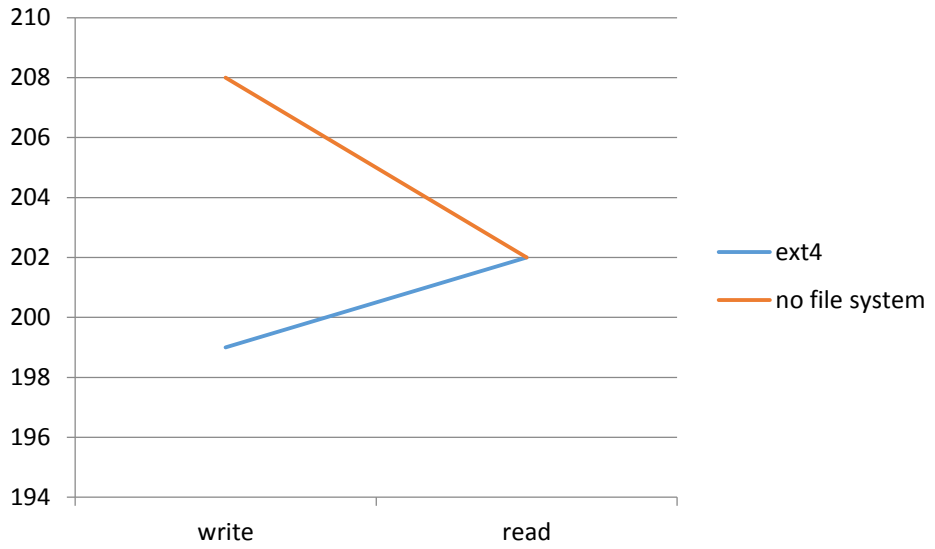
RTD1619 NAS SDK

Test Report

Driving IC Innovation

SATA Performance

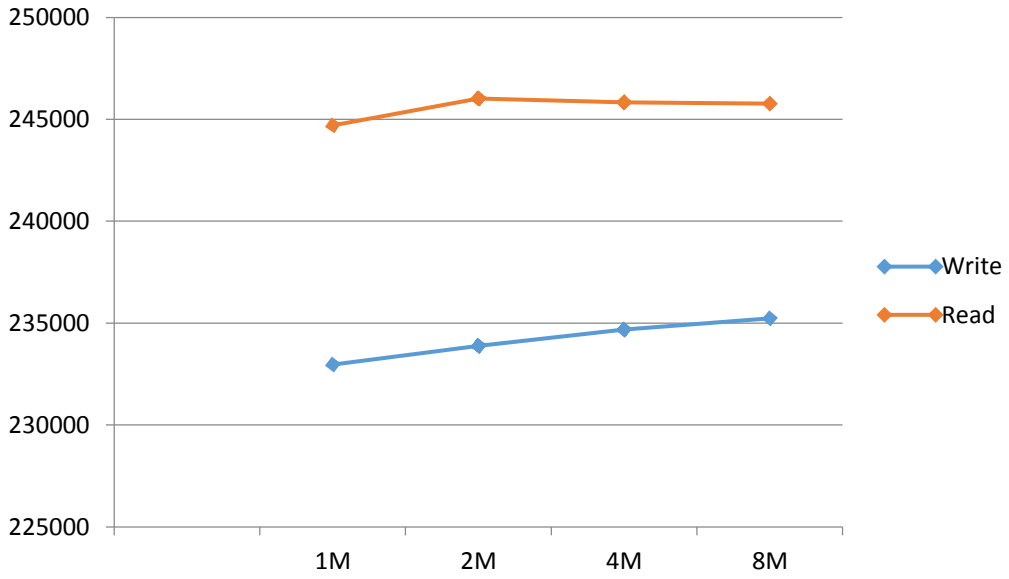
HDD: WD 黑標 2T		Ext4	No File System
Thor A01	Write (MB/s)	199	208
Thor A01	Read (MB/s)	202	202



