

Digital video forensic report

Case OP-2013 · examiner Aditya T · generated 2026-10-04 20:22:44 UTC · dvrf 0.1.0

1. Summary

Recorder format family	DVR-A: hikvision + DVR-B: dahua-dhav + USB: removable media (NTFS) (confidence 0.95) —
Analysis mode	multi
Video frames recovered	12004 in 14 clip(s) across 6 camera(s)
By evidence level	index-confirmed 2300 content-only 1505 carved + timestamp 8199
Findings	8 critical · 4 warning · 6 info
Evidence integrity	Source hash identical before and after analysis; custody ledger: 17 entries, chain intact

Evidence levels. *Index-confirmed*: listed in the recorder's own live index. *Carved + timestamp*: recovered from disk with a timestamp the recorder wrote into the video container. *Content-only*: recovered video whose camera and time come from analysing the picture (burned-in overlay) or are unknown. Machine-generated triage (section 6) is not a finding of fact.

2. Evidence and acquisition

Source	kit\scenario\images\DVR-A_hikvision.img; kit\scenario\images\DVR-B_dahua.img; kit\scenario\images\USB_shiftB.vhd
Size	538,968,576 bytes
MD5 (before analysis)	
SHA-256 (before analysis)	
SHA-256 (after analysis)	

3. Device identification

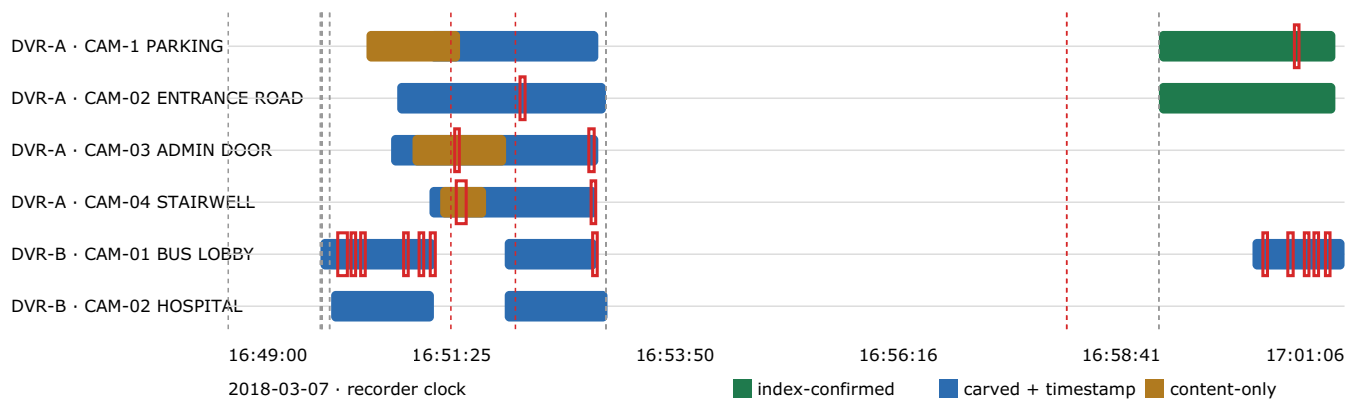
Candidate family	Confidence	Basis
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4. Findings

Severity	Type	Finding
critical	format-event	[DVR-A] System log records a disk initialise/format at 2018-03-07T16:58:06+00:00
critical	index-reset	[DVR-A] 16 data block(s) hold video that the live index does not list; 4900 recovered frames predate the filesystem initialisation time 2018-03-07T16:58:06+00:00
critical	clock-change	[DVR-A] Camera 3: overlay-to-recorder offset changes during recording (+0 s to -900 s) between 16:52:01 and 16:52:07 recorder time: possible clock adjustment
critical	deleted-file	[USB] /EXPORT_CH01_PARKING_20180307_165030.mp4 was deleted at 2026-10-04 17:51:07 UTC: RECOVERED INTACT
critical	disguised-file	[USB] /maintenance_log.txt is named as '.txt' but its header is MP4/MOV (ISO BMFF): a disguised video
critical	export-provenance	[USB] EXPORT_CH01_PARKING_20180307_165030.mp4: ONLY SURVIVING COPY of 41.0 s of DVR-A · CAM-1 PARKING; 200 frames bit-identical to the recorder

