Section VII. Technical Specifications

Bidders must state **"Comply"** in the column **"Statement of Compliance"** against each of the individual parameters of each "Specifications".

LOT 1	Supply, Delivery, Installation, Supervision, Integration, Training, Testing and Commissioning of a Technical Broadcast Operation Center (TBOC), Mater Control (MC), Playout Automation System, File Based/Base Band Ingest Station, Media Asset Management System (MAMS) and Deep Archive Solutions and Complete Audio/Video/Data System and Operation Workflow of the High Definition Technical Operation Center for the Visayas Media Hub (VMH) of Presidential Communications Office **Bidders shall comply with the following minimum Technical Specifications:**	QTY	Brand names	Statement of Compliance
1.1	Core Router Frame capable for at least 72 SDI inputs x 72 SDI outputs. Mixed-signal routing (SD, HD, 3 Gb/s, audio and data paths) Seamless on-air expansion with zero downtime Full redundancy for power, control and signals Router matrix expansion functionality enables cost-effective expansion of outputs Modular I/O in support for coaxial Front-loading, hot-swappable modules for 24/7 operation Wide range of hardware control panels Powerful control integration for easy setup and configuration Software and web-based applications with user-configurable GUIs Protocol support for SNMP Secure access rights with restrictions by level, source and destination Easy-to-use HTML 5 software-based control panel Video routing support Almost any digital video signal from 3Mb/s to over 3Gb/s including: SD-SDI & HD-SDI to 1080i/p (3 Gb/s) ASI, SMPTE 310, SMPTE 305, etc. SMPTE compliant analog video supported via conversion to/from SD-SDI on I/O Support for up to 16 embedded audio signals per video input	1 set		
1.2	Input : 72 3G, HD-SDI (Modular per module)	1 lot		
1.3	*Output : 72 3G, HD-SDI (Modular per module)*	1 lot		
1.4	Re-legendable X-Y/LRC Numeric Auxiliary remote control panel with 24 source buttons and 24 destination buttons	4 units		
2.1	Multi-viewer display monitor 55" or better 4K (3,840 x 2,160) LCD/LED Monitor	4 units		
2.2	Customized frames with mounting kit and accessories (please refer to MV design).	1 lot		
3.1	Standalone Multi-viewer inputs, auto detect. HDMI (1080P 50/60Hz) and SDI (1080i/P 50/60Hz) Outputs. Windows can have multiple sizes and can be moved freely. UMDs, OMDs and standalone labels. Analog, Digital Clocks/Counters and Logos. System provides a real time Multiviewer display of video or audio services coming from different input interfaces Supporting TS over IP, UDP, SRT, NDI, RTSP, RTMP, RTP, HLS, DASH, HDMI/SDI DBVS ASI FM SNMP.	1 lot		
4.1	3g/HD/SDI Waveform monitor 3G/HD/SD Waveform Monitor With Dual Integrated Touchscreens, 3RU Half Rack, four inputs, each capable of supporting up to 12G-SDI. Designed to support both local and remote production situations up to 8K HDR Equipped with a rich set of standard applications such as Waveform, Vector, Lightning, Diamond, Picture, Video Session, Audio, Event Log, Timing, and IP Status.	1 lot		