- HDD : WD 黑標 2T WD2003FZEX
- Test command (for Ext4):
  - Write : dd if=/dev/zero of=./testfile bs=1M count=4096 oflag=direct
  - Read : echo 3 > /proc/sys/vm/drop_caches ; dd if=./testfile of=/dev/null bs=1M
- Test command (for no file system):
  - Write : dd if=/dev/zero of=/dev/sda1 bs=1M count=4096 oflag=direct
  - Read : echo 3 > /proc/sys/vm/drop_caches;dd if=/dev/sda1 of=/dev/null bs=1M count=4096

USB 3.0 Performance

Ext4	Transfer request size	1M	2M	4M	8M
Thor A01	Write (KB/s)	232,963	233,876	234,681	235,232
Thor A01	Read (KB/s)	244,701	246,023	245,839	245,766



- HDD :
  - Samgsung SSD (+ NexStar Dual Bay HARD DRIVE DOCK, Model:NST-D400S3)
- Test command :
  - iozone -I -i0 -i1 -a -s1024m -y1M -q8M -f ./test.tmp

Ethernet Performance

Tx	Rx	Dual
942 (Mb/s)	942 (Mb/s)	1862 (Mb/s)

- Test command (Single test)：
  - server side : iperf -s -i 1
  - client side : iperf -c server_ip -i 1 -t 60
- Test command (Dual test)：
  - server side : iperf -s -i 1
  - client side : iperf -c server_ip -i 1 -t 60 -P 2 –d

  (-d, --dualtest Do a bidirectional test simultaneously)
- iperf version : 2.0.5 multi-thread version

