Correctional Service Canada
Technical Services Branch
Electronics Systems

ES/STD-0229
Revision 3
19 April, 2010

ELECTRONICS ENGINEERING STANDARDS

NETWORK VIDEO RECORDER CLOSED CIRCUIT TELEVISION

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RECORD OF REVISIONS

Revision	Paragraph	Comment
0	N/A	Original issue.
1	6.4 Design Requirements	Delete requirement for local control
	6.14 Design Requirements	Delete requirement for directly attached computer
	7.4 Recording Frame Rate	Delete “minimum compression”
	7.5 Frame Storage Option	Delete
	7.6 Selectable Compression	Delete
	7.8 Primary Storage	“Hot Swappable” Hard Drives
	7.14 Failure Indication	Change to message to the FAAS on failure
	7.15 Disk Full	Delete
2	7.13	Added requirement for Fail-Over Archiving
	7.14	Added requirement for Fail-Over Directory
3	4.3 Power	Increase to 600 watts maximum
	5.3 Depth	Increase to 600 mm
	7.1 Video Format	Determined by cameras
	7.4 Recording Frame Rate	Increase to 20 maximum simultaneous inputs
	7.7 RAID 5	Added 4TB minimum
	7.15	Added requirement for RAID 1 OS solid state drives

1.0 SCOPE

This standard defines the requirements of a Network Video Recorder (NVR) in Closed Circuit Television (CCTV) systems used by Correctional Service of Canada (CSC).

2.0 GENERAL

NVRs are used in security surveillance and assessment applications in institutions. The NVR records real time video and audio streams transmitted from network video cameras or NTSC-IP Video Converters.

3.0 ENVIRONMENTAL CONDITIONS

The system shall meet all operational requirements over the following operating range:

3.1 Temperature: 5° C to 40° C; and

3.2 Humidity: 20 – 80% non-condensing.

4.0 POWER REQUIREMENTS

The equipment shall use standard commercial VAC power within the following range:

4.1 Voltage: 120 VAC ±10%;

4.2 Frequency: 60 Hz ±1.5%; and

4.3 Power: power consumption shall not exceed 600 watts.

5.0 MECHANICAL REQUIREMENTS

The dimensions and weight shall not exceed the following:

5.1 Width: to fit standard 19” rack mount;

5.2 Height: maximum 6RU (Rack Units);

5.3 Depth: 600 mm; and

5.4 Weight: 30 kg.

6.0 DESIGN REQUIREMENTS

6.1 The unit must be self contained.

6.2 The unit must fit in a standard 19" rack.

6.3 The NVR shall be based on common off-the-shelf computers and operating systems.

6.4 All function controls for NVR configuration and operation shall be available through remote access software.

6.5 Power Failure Recovery shall enable the NVR to resume functioning in the same state that it was in at the time of the power failure.

6.6 Memory Backup shall protect timer settings in the event of power failure.

6.7 All test points on the NVR shall be clearly labelled and easily accessible for calibration and maintenance.

6.8 All equipment shall be modular with plug-in circuit cards and assemblies.

6.9 The design Mean Time Between Failure (MTBF) shall be at least 10,000 hours.

6.10 The unit shall provided remote diagnostics to indicate recording failure or video loss from an IP camera or IP encoder.

6.11 The recorder shall utilize user login, password and rights management such as to limit users' access to specific cameras, both live and recorded.

6.12 The recorder system shall provided user rights and priorities to control of P/T/Z cameras.

7.0 TECHNICAL REQUIREMENTS

The NVR shall meet the following requirements:

7.1 Video Format: Determined by camera;

7.2 Audio: Synchronized with video input (when equipped);

7.3	System Recording Rate:	up to 120 Mbits/sec;
7.4	Recording Frame Rate:	maximum 20 simultaneous inputs @ 640 x 480 pixels, 30 frames per second per input;
7.5	Recording Capacity:	Shall have the ability to connect to external local RAID storage drives to a minimum of 4 external RAID chassis. Limited only by hard drive capacity;
7.6	Primary Storage:	Hot Swappable Hard Drives (capacity as per STR);
7.7	RAID 5:	Internal storage shall be 4TB RAID 5 as a minimum (depending on storage requirement);
7.8	Watermark:	The video must contain some form of watermark or fingerprint so that any attempt to tamper with the recorded digital image may be detected.
7.9	Interface:	100Base-T/10Base-T (auto fallback);
7.10	Protocol:	Internet Interface Protocol; and
7.11	User Display:	HTML-based GUI.
7.12	Failure Indication:	Message to the FAAS when NVR stops recording for any reason
7.13	Fail-Over Archiving	To be provided (The RAID 5 feature of the NVR is NOT considered redundant archiving. Additional archiver(s) that will automatically take over recording of the cameras assigned to an NVR that has completely or partially failed, in excess of a single RAID Drive, must be provided.)
7.14	Fail-Over Directory	To be provided (The Fail-Over Directory may reside on the Fail-Over Archiver)
7.15	Operating System	The operating system for the unit shall be contained on two (2) solid state drives configured as RAID 1 storage. The OS shall NOT be installed on the RAID 5 video array.

8.0 INTERFERENCE

The NVR performance and video quality shall not be affected by the presence or use of standard CSC electronic equipment. The units shall work at the following distance limits:

8.1 CB transceivers at 1 metre or more;

8.2 VHF or UHF transceivers (25W) at 1 metre or more;

8.3 Other radio frequency transmitting, receiving and distribution equipment at 5 metres or more; and

8.4 Personal computers and/or computer work stations at 5 metres or more.

The NVR shall not interfere with any standard electronic equipment used at the institutions.

9.0 SAFETY

9.1 The NVR must be CSA, UL, ULC or CE approved, as required by law.

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