Severity	Type	Finding
critical	export-provenance	[USB] EXPORT_CH03_ADMINDOOR_20180307_165100.mp4: EDITED: 6.0 s removed versus DVR-A · CAM-03 ADMIN DOOR
critical	export-edited	[USB] EXPORT_CH03_ADMINDOOR_20180307_165100.mp4: 6.0 s (60 frames) removed: recorder footage 16:51:25.00-16:51:30.90 is missing from the export
warning	clock-drift	[DVR-A] Camera 2: burned-in clock is +47 s from the recorder timestamp
warning	clock-drift	[DVR-A] Camera 4: burned-in clock is -312 s from the recorder timestamp
warning	torn-frames	[DVR-B] 1 DHAV frame header(s) without a matching footer: consistent with partial overwrite or truncation
warning	clock-drift	[DVR-B] Camera 2: burned-in clock is +12 s from the recorder timestamp
info	recording-gap	[DVR-A] Camera 1: no recovered video for 365 s between C0001-CH01 and C0002-CH01
info	recording-gap	[DVR-A] Camera 2: no recovered video for 360 s between C0003-CH02 and C0004-CH02
info	recording-gap	[DVR-B] Camera 1: no recovered video for 45 s between C0001-CH01 and C0002-CH01
info	recording-gap	[DVR-B] Camera 1: no recovered video for 427 s between C0002-CH01 and C0003-CH01
info	recording-gap	[DVR-B] Camera 2: no recovered video for 45 s between C0004-CH02 and C0005-CH02
info	export-provenance	[USB] maintenance_log.txt: EXACT COPY of DVR-A · CAM-04 STAIRWELL 16:51:18.00-16:51:47.90

5. Timeline



Bars: recovered clips coloured by evidence level. Red outlines: motion triage. Dashed lines: recorder log entries (red = format/initialise).

Cameras and clock drift

Channel	Burned-in label	Clips	Frames	Overlay clock vs recorder
101	DVR-A · CAM-1 PARKING	3	2860	+0 s (/ readings agree)
102	DVR-A · CAM-02 ENTRANCE ROAD	2	2510	+47 s (/ readings agree)
103	DVR-A · CAM-03 ADMIN DOOR	2	1900	+0 s (/ readings agree)
104	DVR-A · CAM-04 STAIRWELL	2	1390	-312 s (/ readings agree)
201	DVR-B · CAM-01 BUS LOBBY	3	1950	+0 s (/ readings agree)
202	DVR-B · CAM-02 HOSPITAL	2	1340	+12 s (/ readings agree)