	Flexible screen tile configurations provide full screen, two, three and four tile layouts giving flexibility in selecting a variety of software apps for user-specific applications, while still allowing easy viewing of each display.			
5.1	Technical monitor 21" LCD Display HDMI, 3G, HD, SD-SDI (Audio embedded) Input. two 3G-SDI inputs and two 3G-SDI outputs, Component, Composite & HDMI 1.3a Inputs, (must be viewable in any angle)	1 unit		
6.1	GPS System Global Positioning System (GPS) Antenna. Standalone	1 unit		
6.2	Time code Generator Produce digital Time Code Generate Centralized Time Code Generator to all Ingest, editing, Recording and storage in entire network.	1 unit		
6.3	Test signal Generator Generate all necessary signal and test pattern in TV broadcast w/ text ID capabilities, HD and SD-SDI output. Black burst, Bi-Level and Tri-Level sync., Analog Black Bars	1 unit		
7.1	Master & Slave Station Clock For centralized clock in entire broadcast facility. Station Clock for TOC/MCR & CER Area	1 lot		
8.1	Pulse & SDI Signal Distribution amplifier / Modular Frame (for SDI-VDA) Modular card type and adequate for Reference Gen-Lock for the entire system with redundant power supply frame. Modular card type HD-SDI (embedded audio) input and output with gain control and Switch On/Off output Re-clocked. The Distribution Amplifier supplied should not be less than 30dB for a long of coaxial cable run. 1. Signal type : 3 Gb/s HD, SD, ASI (embedded audio) 2. Connector : BNC 3. Impedance : 75 ohms Noise free universal frame holds up to 20 cards or more, with appropriate connector panel for each card at the back of the frame and at least four (4) BNC outputs and one (1) BNC input with active loop through per module. Shall be controlled and monitor by SNMP.	1 lot		
9.1	Audio/ Video Confidence monitors A combination of OLED display and high quality audio monitoring with built-in speaker capable to receive the following video signal HDMI, 4K, 3G, HD, SD-SDI (Audio embedded) Input. (Must be viewable in any angle). Also, capable to receive the following embedded audio signal mono, stereo analog audio, ASI, DTS etc. (Note: This confidence monitor is intended for AV lip sync detection)	1 unit		
10.1	File base quality control File base quality control for ingest, editing and playout server (see instruction on item H of this Technical requirements.	1 unit		
11.1	Audio & video processor with Audio Loudness Control Animated logo generator/inserter (1/9th screen size) with up to 80 seconds for at least 150 seconds for 1080i Real Time Loudness Control (RTLL) Insertion of closed captioning data from serial port Support for SFPs (Dual channel HD-BNC inputs and outputs, combination of HD-BNC and optical Input and output, SD/HD to DVI Converter, SD/HD to HDMI Converter) Intelligent dual-channel frame sync/delay, proc amp, noise reduction, clipping and color correction Fast frame sync, fast conversion, delay (lock to one input), program delay and time base corrector (TBC) modes Two switchable auto-sensing 3G/HD/SD inputs Dual up/down/cross/aspect/basic ratio conversion Noise reduction (mosquito and block), sharpness and texture controls Two aspect ratio converters with full control over H/V size and position with AFD support	1 unit		

	Built-in video test and audio tone generators Redundant power supplies Dual logo generator/inserters Static built-in, can be used for a trouble slide Optional 1/9 screen animated logos Audio de-embed/embed, sync, delay, gain, invert and delay processing PCM and non-PCM (Dolby® Digital Plus, Dolby® Digital, Dolby® E) passthrough Options for Dolby® Digital Plus, Dolby® Digital, Dolby® E decode and encode (up to 2 Dolby decoders and encoders) Options for DTS Neural Surround Upmix, Downmix, Multimerge and DTS Neural Loudness Control Video Interfaces: Auto-sensing for SD-SDI, HD-SDI, 3G-SDI Two SDI inputs (2 HD-BNC, Dual SFP) Four SDI Outputs (4 HD-BNC, Dual SFP) EDH/CRC error monitoring and insertion HDMI output One channel composite analog video Audio Interfaces Eight-channel analog audio 2 x 4 groups embedded audio 16 AES Control and Monitoring 100/100BT Ethernet connectivity SNMP compliant Built-in web control and monitoring Local control panel Four customizable GPI inputs and outputs			
12.1	Dual Channel Video Processor/frame synchronizer Standalone 3G, HD/SD-SDI (embedded audio) input and at least 2 HD/SD-SDI output, has video parameters control adjustment in front panel such as: video gain, Chroma gain, black setup, Audio/video lip sync, horizontal timing with reference Genlock input. Dual-channel capability frame sync/delay, proc amp, and noise reduction, clipping and color correction. Fast frame sync, fast conversion, delay (lock to one input), program delay and time base corrector (TBC) modes	1 unit		
13.1	Patch panel 32 holes x 2 normally close 3G, HD-SDI Digital Patch/Jack field must be from globally known manufacturer	1 lot		
13.2	Patch Cord 3G, HD-SDI Digital Patch Color Black must be from globally known manufacturer			
14.1	Network switches and router switch Part of installation materials High quality and high efficiency products came from globally known brand it shall be rack mounted. (number of ports are discretion of the system integrator but it shall be all are rack mounted)			
15.1	Network Management System (NMS/SNMP) Simple Network Monitoring Protocol Software based application that provides device configuration and various levels of control and monitoring for broadcast networks. Provides real-time parametric adjustment and enhanced alarm management and correlation. It allows discovery, configuration, control and monitoring through device control, as well as an enhanced graphical surface and enhanced scripting capabilities • Searchable alarm logging capability • User-configurable network views per devices • Secure and restricted user access control			