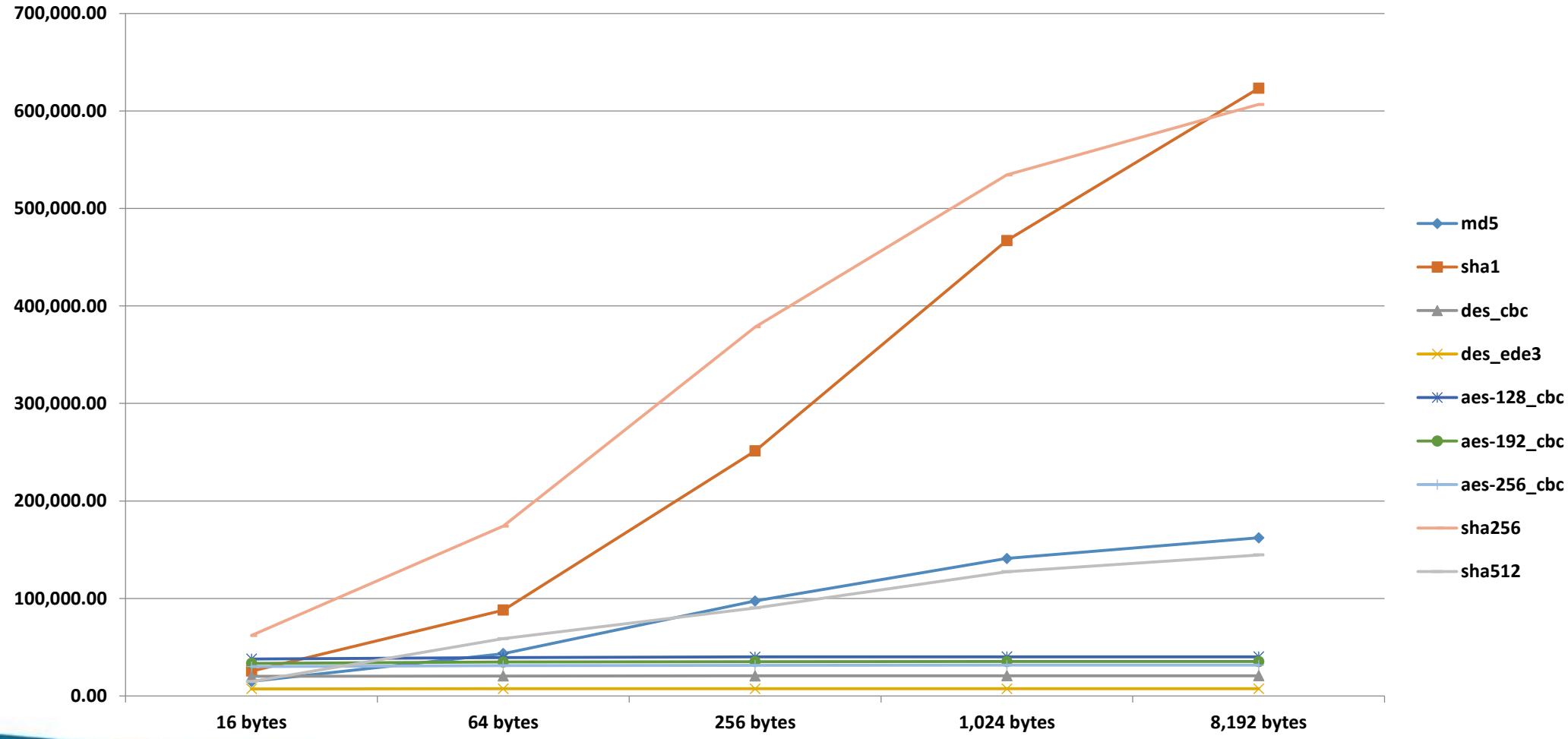
Openssl Performance

The 'numbers' are in 1000s of KB per second processed.

Type	16 bytes	64 bytes	256 bytes	1,024 bytes	8,192 bytes
md5	14,897.19	43,465.24	97,404.84	140,991.83	162,179.75
sha1	25,514.52	88,022.57	251,310.68	466,979.84	623,165.44
des_cbc	20,119.17	20,530.82	20,685.14	20,728.83	20,728.49
des_ede3	7,337.09	7,428.97	7,450.11	7,457.11	7,460.18
aes-128_cbc	38,036.71	39,525.93	40,054.10	40,250.71	40,288.26
aes-192_cbc	33,517.55	34,823.85	35,276.97	35,426.30	35,362.13
aes-256_cbc	30,134.25	31,095.42	31,485.10	31,574.70	31,580.16
sha256	62,007.34	174,242.56	378,386.09	534,356.99	606,595.75
sha512	14,829.60	58,813.61	90,343.17	127,421.78	144,689.83

- Test commad : openssl speed md5 sha1 sha256 sha512 des des-ede3 aes-128-cbc aes-192-cbc aes-256-cbc rsa2048 dsa2048 | tee /tmp/sslspeed
echo ""|"" `awk 'match($0,/r[0-9]+/) {print substr($0,RSTART,RLENGTH)}' /etc/banner` `awk -v FS="": "" -v ORS="""" '/(Processor|BogoMIPS|Hardware|machine|cpu model|system type)/ { print ""| "" $2 "" "" } END { print """" }' /proc/cpuinfo` `awk -v ORS="""" '$1 ~ /OpenSSL/ {print ""| "" $2 "" |""} $1 ~ /(md5|sha)/ {print ""  "" $5 "" |""} $1 ~ /(des|aes)/ {b = b ""  "" $6 "" |""} $1 ~ /(rsa|dsa)/ {print b ""  "" $6 "" | "" $7 "" | "";b="""} END { print """" }' /tmp/sslspeed | sed 's/\.\(..\)k/\10/g'`

Openssl Performance (Cont.)