Recovered clips

Clip	Ch	Start (recorder clock)	End	Frames	Evidence	Time source	Exported file and SHA-256
E1-C0001-CH01	101	2018-03-07 16:51:11.0	2018-03-07 16:53:00.9	1100	carved + timestamp	o, f, n, i	E1-C0001-CH01.mp4 b49673fd6c1214636c8d868 9b9b226289fabdfa3c588d f9db4f5f61daa51067b
E1-C0002-CH01	101	2018-03-07 16:59:06.0	2018-03-07 17:01:00.9	1150	index- confirmed	i, n, d, e, x	E1-C0002-CH01.mp4 870b43fdd56dee98b3d4258 6ce55ed4c67dd8615263372 7774ccb2fd464813ec
E1-C0003-CH02	102	2018-03-07 16:50:50.0	2018-03-07 16:53:05.9	1360	carved + timestamp	o, f, n, i	E1-C0003-CH02.mp4 ff3337db5c46f140d8d5e59 42eff42cd402e23f4eb475 f3b1e13e87f63572b2f
E1-C0004-CH02	102	2018-03-07 16:59:06.0	2018-03-07 17:01:00.9	1150	index- confirmed	i, n, d, e, x	E1-C0004-CH02.mp4 ad9c93cb46eb9d643c5cf37 a08c57b84e8ff5c76b7cca ace405d5533181a7f2e
E1-C0005-CH03	103	2018-03-07 16:50:46.0	2018-03-07 16:53:00.9	1350	carved + timestamp	o, f, n, i	E1-C0005-CH03.mp4 2f9433eba4aff9f69c89a70 664e9a103de813885083092 ee710f8dac5aab989a
E1-C0006-CH04	104	2018-03-07 16:51:11.0	2018-03-07 16:52:59.9	1090	carved + timestamp	o, f, n, i	E1-C0006-CH04.mp4 bfb77a5dd74482c143188f b953e9ef880eefa084908f2 ae1696cd606fa993118
E2-C0001-CH01	201	2018-03-07 16:50:00.0	2018-03-07 16:51:14.9	750	carved + timestamp	c, o, n, t, a, i, n, e, r	E2-C0001-CH01.mp4 c35e8d50659cbc322164e0 aeca178230d7f64c8fc86c7 571883cd96dbd5460c0
E2-C0002-CH01	201	2018-03-07 16:52:00.0	2018-03-07 16:52:59.9	600	carved + timestamp	c, o, n, t, a, i, n, e, r	E2-C0002-CH01.mp4 be2438296f87f071a25f6f a3bdba10822e8fa18bcfec6 169071aec89d8ee4783
E2-C0003-CH01	201	2018-03-07 17:00:07.0	2018-03-07 17:01:06.9	600	carved + timestamp	c, o, n, t, a, i, n, e, r	E2-C0003-CH01.mp4 8cd52d8d84918df73c89375 a7369ad9d33be87e654bbe6 f6b7f37e1118fd1a55
E2-C0004-CH02	202	2018-03-07 16:50:07.0	2018-03-07 16:51:13.9	670	carved + timestamp	c, o, n, t, a, i, n, e, r	E2-C0004-CH02.mp4 c9c771c48dcf8b6276d593 e8033504d887e1f182f4573 f4e1dc41318241fc6ff
E2-C0006-CH02	202	2018-03-07 16:52:00.0	2018-03-07 16:53:06.9	670	carved + timestamp	c, o, n, t, a, i, n, e, r	E2-C0006-CH02.mp4 7e4a8c41d9b36632eabec2 c81b3e58058d652a6ef0674 5fb7c8aab4b2034eb3d
E3-F01	101	2018-03-07 16:50:30.0	2018-03-07 16:51:30.9	610	content-only	p, r, o, v, e, n, a, n, c, e, , m, a, t, c, h	E3-F01.mp4 375f0f0be04bae9488eccd6 0cb750ca7baf1009cd1b390 21b2fa82a2a9d88787
E3-F02	104	2018-03-07 16:51:18.0	2018-03-07 16:51:47.9	300	content-only	p, r, o, v, e, n, a, n, c, e, , m, a, t, c, h	E3-F02.mp4 7e8edad87f455f2995ccb05 6e4664f510b23fc434e947 cb4d8113dac484392d6

Clip	Ch	Start (recorder clock)	End	Frames	Evidence	Time source	Exported file and SHA-256
E3-F03	103	2018-03-07 16:51:00.0	2018-03-07 16:52:00.9	550	content-only	p, r, o, v, e, n, a, n, c, e, , m, a, t, c, h	E3-F03.mp4 c902bf773e0e6c9b161889 a75feb9c7473892152a4db0 f486351365ed2696583

6. Machine triage (not findings)

Automatic detections are leads for a human examiner. Each states its method and confidence. None is evidence by itself and none appears in the certificate.

Channel	From	To	Type	Confidence	Basis
101	2018-03-07 17:00:34.2	2018-03-07 17:00:35.7	moving- object	0.69	background subtraction, compact foreground blob
102	2018-03-07 16:52:10.0	2018-03-07 16:52:13.2	moving- object	0.78	background subtraction, compact foreground blob
103	2018-03-07 16:51:27.5	2018-03-07 16:51:29.7	moving- object	0.75	background subtraction, compact foreground blob
103	2018-03-07 16:52:54.7	2018-03-07 16:52:58.2	moving- object	0.61	background subtraction, compact foreground blob
104	2018-03-07 16:51:28.5	2018-03-07 16:51:35.0	moving- object	0.85	background subtraction, compact foreground blob
104	2018-03-07 16:52:56.2	2018-03-07 16:52:58.0	moving- object	0.54	background subtraction, compact foreground blob
201	2018-03-07 16:50:11.2	2018-03-07 16:50:17.5	moving- object	0.71	background subtraction, compact foreground blob
201	2018-03-07 16:50:20.0	2018-03-07 16:50:22.5	moving- object	0.59	background subtraction, compact foreground blob
201	2018-03-07 16:50:26.2	2018-03-07 16:50:28.7	moving- object	0.56	background subtraction, compact foreground blob
201	2018-03-07 16:50:54.2	2018-03-07 16:50:57.2	moving- object	0.62	background subtraction, compact foreground blob
201	2018-03-07 16:51:04.2	2018-03-07 16:51:05.2	moving- object	0.51	background subtraction, compact foreground blob
201	2018-03-07 16:51:11.5	2018-03-07 16:51:14.7	moving- object	0.57	background subtraction, compact foreground blob
201	2018-03-07 16:52:57.2	2018-03-07 16:52:59.0	moving- object	0.51	background subtraction, compact foreground blob
201	2018-03-07 17:00:13.7	2018-03-07 17:00:15.0	moving- object	0.56	background subtraction, compact foreground blob
201	2018-03-07 17:00:30.0	2018-03-07 17:00:33.5	moving- object	0.69	background subtraction, compact foreground blob
201	2018-03-07 17:00:40.7	2018-03-07 17:00:41.7	moving- object	0.54	background subtraction, compact foreground blob
201	2018-03-07 17:00:47.0	2018-03-07 17:00:48.5	moving- object	0.51	background subtraction, compact foreground blob