	• GUI supports video thumbnails and MPEG-4 streaming (depending on the modules that has streaming capability) • Single button to launch single or multiple presets • Single click to launch Web-based applications • Ability to employ and represent operational environments and workflows in a familiar and intuitive manner. • Allows users to discover compatible network elements • Ability to configure, control and monitor them from a simple and familiar navigational tree structure. Allow structure to logically group devices by simply dragging and dropping devices onto network nodes for faster problem isolation or control capabilities			
16.1	Media Asset Management System- SW Media Asset Management database synchronization service - allows bi-directional content metadata synchronization between Databases Media Asset Management system provides content registration, search, preview (proxy) and prepare (segment and markers). Requires service to synchronize content Metadata and database. Contains SW workflow capable of maintaining storage inventory of supported device(s) and executing workflows based on purchased workflow bundles or custom workflow implementations. Workflows can be triggered on storage triggers (created, updated deleted files, capacity), calendar/time based, user requests or automation missing media requests. Additional options available for third-party storage, transfer and processing solutions. 1 UI for workflow tasks & storage devices	1 lot		
16.3	Media Asset Management System- HW Ready for mirroring large amount of files (million), lots of workflow per week with few clients only. MINIMUM RECOMMENDED SYSTEM REQUIREMENT: Processor: 2 x 4-8 Core Xeon CPU, 2.5+ GHz Memory: 24-32+ GB RAM Drive(s): RAID 1 SAS HDD for system + RAID 10 array of 15k/rpm SAS HDD or SSD Network: Minimum 1 x 1Gb Ethernet Database Server: SQL Server in latest Edition Operating System: Latest version operating system Processor: 2 x 8 Core Xeon CPU, 2.5+ GHz Memory: 24-32+ GB RAM	1 set		
16.3	Media Asset Management System- CLIENT Media Asset Management System- Client PC for the operation of Media transfer and other processes. MINIMUM RECOMMENDED SYSTEM REQUIREMENT: Processor Any desktop CPU Memory 8+ GB RAM Drive(s) Any HDD Network 1Gb Ethernet or Wifi	1 set		

17	Archiving
	
	MINIMUM RECOMMENDED SYSTEM REQUIREMENT:
	
	Master Node
	Size: 4U
	Capacity: 48 TB – 480 TB
	Number of Drives: 12 - 35
	Drive Type Archive: Up to 8 TB
	Enterprise: 4 TB, 8 TB 12 TB
	SSD: 1 TB, 2 TB
	Expansion Chassis Drive & Capacity Archive: Up to 96 Drives (768 TB)
	Enterprise: Up to 44 Drives (528 TB)
	System Capacity Archive: Up to 7.1 PB
	Enterprise: Up to 5.1 PB
	Port Connectivity: 2 Port—10 Gbase-T (RJ45)
	         2 Port—10 GigE (SFP+)
	         2 Port—40 GigE (QSFP+)
	Protection Level: Double or Triple Parity
	Failover Mode: Hot Pair
		1 set		