Transcode Performance

Test files	Coding		Runtime	Resolution	FPS	Bitrate (KB)	1619 FFmpeg AV trasncode use audio copy (fps, spend time)		
	Video	Audio					1,080p	720p	480p
Test_HD_HEVC_3840x2160_30p.mkv	H265	無聲	2min 9s	3,840*2,160	30	166.875	64fps, 0:58	101fps, 0:36	112fps, 0:33

Test command :
#for output 1080p
ffmpeg -y -dec_o_width 1920 -dec_o_height 1080 -i 4k/Test_HD_HEVC_3840x2160_30p.mkv -max_muxing_queue_size 1024
-c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero 4k_HEVC_1080p.ts
#for output 720p
ffmpeg -y -dec_o_width 1280 -dec_o_height 720 -i 4k/Test_HD_HEVC_3840x2160_30p.mkv -max_muxing_queue_size 1024
-c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero 4k_HEVC_720p.ts
#for output 480p
ffmpeg -y -dec_o_width 720 -dec_o_height 480 -i 4k/Test_HD_HEVC_3840x2160_30p.mkv -max_muxing_queue_size 1024
-c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero 4k_HEVC_480p.ts

Transcode Performance (Cont.)

Test files	Coding		Runtime	Resolution	FPS	Bitrate (KB)	1619 FFmpeg AV trasncode use audio copy (fps, spend time)		
	Video	Audio					1,080p	720p	480p
GoPro.mp4	H264	AC3 (2ch)	1min 15s	3,840*2,160	23.976	2,781.67	37fps, 0:49	39fps, 0:46	40fps, 0:44

Test command :
#for output 1080p
ffmpeg -y -dec_o_width 1920 -dec_o_height 1080 -i 4k/GoPro.mp4 -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero 4k_GoPro_1080p.ts
#for output 720p
ffmpeg -y -dec_o_width 1280 -dec_o_height 720 -i 4k/GoPro.mp4 -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero 4k_GoPro_720p.ts
#for output 480p
ffmpeg -y -dec_o_width 720 -dec_o_height 480 -i 4k/GoPro.mp4 -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero 4k_GoPro_480p.ts

Transcode Performance (Cont.)

Test files	Coding		Runtime	Resolution	FPS	Bitrate (KB)	1619 FFmpeg AV trasncode use audio copy (fps, spend time)		
	Video	Audio					1,080p	720p	480p
bbb_sunflower_2160p_30fps_normal.mp4	H264	AAC (5.1ch)	10min 34s	3,840*2,160	30	1,770.43	33fps, 9:34	35fps, 8:56	37fps, 8:39

Test command :
#for output 1080p
ffmpeg -y -dec_o_width 1920 -dec_o_height 1080 -i 4k/bbb_sunflower_2160p_30fps_normal.mp4 -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero 4k_bbb_1080.ts
#for output 720p
ffmpeg -y -dec_o_width 1280 -dec_o_height 720 -i 4k/bbb_sunflower_2160p_30fps_normal.mp4 -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero 4k_bbb_720p.ts
#for output 480p
ffmpeg -y -dec_o_width 720 -dec_o_height 480 -i 4k/bbb_sunflower_2160p_30fps_normal.mp4 -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero 4k_bbb_480p.ts

Transcode Performance (Cont.)

Test files	Coding		Runtime	Resolution	FPS	Bitrate (KB)	1619 FFmpeg AV trasncode use audio copy (fps, spend time)		
	Video	Audio					1,080p	720p	480p
1080p.avi	MPEG4	MP3 (2ch)	3min 50s	1,920*1,080	23.976	1,054.18	83fps, 1:06	109fps, 0:50	113fps, 0:48

Test command :
#for output 1080p
ffmpeg -y -i avi/1080p.avi -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero avi_1080p_1080p.ts
#for output720p
ffmpeg -y -dec_o_width 1280 -dec_o_height 720 -i avi/1080p.avi -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero avi_1080p_720p.ts
#for output 480p
ffmpeg -y -dec_o_width 720 -dec_o_height 480 -i avi/1080p.avi -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero avi_1080p_480p.ts

Transcode Performance (Cont.)