Channel	From	To	Type	Confidence	Basis
201	2018-03-07 17:00:54.5	2018-03-07 17:00:56.2	moving- object	0.51	background subtraction, compact foreground blob
304	2018-03-07 16:46:16.5	2018-03-07 16:46:17.5	moving- object	0.59	background subtraction, compact foreground blob
304	2018-03-07 16:46:19.2	2018-03-07 16:46:23.0	moving- object	0.74	background subtraction, compact foreground blob
303	2018-03-07 16:51:25.0	2018-03-07 16:51:26.7	moving- object	0.65	background subtraction, compact foreground blob

7. Recorder system log

Time (recorder clock)	Type	Entry
2018-03-07 16:49:00.0	power/login/shutdown	Power On
2018-03-07 16:50:00.0	motion	Start Motion Detect CH04
2018-03-07 16:50:00.0	hdd/recording	Start Recording CH04
2018-03-07 16:50:01.0	motion	Start Motion Detect CH01
2018-03-07 16:50:01.0	motion	Start Motion Detect CH03
2018-03-07 16:50:01.0	hdd/recording	Start Recording CH01
2018-03-07 16:50:01.0	hdd/recording	Start Recording CH03
2018-03-07 16:50:06.0	motion	Start Motion Detect CH02
2018-03-07 16:50:06.0	hdd/recording	Start Recording CH02
2018-03-07 16:53:06.0	hdd/recording	Stop Recording CH01
2018-03-07 16:53:06.0	hdd/recording	Stop Recording CH02
2018-03-07 16:53:06.0	hdd/recording	Stop Recording CH03
2018-03-07 16:53:06.0	hdd/recording	Stop Recording CH04
2018-03-07 16:58:06.0	hdd/recording	HDD Initialize
2018-03-07 16:59:06.0	hdd/recording	Start Recording CH01
2018-03-07 16:59:06.0	hdd/recording	Start Recording CH02

7a. Evidence items and format coverage

REAL footage (MEVA, CC-BY-4.0); recorder disks and all tampering SIMULATED in vendor formats. Footage: MEVA, Kitware / IARPA DIVA (CC-BY-4.0, <https://mevadata.org>).

Item	Format (confidence)	Coverage	SHA-256 before	Unchanged	Custody
E1 DVR-A	hikvision (0.99)	tested on modelled images structures from published research (Han et al. 2015) and an MIT parser derived from a real DVR; not yet run on a physical Hikvision disk	eb7026ade69c6a4db24d37833e324c3708c0c4bbd50db67acc25d08878183f7b	yes	6 entries, chain intact
E2 DVR-B	dahua-dhav (0.95)	tested on modelled images DHAV frame layout per FFmpeg dhav.c; DHFS index not parsed; not yet run on a physical Dahua/CP Plus disk	6373412c60b9a3798b70c16c0d697b1f48b0f0fa2ec652b0aed7441dad221360	yes	6 entries, chain intact

Item	Format (confidence)	Coverage	SHA-256 before	Unchanged	Custody
E3 USB	removable media (NTFS) (1.0)	external tool, widely validated filesystem parsed by The Sleuth Kit (pytsk3); \$UsnJrnl parsed by dvrf	40c3fdee0abf01b1c6533c00bc34c55429daa7d4009db02d14f2a2ce914b547b	yes	10 entries, chain intact

7b. Export provenance

Each export frame's H.264 coded picture compared bit-for-bit with recorder frames.

