 2
5514 www-data  30  10  625M  301M  97328 S 20.8 32.5  0:10.37 /usr/local/bin/zma -m 2
5510 www-data  30  10  625M  301M  97328 S 18.9 32.5  0:08.84 /usr/local/bin/zma -m 2
5512 www-data  30  10  625M  301M  97328 S 16.9 32.5  0:08.76 /usr/local/bin/zma -m 2
5513 www-data  30  10  625M  301M  97328 R 15.6 32.5  0:09.43 /usr/local/bin/zma -m 2
5516 www-data  20   0  625M  301M  97328 S 13.7 32.5  0:13.11 /usr/local/bin/zma -m 2
5517 www-data  20   0  625M  301M  97328 S 11.7 32.5  0:13.23 /usr/local/bin/zma -m 2
5515 www-data  30  10  625M  301M  97328 S 7.2 32.5  0:08.56 /usr/local/bin/zma -m 2
5511 www-data  30  10  625M  301M  97328 S 7.2 32.5  0:09.87 /usr/local/bin/zma -m 2
5344 www-data  20   0  296M  121M  98928 R 7.2 13.1  0:18.20 /usr/local/bin/zmc -m 2
2375 www-data  20   0  123M  13424  8536 S 2.6 1.4  0:12.88 /usr/sbin/apache2 -k start
5357 dev        20   0  5544  3144  2480 R 2.6 0.3  0:05.84 http
1454 www-data  20   0  123M  14212  9068 S 1.3 1.5  0:13.74 /usr/sbin/apache2 -k start
1908 mysql      20   0  624M  81612 14720 S 1.3 8.6  0:20.00 /usr/sbin/mysqld --basedir=/usr --datadir=/var/lib/mysql --plu
5518 www-data  20   0  625M  301M  97328 S 0.7 32.5  0:00.61 /usr/local/bin/zma -m 2
2547 mysql      20   0  624M  81612 14720 S 0.7 8.6  0:02.05 /usr/sbin/mysqld --basedir=/usr --datadir=/var/lib/mysql --plu
1923 mysql      20   0  624M  81612 14720 S 0.7 8.6  0:00.26 /usr/sbin/mysqld --basedir=/usr --datadir=/var/lib/mysql --plu
5348 www-data  20   0  296M  121M  98928 S 0.0 13.1  0:00.73 /usr/local/bin/zmc -m 2
2641 www-data  20   0  122M  12940  8412 S 0.0 1.4  0:07.77 /usr/sbin/apache2 -k start
F1Help F2Setup F3Search F4Filter F5Free F6SortBy F7Nice F8Nice F9Kill F10Quit
```

CAM01

Disable Alarms State: Record - 23.74 fps Force Alarm

|| |> -

Monitor gives us a very minimal load of about 1. This shows that nodect would be the king when it comes to performance. I prefer hardware motion detection, and offloading CPU usage is a good reason (but not the only reason) to use hardware motion detectors.



Moving on, let's confirm that HWACCEL is being called...

I will set debug on \_zmc\_m2

By grepping on the log we can find the following:

```
zmc2_debug.log.06208:08/11/18 07:36:58.322861 zmc_m2[6208].DB1-zm_ffmpeg_camera.cpp/542
[HWACCEL not in use]
```

You might think that HWACCEL is not being called, but it conflicts with this log:

```
less zm_debug.log.05594
```

```
root@raspberrypi:/var/log/zm# grep -ir mmal
```

```
zmc2_debug.log.06382:08/11/18 07:39:26.839304 zmc_m2[6382].DB1-zm_ffmpeg_camera.cpp/503
[Success finding decoder (h264_mmal)]
```

```
zmc2_debug.log.06382:08/11/18 07:39:26.839412 zmc_m2[6382].DB1-zm_ffmpeg_camera.cpp/512
[Video Found decoder h264_mmal]
```