Test files	Coding		Runtime	Resolution	FPS	Bitrate (KB)	1619 FFmpeg AV trasncode use audio copy (fps, spend time)		
	Video	Audio					1,080p	720p	480p
720p.avi	MPEG4	MP3 (2ch)	2min 6s	1,280*528	23.976	524.12		224fps, 0:13	266fps, 0:11

Test command :
#for output 720p
ffmpeg -y -i avi/720p.avi -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero avi_720p_720p.ts
#for output 480p
ffmpeg -y -dec_o_width 720 -dec_o_height 480 -i avi/720p.avi -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero avi_720p_480p.ts

Transcode Performance (Cont.)

Test files	Coding		Runtime	Resolution	FPS	Bitrate (KB)	1619 FFmpeg AV trasncode use audio copy (fps, spend time)		
	Video	Audio					1,080p	720p	480p
1080p.mkv	H264	AC3 (5.1ch)	5min 0s	1,920*800	23.976	2403	102fps, 1:10	127fps, 0:56	149fps, 0:48

Test command :
#for output 1080p
ffmpeg -y -i mkv/1080p.mkv -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero mkv_1080p_1080p.ts
#for output 720p
ffmpeg -y -dec_o_width 1280 -dec_o_height 720 -i mkv/1080p.mkv -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero mkv_1080p_720p.ts
#for output 480p
ffmpeg -y -dec_o_width 720 -dec_o_height 480 -i mkv/1080p.mkv -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero mkv_1080p_480p.ts

Transcode Performance (Cont.)

Test files	Coding		Runtime	Resolution	FPS	Bitrate (KB)	1619 FFmpeg AV trasncode use audio copy (fps, spend time)		
	Video	Audio					1,080p	720p	480p
720p.mkv	H264	AC3 (5.1ch)	5min 0s	1,280*534	23.976	285.46		210fps, 0:34	264fps, 0:27

Test command :
#for output 720p
ffmpeg -y -i mkv/720p.mkv -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero mkv_720p_720p.ts
#for output 480p
ffmpeg -y -dec_o_width 720 -dec_o_height 480 -i mkv/720p.mkv -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero mkv_720p_480p.ts

Transcode Performance (Cont.)

Test files	Coding		Runtime	Resolution	FPS	Bitrate (KB)	1619 FFmpeg AV trasncode use audio copy (fps, spend time)		
	Video	Audio					1,080p	720p	480p
TOS_1080p_24fps_hevc.mkv	H265	AC3 (5.1ch)	12min 14s	1,920*1,080	24	180.9	84fps, 3:28	165fps, 1:46	328fps, 0:53

Test command :
#for output 1080p
ffmpeg -y -i mkv/TOS_1080p_24fps_hevc.mkv -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero TOS_1080p_1080.ts
#for output 720p
ffmpeg -y -dec_o_width 1280 -dec_o_height 720 -i mkv/TOS_1080p_24fps_hevc.mkv -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero TOS_1080p_720p.ts
#for output 480p
ffmpeg -y -dec_o_width 720 -dec_o_height 480 -i mkv/TOS_1080p_24fps_hevc.mkv -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero TOS_1080p_480p.ts

Transcode Performance (Cont.)

Test files	Coding		Runtime	Resolution	FPS	Bitrate (KB)	1619 FFmpeg AV trasncode use audio copy (fps, spend time)		
	Video	Audio					1,080p	720p	480p
1080p.mp4	H264	AAC (2ch)	1min 35s	1,920*1,080	29.97	912.65	80fps, 0:35	111fps, 0:25	122fps, 0:23

Test command :
#for output 1080p
ffmpeg -y -i mp4/1080p.mp4 -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero mp4_1080p_1080p.ts
#for output 720p
ffmpeg -y -dec_o_width 1280 -dec_o_height 720 -i mp4/1080p.mp4 -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero mp4_1080_720p.ts
#for output 480p
ffmpeg -y -dec_o_width 720 -dec_o_height 480 -i mp4/1080p.mp4 -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero mp4_1080p_480p.ts

Transcode Performance (Cont.)