Export	Verdict	Frames matched	Edits
EXPORT_CH01_PARKING_20180307_165030.mp4	ONLY SURVIVING COPY of 41.0 s of DVR-A · CAM-1 PARKING; 200 frames bit-identical to the recorder	200 / 610	
maintenance_log.txt	EXACT COPY of DVR-A · CAM-04 STAIRWELL 16:51:18.00-16:51:47.90	300 / 300	
EXPORT_CH03_ADMINDOOR_20180307_165100.mp4	EDITED: 6.0 s removed versus DVR-A · CAM-03 ADMIN DOOR	550 / 550	6.0 s (60 frames) removed: recorder footage 16:51:25.00-16:51:30.90 is missing from the export

7c. Planted manipulations and what caught them

#	Item	Planted	Caught	By
P1	DVR-A	Recorder formatted after the incident	yes	[DVR-A] System log records a disk initialise/format at 2018-03-07T16:58:06+00:00
P2	DVR-A	Recording resumed after the format and overwrote the earliest footage	yes	[DVR-A] 16 data block(s) hold video that the live index does not list; 4900 recovered frames predate the filesystem initialisation time 2018-03-07T16:58:06+00:00
P3	DVR-A	CH3 clock set back 15 minutes mid-recording	yes	[DVR-A] Camera 3: overlay-to-recorder offset changes during recording (+0 s to -900 s) between 16:52:01 and 16:52:07 recorder time: possible clock adjustment
P4	DVR-A	Camera clocks drift	yes	[DVR-A] Camera 2: burned-in clock is +47 s from the recorder timestamp; [DVR-A] Camera 4: burned-in clock is -312 s from the recorder timestamp
P5	DVR-B	Part of the Dahua disk overwritten; a frame torn at the boundary	yes	[DVR-B] 1 DHA V frame header(s) without a matching footer: consistent with partial overwrite or truncation
P6	USB	Export of the vehicle entry deleted after the incident	yes	[USB] /EXPORT_CH01_PARKING_20180307_165030.mp4 was deleted at 2026-10-04 17:51:07 UTC: RECOVERED INTACT; [USB] EXPORT_CH01_PARKING_20180307_165030.mp4: ONLY SURVIVING COPY of 41.0 s of DVR-A · CAM-1 PARKING; 200 frames bit-identical to the recorder

#	Item	Planted	Caught	By
P7	USB	Export of the admin door edited: 6 s showing the entry removed	yes	[USB] EXPORT_CH03_ADMINDOOR_20180307_165100.mp4: 6.0 s (60 frames) removed: recorder footage 16:51:25.00-16:51:30.90 is missing from the export
P8	USB	Video disguised as a text file	yes	[USB] /maintenance_log.txt is named as '.txt' but its header is MP4/MOV (ISO BMFF): a disguised video

7d. AI activity events against human labels

Recall 0.44 on 9 scorable labels (4 hits); precision lower bound 0.04; 4 labels fall in destroyed footage; 4 not modelled. event overlaps label +/- 2 s; MEVA labels cover scripted activities only, so unlabelled events lower the precision bound without being proven false.

7f. Requirements demonstrated in this case

Requirement	Status	Shown by
Identify the recorder / format from the disk	demonstrated	DVR-A: hikvision (0.99), DVR-B: dahua-dhav (0.95), USB: removable media (NTFS) (1.0)
Support multiple OEMs in one workflow	demonstrated	dahua-dhav · hikvision · removable media (NTFS)
Forensic image + MD5/SHA-256	demonstrated	3 items hashed before and after; unchanged: True
Parse proprietary filesystems	demonstrated	Hikvision master sector, system log, HIKBTREE, OFNI; DHAV frames; NTFS + \$UsnJrnl
Recover deleted / formatted / overwritten footage	demonstrated	9 carved clips; 1 deleted files
Detect anti-forensics (format, clock change, edits, disguise)	demonstrated	format-event, index-reset, clock-change, torn-frames, export-edited, disguised-file
Normalise timestamps	demonstrated	3 drifts, 1 clock changes; all events on the recorder clock with stated uncertainty
Verify export provenance	demonstrated	EXPORT_CH01_PARKING_20180307_165030.mp4: ONLY SURVIVING COPY of 41.0 s of DVR-A · CAM-1 PARKING; 200 frames bit-identical to the recorder; maintenance_log.txt: EXACT COPY of DVR-A · CAM-04 STAIRWELL 16:51:18.00-16:51:47.90; EXPORT_CH03_ADMINDOOR_20180307_165100.mp4: EDITED: 6.0 s removed versus DVR-
Correlate events across cameras	demonstrated	21 entities seen on more than one camera
AI: object, face and motion detection	demonstrated	379 tracks, 29 faces, 21 motion events, 187 activity events
AI accuracy measured against human labels	demonstrated	recall 0.44 on 9 scorable labels