```
zm_debug.log.05486:08/11/18 04:51:33.526451 zmc_m1[5486].DB1-zm_ffmpeg_camera.cpp/503
[Success finding decoder (h264_mmal)]
```

And that shows HWACCEL is enabled, as the decoder was found. It's possible I am either mistaken, or the debug logs are giving incorrect reads.

Let's enable H264 passthrough and see how this affects the load.

It ends up curtailing the 3.9 load to about 2.

Now, I have a 22 FPS 720p camera (B&W) recording at just over 2 load.

NetSurveillance

Tasks: 58, 42 thr; 3 running  
Load average: 2.31 1.71 1.69  
Uptime: 02:09:54

Mem [|||||] 274M/927M  
Swp [|||||] 0K/106.0M

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
6458	www-data	20	0	285M	97M	93464	R	4.0	10.6	0:13.05	/usr/local/libexec/zoneminder/cgi-bin/nph-zms
6382	www-data	20	0	295M	121M	99280	S	3.3	13.1	1:19.81	/usr/local/bin/zmc -m 2
2641	www-data	20	0	122M	12996	8456	S	1.3	1.4	0:12.58	/usr/sbin/apache2 -k start
6405	dev	20	0	5436	3008	2456	R	1.3	0.3	0:04.88	htop
6383	www-data	20	0	295M	121M	99280	R	0.7	13.1	0:17.19	/usr/local/bin/zmc -m 2
1908	mysql	20	0	628M	83352	14720	S	0.0	8.8	0:30.97	/usr/sbin/mysqld --basedir=/usr --datadir=/var/lib/mysql --plu
3406	www-data	20	0	123M	13384	8448	S	0.0	1.4	0:12.63	/usr/sbin/apache2 -k start
2547	mysql	20	0	628M	83352	14720	S	0.0	8.8	0:03.24	/usr/sbin/mysqld --basedir=/usr --datadir=/var/lib/mysql --plu
2375	www-data	20	0	123M	13368	8544	S	0.0	1.4	0:15.94	/usr/sbin/apache2 -k start
2536	mysql	20	0	628M	83352	14720	S	0.0	8.8	0:00.62	/usr/sbin/mysqld --basedir=/usr --datadir=/var/lib/mysql --plu
1959	mysql	20	0	628M	83352	14720	S	0.0	8.8	0:00.18	/usr/sbin/mysqld --basedir=/usr --datadir=/var/lib/mysql --plu
1306	nobody	20	0	5296	2248	2000	S	0.0	0.2	0:00.06	/usr/sbin/thd --daemon --triggers /etc/triggers/triggers.d
5259	dev	20	0	11660	3844	3120	S	0.0	0.4	0:00.52	sshd: dev@pts/0
6182	www-data	20	0	18824	10992	3788	S	0.0	1.2	0:00.49	/usr/bin/perl -wT /usr/local/bin/zmdc.pl startup
2471	mysql	20	0	628M	83352	14720	S	0.0	8.8	0:02.71	/usr/sbin/mysqld --basedir=/usr --datadir=/var/lib/mysql --plu
1947	mysql	20	0	628M	83352	14720	S	0.0	8.8	0:01.05	/usr/sbin/mysqld --basedir=/usr --datadir=/var/lib/mysql --plu
6387	www-data	20	0	295M	121M	99280	S	0.0	13.1	0:00.56	/usr/local/bin/zmc -m 2
1447	root	20	0	122M	21452	18280	S	0.0	2.3	0:00.62	/usr/sbin/apache2 -k start
1939	mysql	20	0	628M	83352	14720	S	0.0	8.8	0:00.05	/usr/sbin/mysqld --basedir=/usr --datadir=/var/lib/mysql --plu
1960	mysql	20	0	628M	83352	14720	S	0.0	8.8	0:00.06	/usr/sbin/mysqld --basedir=/usr --datadir=/var/lib/mysql --plu
1948	mysql	20	0	628M	83352	14720	S	0.0	8.8	0:00.34	/usr/sbin/mysqld --basedir=/usr --datadir=/var/lib/mysql --plu

F1 Help F2 Setup F3 Search F4 Filter F5 Tree F6 Sort By F7 Nice F8 Nice F9 Kill F10 Quit

CAM01

isable Alarms State: Idle - 31.05 fps Force Alarm

So as you may or may not have expected, the best results are with h264 passthrough. By not storing any JPEGs we get the compression, and the CPU savings. If you add in hardware motion sensors you get even more CPU savings (by using nodedt. Modect, and mocord are not as efficient).

The next test needed to be done, is to setup an equivalent 1.30.4 ZM on a pi and compare the performance of this test, to see if indeed HWACCEL is doing what we think it should.