20	Network controllers - Copper	2 x GbE (RJ-45) ports		
21	COM ports	1 or more serial port headers		
22	PCI-Express slots	4 or more PCI-E 3.0 x16 slots		
23		2 or more PCI-E 2.0 x4 Slots		
24	GPU	2 or more monitors supported		
25		PCI-E 3.0 x 16		
26		DDR5 7Gbps – 2GB 128-bit memory		
27		OpenGL 4.5		
28		640 or more stream processors/cores		
29		1400MHz or higher		
30	Monitor	1 No. 28" or Larger LCD/LED 3840x2160(4K/UHD) monitor		
31	Keyboard & Mouse	USB keyboard and mouse		
32	Chassis Fans	12cm or larger		
33	Power supply	900W		
34		80 Plus Gold Level certified		
35		100-240 V, 50-60 Hz, 6-10 Amp		
36		ACPI Power Management		
37	Operating Temperature	10°C to 35°C		
38	Operating Relative Humidity	8% to 90% (non-condensing)		
39	Operating System	Specify suitable OS required by the Archive Management Server application.		
40	Archive Management Server Application (Perpetual License)	Ability to select, cue and write audio-visual content to the Deep Archival system.		
41		Direct viewing of audio-visual content stored on the cartridges of the Deep Archival system.		
42		Browse, search and retrieve archived content.		
43		Metadata maintenance for online and offline content		
44		Offline cartridge management: Ability to catalogue, print labels& barcodes and manage		

		the cartridges that are removed from the Deep Archival drives for shelving.	
45		Proxy video and thumbnail creation and management for browsing and searching of content form cartridges that are currently stored on shelves (offline) without re-inserting them into the Deep Archival system.	
46		Advance search using face-recognition data	
47		Built-in checksum archive	
48		Scheduled database backup to Networked Storage system	

General Conditions

49	Warranty	1year or more		
50	Support	Spare parts and maintenance services must be made available for a minimum of 2 years after the warranty period.		
51	Eligibility	The supplier must have industry experience of more than 10 years. Include business registration certificate.		
52	Authorization	The supplier must include a Letter of Authorization from the manufacturer of the product, authorizing the bidder to submit a bid for this project.		
53	Training	In-depth training must be provided in the operations and maintenance of the product.		
54	Make:			
55	Model:			
56	Country of Origin:			

Technical Specifications – 1 No. Networked Storage System

Item No.	Description	Requirement	Compliance (Yes/No)	Corroboration & Reference
01	Purpose	Serve as interim repository for media files before being sent to the Deep Archival System.		
02		Serve as interim repository for content extracted from the Deep Archival System.		
03		Serve as the database and cache storage for the Content Server.		
04	Type	High Performance Unified Data Storage System able to concurrently operate as a NAS as well as a SAN.		
05	Supported Client OS	Microsoft Windows 7, 8, 10		
06		Apple Mac OS 10.7 or later		
07		Linux and Unix		
08		Microsoft Windows Server 2003, 2008 R2, 2012, 2012 R2 and 2016		
09	Supported Browsers	Google Chrome		
10		Microsoft Internet Explorer 10 or later		
11		Apple Safari 7 or later		
12		Mozilla Firefox		
13	Storage Management Features to be included in the supply. Supply all requested licenses in perpetual form.	Thin Provisioning		
14		RAID Hot Spare		
15		Global Hot Spare		
16		RAID Rebuild		
17		Advanced secure data erase		
18		Storage pools		
19		Automatic and scheduled data Tiering		
20		I/O-aware data Tiering		
21		On-demand shared folder Tiering		
22		Volume and LUN Snapshots		
23		Snapshot cloning		

24		Snapshot replica		
25		Snapshot agent for VMware vSphere		
26		Online volume expansion		
27		Online storage pool expansion		
28		Online RAID Level migration		
29	Network & Virtual Switch	TCP/IP: Dual stack (IPv4 and IPv6)		
30		DHCP Server		
31		DHCP Client		
32		Jumbo Frame		
33		Port Trunking		
34		NIC Teaming		
35		Port Failover		
36		Network Address Translation (NAT)		
37		Spanning Tree Protocol (STP)		
38	Security	AES 256-bit volume-based and shared folder data encryption (FIPS)		
39		IP Filter & Policy-based Automatic IP Blocking		
40		Network Access Protection with Auto-blocking: SSH, Telnet, HTTP(S), FTP, CIFS/SMB, AFP		
41		CIFS Host Access Control for Shared Folders		
42		Antivirus Protection		
43		Importable SSL Certificate		
44		Instant Alert via E-mail, SMS& Beep		
45	Backup	Remote Replication Server (over Rsync)		
46		Real-time Remote Replication (RTRR)		
47		Real-time & Scheduled Backup		
48		Data Backup to Multiple External Storage Devices		
49	IPSAN	iSCSI Target		
50		Multi-LUNs per Target		