Requirement	Status	Shown by
Chain of custody	demonstrated	hash-chained ledger per item and for the case
Standardised report with s.63(4) data sheet	demonstrated	HTML + PDF

7g. Key frames

One frame per camera from the recovered clip, so a reader sees what each camera recorded. Each image is a derivative; its hash and the hash of the clip it came from are listed.



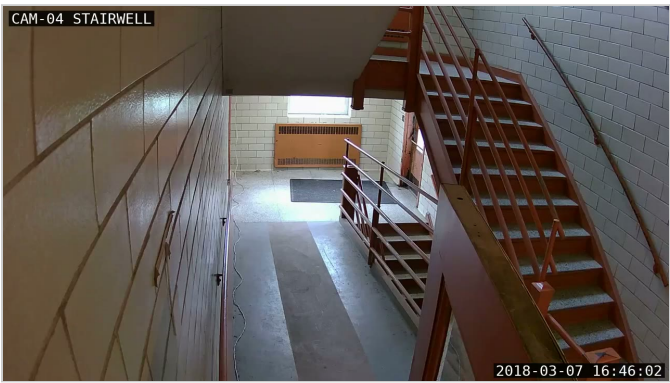
DVR-A · CAM-1 PARKING · clip E1-C0001-CH01 · carved + timestamp · 2018-03-07 16:51:14.0
 frame sha256
 a474c3a71ef425a207e2c3fd4a9770c0310d1cb993fdc7f8ed526693a0ec86e7
 clip sha256
 b49673fd6c1214636c8d8689b9b226289fabdfa3c588df9db4f5f61daa51067b



DVR-A · CAM-02 ENTRANCE ROAD · clip E1-C0003-CH02 · carved + timestamp · 2018-03-07 16:50:53.0
 frame sha256
 9e0ce8e0216d1b5557b84474f5fcce91b07af0f7aa85cba b93c1555ac01313b3
 clip sha256
 ff3337db5c46f140d8d5e5942eff42cd402e23f4eb475f3b1e13e87f63572b2f



DVR-A · CAM-03 ADMIN DOOR · clip E1-C0005-CH03 · carved + timestamp · 2018-03-07 16:50:49.0
 frame sha256
 a330d3b0ace271b9db195ce0bebc711597667107c1af705396b0c8b86c0aca3a
 clip sha256
 2f9433eba4aff9f69c89a70664e9a103de813885083092ee710f8dac5aab989a



DVR-A · CAM-04 STAIRWELL · clip E1-C0006-CH04 · carved + timestamp · 2018-03-07 16:51:14.0
 frame sha256
 cb143a1cf726f75e2ecfe6adacce8c69df89004295ece148b4fff6cbad80739
 clip sha256
 bfb77a5dd74482c143188fb953e9ef880eefa084908f2ae1696cd606fa993118



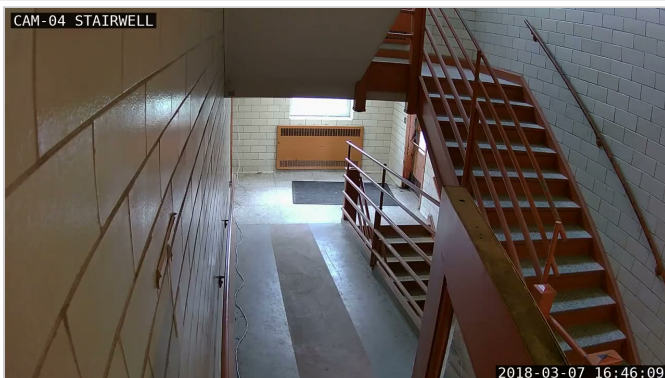
DVR-B · CAM-01 BUS LOBBY · clip E2-C0001-CH01 · carved + timestamp · 2018-03-07 16:50:03.0
 frame sha256
 885778bbd3d4569405ddf8c45a4f957d40d38206ac53fdd
 cd879c28a69542170
 clip sha256
 c35e8d50659cbc322164e0aeca178230d7f64c8fc86c7571
 883cd96dbd5460c0