Test files	Coding		Runtime	Resolution	FPS	Bitrate (KB)	1619 FFmpeg AV trasncode use audio copy (fps, spend time)		
	Video	Audio					1,080p	720p	480p
720p.mp4	H264	AAC (2ch)	3min 35s	1,280*720	29.97	912.66		165fps, 0:39	223fps, 0:28

Test command :
#for output 720p
ffmpeg -y -i mp4/720p.mp4 -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero mp4_720p_720p.ts
#for output 480p
ffmpeg -y -dec_o_width 720 -dec_o_height 480 -i mp4/720p.mp4 -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero mp4_720p_480p.ts

Transcode Performance (Cont.)

Test files	Coding		Runtime	Resolution	FPS	Bitrate (KB)	1619 FFmpeg AV trasncode use audio copy (fps, spend time)		
	Video	Audio					1,080p	720p	480p
1080p.mpg	MPEG2	AC3 (2ch)	1min 7s	1,920*1,080	30	1,925.38	57fps, 0:36	88fps, 0:23	101fps, 0:20

Test command :
#for output 1080p
ffmpeg -y -i mpeg/1080p.mpg -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero mpeg_1080p_1080p.ts
#for output 720p
ffmpeg -y -dec_o_width 1280 -dec_o_height 720 -i mpeg/1080p.mpg -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero mpeg_1080p_720p.ts
#for output 480p
ffmpeg -y -dec_o_width 720 -dec_o_height 480 -i mpeg/1080p.mpg -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero mpeg_1080p_480p.ts

Transcode Performance (Cont.)

Test files	Coding		Runtime	Resolution	FPS	Bitrate (KB)	1619 FFmpeg AV trasncode use audio copy (fps, spend time)		
	Video	Audio					1,080p	720p	480p
720p.mpg	MPEG2	AC3 (2ch)	1min 19s	1,280*720	24	852.51		114fps, 0:16	184fps, 0:10

Test command :
#for output 720p
ffmpeg -y -i mpeg/720p.mpg -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero mpeg_720p_720p.ts
#for output 480p
ffmpeg -y -dec_o_width 720 -dec_o_height 480 -i mpeg/720p.mpg -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero mpeg_720p_480p.ts

Transcode Performance (Cont.)

Test files	Coding		Runtime	Resolution	FPS	Bitrate (KB)	1619 FFmpeg AV trasncode use audio copy (fps, spend time)		
	Video	Audio					1,080p	720p	480p
1080p.wmv	WMV9	WMA9 (5.1ch)	5min 0s	1,920*1,080	23.976	1,446.4	78fps, 1:31	111fps, 1:04	128fps, 0:55

Test command :
#for output 1080p
ffmpeg -y -i wmv/1080p.wmv -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero wmv_1080p_1080p.ts
#for output 720p
ffmpeg -y -dec_o_width 1280 -dec_o_height 720 -i wmv/1080p.wmv -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero wmv_1080p_720p.ts
#for output 480p
ffmpeg -y -dec_o_width 720 -dec_o_height 480 -i wmv/1080p.wmv -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero wmv_1080p_480p.ts

Transcode Performance (Cont.)

Test files	Coding		Runtime	Resolution	FPS	Bitrate (KB)	1619 FFmpeg AV trasncode use audio copy (fps, spend time)		
	Video	Audio					1,080p	720p	480p
720p.wmv	WMV9	WMA9 (5.1ch)	1min 59s	1,280*720	23.976	867.125		171fps, 0:16	249fps, 0:11

Test command :
#for output 720p
ffmpeg -y -i wmv/720p.wmv -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero wmv_720p_720p.ts
#for output 480p
ffmpeg -y -dec_o_width 720 -dec_o_height 480 -i wmv/720p.wmv -max_muxing_queue_size 1024 -c:a copy -c:v h264_omx -b:v 5500k -i_frame_interval 1 -f mpegts -copyts -start_at_zero wmv_720p_480p.ts