51		Up to 256 Targets/LUNs Combined		
52		LUN Mapping & Masking		
53		Block-based LUN		
54		Online LUN Capacity Expansion		
55		SPC-3 Persistent Reservation		
56		MPIO & MC/S		
57	Database Server	Built-in MySQL Server		
58		Web-based Management via phpMyAdmin		
59		Centralized Log Monitoring and Archiving		
60	Syslog Server	Immediate Email Alerts		
61		Support Log Filtering		

62	File Server	File Sharing across Windows, Mac, and Linux/UNIX		
63		Protocols: CIFS/SMB, AFP, NFS, FTP/FTPS, HTTP/HTTPS (Web File Manager), WebDAV		
64		Windows ACL& Advanced Folder Permissions		
65		Shared Folder Aggregation (CIFS/SMB)		
66	Access Rights Management	Batch Users Creation		
67		Import/Export Users		
68		User Quota Management		
69		Local User Access Control for CIFS, AFP, FTP, and WebDAV		
70		Subfolder Permissions Support for CIFS/SMB, AFP, FTP, and Web File Manager		
71	Domain Authentication Integration	Microsoft Active Directory (AD)		
72		LDAP Server		
73		LDAP Client		
74		Domain Users Login via CIFS/SMB, AFP, FTP		
75	Drive Bays	12 x 3.5"/2.5" or more		
76	Storage Capacity	72TB RAW		
77	RAID Support	RAID Level 6		
78		RAID Level 5		
79	Processor	Quad-Core Turbo 3.4GHz or higher		
80	RAM	16GB DDR4 or higher		
81	RAM Upgradability	64 GB or higher		
82	Flash Memory	512MB DOM		
83	10 Gigabit Ethernet Port	2 or more 10GbE SFP+ ports with suitable transceivers and cables to complete the interconnections of the Media Archival Solution.		

84	Gigabit Ethernet Port	4 or more Gigabit RJ45 ports		
85	PCIe Slot	1 or more PCIe expansion slot		
86	USB Ports	2 or more USB 3.0 ports		
87		4 or more USB 2.0 ports		
88	Form Factor	2U Rackmount		
89	Power supply	Dual Redundant 100-240V AC, 50/60 Hz		
90	Fan	Minimum 2 x 70mm fans		
91	Operating Temperature	0 ~ 40˚C		
92	Relative Humidity	5 ~ 95% RH non-condensing		

General Conditions

93	Warranty	1year or more		
94	Support	Spare parts and maintenance services must be made available for a minimum of 2 years after the warranty period.		
95	Eligibility	The supplier must have industry experience of more than 10 years. Include business registration certificate.		
96	Authorization	The supplier must include a Letter of Authorization from the manufacturer of the product, authorizing the bidder to submit a bid for this project.		
97	Training	In-depth training must be provided in the operations and maintenance of the product.		
98	Make:			
99	Model:			
100	Country of Origin:			

Technical Specifications – 1 No. Standalone Drive Unit

Item No.	Description	Requirement	Compliance (Yes/No)	Corroboration & Reference
01	Type of Drive	Standalone drive capable of reading from and writing to a single cartridge of the type utilized by the Deep Archival System.		
02	Host Interface	Super Speed USB 3.0		
03	Form Factor	Desktop		
04	Read/write mechanism	Non-contact read write mechanism for high reliability.		
05	Data access	True random access though Open Platform Architecture-Universal Disk Format (UDF)		
06	Data write speed	Write speed of 1 Gbps or faster		
07	Data read speed	Read speed of 2 Gbps or faster.		
08	Cartridge storage capacity	3TB or more per cartridge		
09	Cartridge durability	Rated for 1 million read cycles		
10	Cartridge robustness	Water disaster resistant		
11	Cartridge operating temperature	+5°C ~ +55°C		
12	Cartridge storage temperature	-10°C ~ +55°C		
13	Cartridge storage humidity	3% ~ 90% relative humidity		
14	Error verification	On-the-fly verification for error-free recording		
15	Power consumption	110W or less		
16	Drive operating temperature	5°C ~40°C		
17	Drive operating humidity	20% to 90% (relative humidity)		
18	Electrical compatibility	100-240V AC, 50/60 Hz		
19	Product weight	Less than 5kg		
20	License	Include license for content browsing and extracting application.		