DVR-B · CAM-02 HOSPITAL · clip E2-C0004-CH02 · carved + timestamp · 2018-03-07 16:50:10.0
 frame sha256
 5d7967c485991cf2e0dfba54445bb2208c5825036fe71ec4
 b7fb209b7a533138
 clip sha256
 c9c771c48dcf8b6276d593e8033504d887e1f182f4573f4
 e1dc41318241fc6ff



USB · CAM-1 PARKING (export) · clip E3-F01 · content-only · 2018-03-07 16:50:33.0
 frame sha256
 3252928883bec0278242354d3ee16b560be65f83f98034e4
 2cf6a386a0dec3f5
 clip sha256
 375f0f0be04bae9488eccd60cb750ca7baf1009cd1b39021
 b2fa82a2a9d88787



USB · CAM-04 STAIRWELL (export) · clip E3-F02 · content-only · 2018-03-07 16:51:21.0
 frame sha256
 72b52e5a4a5e18f0342bd6614942925a93d2781fd26394c
 b03380f8e64e074a6
 clip sha256
 7e8edad87f455f2995ccb056e4664f510b23fc434e947cb4
 d8113dac484392d6



USB · CAM-03 ADMIN DOOR (export) · clip E3-F03 · content-only · 2018-03-07 16:51:03.0
 frame sha256
 8e8bbff0dd2df3e4138f9d4595455eaefc16180eeee39574
 d003b6eeb258e0ff
 clip sha256
 c902bf773e0e6c9b161889a75feb9c7473892152a4db0f48
 6351365ed2696583

7k. Replay capsule

A signed capsule lists the byte ranges of the preserved images behind all 14 recovered clip(s) (11,214 ranges). Any reviewer holding the capsule and the images can rebuild each clip and compare hashes without this software's parsers.

Sealed	2026-10-05T14:36:33Z
Ed25519 key fingerprint	E649 F181 1FA9 2D8E
Signature at report time	valid

8. Method, tools and limitations

- Recovery walks the whole source. A native parser for the detected family runs first; a vendor-agnostic H.264 carver then sweeps every byte the parser did not claim.
- Frames are validated structurally (Dahua: matching DHAV header and footer; MPEG-PS: complete pack and PES lengths) before they are counted.
- Times are shown as stored by the recorder (its local clock); overlay clocks are compared with them per camera.
- Tools: ffmpeg 9.0.2-full_build-www.gyan.dev; tesseract v5.4.0.20240606; opencv 5.0.0.
- Dahua DHFS index structures are not parsed; Dahua-family frames are carved and carry the recorder timestamp from each DHAV header (evidence level: carved + timestamp).
- The universal path attributes camera and time from burned-in overlays; footage without overlays is recovered as content-only. PRNU sensor-noise clustering is not yet implemented.
- Motion triage misses objects against full-frame moving texture (heavy rain, foliage, noise).
- Format coverage per item is shown beside it; 'tested on modelled images' means not yet run on a physical recorder of that brand.

Annex A. Data for the BSA s.63(4) certificate

This sheet collects the facts the Schedule certificate asks for. Transcribe them onto the official Schedule form (Part A by the party producing the record; Part B by the expert). It is not itself the certificate. Fields marked  must be completed by a person.

Part A — produced electronic record

Device type	Digital video recorder (DVR/NVR) storage
Make / model / serial number	 (detected format family: DVR-A: hikvision + DVR-B: dahua-dhav + USB: removable media (NTFS))
Storage medium details	 HDD make, model, serial, capacity (538,968,576 bytes read)
Under lawful control of	
Hash algorithm(s)	SHA-256 (primary), MD5 (secondary)
Hash of source / forensic image	SHA - 256 MD5
Produced records (clips) and their SHA-256	E1-C0001-CH01.mp4 b49673fd6c1214636c8d8689b9b226289fabdfa3c588df9db4f5f61daa51067b E1-C0002-CH01.mp4 870b43fdd56dee98b3d42586ce55ed4c67dd86152633727774ccb2fd464813ec E1-C0003-CH02.mp4 ff3337db5c46f140d8d5e5942eff42cd402e23f4eb475f3b1e13e87f63572b2f E1-C0004-CH02.mp4 ad9c93cb46eb9d643c5cf37a08c57b84e8ff5c76b7ccaace405d5533181a7f2e E1-C0005-CH03.mp4 2f9433eba4aff9f69c89a70664e9a103de813885083092ee710f8dac5aab989a E1-C0006-CH04.mp4 bfb77a5dd74482c143188fb953e9ef880eefa084908f2ae1696cd606fa993118 E2-C0001-CH01.mp4 c35e8d50659cbc322164e0aeca178230d7f64c8fc86c7571883cd96dbd5460c0 E2-C0002-CH01.mp4 be2438296f87f071a25f6fa3bdba10822e8fa18bcfec6169071aec89d8ee4783 E2-C0003-CH01.mp4 8cd52d8d84918df73c89375a7369ad9d33be87e654bbe6f6b7f37e1118fd1a55 E2-C0004-CH02.mp4 c9c771c48dcf8b6276d593e8033504d887e1f182f4573f4e1dc41318241fc6fff E2-C0006-CH02.mp4 7e4a8c41d9b36632eabec2c81b3e58058d652a6ef06745fb7c8aab4b2034eb3d E3-F01.mp4 375f0f0be04bae9488eccd60cb750ca7baf1009cd1b39021b2fa82a2a9d88787 E3-F02.mp4 7e8edad87f455f2995ccb056e4664f510b23fc434e947cb4d8113dac484392d6 E3-F03.mp4 c902bf773e0e6c9b161889a75feb9c7473892152a4db0f486351365ed2696583

Part B — expert

Examiner	Aditya T  designation and organisation
Examination performed	2026-10-04 20:22:44 UTC using dvrf 0.1.0
Method summary	Read-only analysis of the hashed source; format-family identification; index parsing and structural carving; per-clip export with SHA-256; custody ledger with hash chain.
Integrity statement data	Source SHA-256 before analysis equals after analysis.
Signature, date, place	

Annex B. Chain of custody

Ledger status: **17 entries, chain intact**

#	UTC	Actor	Action	Entry hash
0	2026-10-04T20:14:30+00:00	HP	case-opened	698ca4582373722f6b6c6edc...
1	2026-10-04T20:14:53+00:00	HP	evidence-analysed	c3af6cafe8006500c1bb5614...
2	2026-10-04T20:15:07+00:00	HP	evidence-analysed	455f798b90a62423aca5a3af...
3	2026-10-04T20:15:25+00:00	HP	evidence-analysed	de543b74229a5631b6f75fc0...
4	2026-10-04T20:15:25+00:00	HP	provenance	2cbd3cfe3cefcd6534967eda...
5	2026-10-04T20:22:42+00:00	HP	ai-analysis	18646fd5c382d20a3dce0251...
6	2026-10-04T20:22:44+00:00	HP	ai-scored-against-labels	bfe3aad6ba2b04b4d56a60fc...
7	2026-10-04T20:22:44+00:00	HP	poison-scorecard	98be52ddebe1b061c1789a4d...
8	2026-10-04T20:22:44+00:00	HP	results-written	33b5c2bdf7d3e77777225ef...
9	2026-10-04T20:22:47+00:00	HP	report-generated	681c5f12da053a67f880d4dd...
10	2026-10-05T14:34:56+00:00	HP	report-regenerated	51a02b618c877587a573b758...
11	2026-10-05T14:34:57+00:00	HP	report-regenerated	3bfe65cf858ecf5bbbbc8e8...
12	2026-10-05T14:34:57+00:00	HP	report-regenerated	2b4091c2ed658b40748a1af2...
13	2026-10-05T14:36:33+00:00	HP	replay-capsule-built	4fe3eacee1b69d8b51960010...
14	2026-10-05T14:36:37+00:00	HP	replay-verified	494a2a6c252fd0a25d2716ae...
15	2026-10-05T15:27:51+00:00	HP	report-regenerated	41d11d9d9e29e9c6cd1d2710...
16	2026-10-05T15:29:05+00:00	HP	replay-verified	b9c577f1917a3ae1095d8157...