General Conditions

20	Warranty	1year or more		

21	Support	Spare parts and maintenance services must be made available for a minimum of 2 years after the warranty period.		
22	Eligibility	The supplier must have industry experience of more than 10 years. Include business registration certificate.		
23	Authorization	The supplier must include a Letter of Authorization from the manufacturer of the product, authorizing the bidder to submit a bid for this project.		
24	Training	In-depth training must be provided in the operations and maintenance of the product.		
25	Make:			
26	Model:			
27	Country of Origin:			

Technical Specifications – 1 No. LAN Switch

Item No.	Description	Requirement	Compliance (Yes/No)	Corroboration & Reference
01	Type of Switch	10-Gigabit Ethernet Managed Switch		
02	No. of Ports - 10G/1G RJ-45	24 or more		
03	No. of Ports – 10G/1G SFP+	4 or more		
04	Config/Firmware Port	1 x USB		
05	Form Factor	1U rack-mount		
06	Cooling	4 or more internal, fixed fans		
07	CPU	800MHz Dual Core or better		
08	RAM	512MB or higher		
09	Fabric	560Gbps line-rate or higher		
10	Latency – 10GBASE-T RJ-45	<12μs		
11	Latency – 10GBASE-X SFP+	<3μs		
12	Static Routes IPV4	48 or more		
13	Static Routes IPV6	48 or more		
14	Multicast IGMP Groups	480 or more		
15	Packet Buffer Memory	3MB or more		
16	Forwarding Mode	Store-and-forward		
17	Bandwidth	560Gbps or higher		
18	MAC Address DB Size	16K or more		
19	Jumbo frame Support	Up to 10K packet size		
20	MTBF @ 25°C	500,000 hours or more		
21	Operating Temperature	0° to 50°C		
22	Electrical Compatibility	240V AC 50Hz compatible		
23	Transceivers& Cables	Include suitable 10Gbps transceivers and cables for 4 or more SFP+ ports. Must be compatible with the proposed Networked Storage System and the Contend Server.		

General Conditions – LAN Switch

24	Warranty	1year or more		
25	Support	Spare parts and maintenance services must be made available for a minimum of 2 years after the warranty period.		
26	Eligibility	The supplier must have industry experience of more than 10 years. Include business registration certificate.		
27	Training	In-depth training must be provided in the operations and maintenance of the product.		
28	Make:			
29	Model:			
30	Country of Origin:			

Technical Specifications – 1 No. Equipment Rack

Item No.	Description	Requirement	Compliance (Yes/No)	Corroboration & Reference
01	Type of Rack	19" Industrial IT equipment rack		
02	Rack height	42U		
03	Suitability	Must be compatible with all rack equipment included in this project.		
04	Accessories	Include all required accessories to install and operate the Media Archival solution.		

General Conditions – Equipment Rack

24	Warranty	1 year or more		
25	Support	Spare parts and maintenance services must be made available for a minimum of 2 years after the warranty period.		
26	Eligibility	The supplier must have industry experience of more than 10 years. Include business registration certificate.		
27	Training	In-depth training must be provided in the operations and maintenance of the product.		
28	Make:			
29	Model:			
30	Country of Origin:			

Technical Specifications – 1 No. UPS System

Item No.	Description	Requirement	Compliance (Yes/No)	Corroboration & Reference
01	Type of UPS	Online		
02	Topology	Double conversion online		
03	Power Capacity	3 kVA or higher		
04	Form Factor	Rack-mount		
05	Nominal Output Voltage	230V		
06	Output Voltage Distortion	Less than 3%		
07	Waveform Type	Sine wave		
08	Suitability	Must be suitable for powering and protecting all equipment in this project.		

General Conditions – UPS System

Item No.	Description	Requirement	Compliance (Yes/No)	Corroboration & Reference
09	Warranty	1 year or more		
10	Support	Spare parts and maintenance services must be made available for a minimum of 2 years after the warranty period.		
11	Eligibility	The supplier must have industry experience of more than 10 years. Include business registration certificate.		
12	Training	In-depth training must be provided in the operations and maintenance of the product.		
13	Make:			
14	Model:			
15	Country of Origin:			