17.1	Ingest Server Server Hardware (NOTE: Minimum technical specification requirement) Ingest Server shall deliver the exceptional reliability, flexibility and format transparency that broadcast operations demand System scales from small integrated servers to 1000+ channel NAS architecture. Pay as you go, online expansion of storage capacity and bandwidth. Support hybrid baseband + IP capability Future-proofed, software-defined media server Support integration of uncompressed, compressed IP and UHD/HD/SD SDI I/O 1 or 2 RU Rack Mount Up to 16 front-mounted hot-swappable media hard drives or SSDs 1+1 redundant hot-swappable power supply High CFM cooling for 24/7 operation 2 Intel Xeon 64-bit Haswell 6-core processors 64 GB DDR4 RAM expandable to 1536 GB 1+1 redundant front-mounted hot-swappable OS SSDs 4x 1GbE Ethernet Ports Optional additional 4x 1GbE, or 2x 10GbE, or 2x 40GbE Ethernet Ports Quadruple-head monitor ports; 4x DisplayPort 1.4 with adapter to DVI-D 1x VGA monitor port 3 USB 3.0 ports (1 front, 2 rear) Dedicated Hewlett Packard Enterprise Integrated Lights-Out (iLO) Ethernet Port R2 Standard 64-bit Embedded OS GPU co-processing engine for advanced SD/HD/UHD Up/Down/Cross-conversion processing Channel Configurations Mixed SD/HD Up/Down/Cross-conversion Up to 6 bidirectional channels Automatic input format detection Automatic aspect-ratio conversion (ARC) with Active Format Descriptor (AFD) support All channels software license key (SLK) enabled UHD-1 Ultra Hi-Def bidirectional channel INPUTS & OUTPUT, Broadcast Signal I/O HD/SDI Input Video: atleast 5 HD-BNC RS-232 LTC Input Reference Sync Input 1x HD-BNC Analogue Bi-Level 1080i Tri-Level AUDIO Inputs 4 pairs (8 channels) HD-BNC, unbalanced (AES/EBU) (optional) 8 pairs (16 channels) embedded HD-BNC Outputs 4 pairs (8 channels) HD-BNC, unbalanced (AES/EBU) (optional) 8 pairs (16 channels) embedded HD-BNC Storage Up to 32 tracks of PCM uncompressed audio per ID Up to 8 channels per track compressed, up to 256 compressed audio channels per ID Sample Precision 16-, 20- or 24-bit PCM, 48 kHz Compressed Audio Pass-Through Dolby® Digital (AC-3), Dolby® Digital Plus (E-AC-3), Dolby® E, DTS/DTS-HD pass through Compressed Audio Pass-Through Dolby® Digital (AC-3), Dolby® Digital Plus (E-AC-3), Dolby® E, DTS/DTS-HD pass through Compressed Audio Playback AAC/HE-AAC/HE-AACv2, MPEG1-LayerII (MP2) CODECS SUPPORTED	1 set		

270 Mb/s SDI Video Formats
MPEG-2 I-Frame
MPEG-2 Long-GOP
IMX 30, 40, 50 (D-10)
DVCPRO25, DVCPRO50
DVCAM (PAL only)
DV (NTSC only)
Apple ProRes LT/422/HQ
H.264/AVC Long-GOP

1.5 Gb/s HD/SDI 1080i, 1080p/PsF, 720p Video Formats
MPEG-2 I-Frame & Long-GOP
XDCAM HD/EX/422
AVC-Intra Class 50/100, AVC-Ultra Class 200
XAVC-Intra & Long-GOP
H.264/AVC-HD Long-GOP
DVCPRO HD
Avid DNxHD
Apple ProRes LT/422/HQ

3.0 Gb/s HD/SDI 1080p Video Formats
MPEG-2 I-Frame & Long-GOP
XDCAM 422
AVC-Intra Class 100 (~200Mbps)
XAVC-Intra & Long-GOP
H.264/AVC-HD Long-GOP
Avid DNxHR

6.0, 12.0 Gb/s UHD-1 2160p Video Formats
Apple ProRes LT/422/HQ
H.264/AVC-UHD Long-GOP
XAVC Long-GOP Class 188/300
XAVC-Intra Class 300/480

ASPECT RATIO
HD (SD) 16:9, (16:9, 4:3)
Aspect Ratio Conversion:
Up/down/cross conversion support with NTSC EIA- 608 <> 708 caption
conversion
Up/down/cross conversion support with PAL WST/OP42 <> OP47 caption
conversion
AFD Support:
Insert/fill/override embedded AFD metadata frame-by-frame on a per-ID or per-
port basis
SMPTE 2016 and ATSC TSG-814

TIMECODE I/O
Serial RS-232, RS-422
LTC time-of-day data from reference/sync generator BNC
LTC Balanced Analogue
HD/SDI
SD VBI
Read, generate, and write discontinuous VITC1 and VITC2, user-selectable
lines
HD HANC/VANC
Read, generate, and write discontinuous ATC/LTC, ATC/VITC1, and
ATC/VITC2, user-selectable data location
PTP
IP Multicast
IEEE1588/SMPTE2059 Precision Time Protocol time-of-day data for baseband
PTP timestamp used for 2022-6/-7 UCIP output frames
RS-422, TCP/UDP Protocols, & GPI Control
Serial Ports
Optional 8x RS-422 RJ12 ports. Includes cables and RJ12->DB9 adapters
GPI I/O 8
Optional 16x GPI input, 16x GPI output
Native Control Protocol
TCP/IP, UDP Ethernet; RS-422 serial
Video Disk Control Protocol (VDCP)
TCP/IP Ethernet; RS-422 serial
Timeline Playlist/Macro API
TCP/IP Ethernet
Simple Network Management Protocol (SNMP)
SYSLOG Operating System and Application Message Logging
TCP/IP Ethernet

	FILE INTERCHANGE Supports 20+ simultaneous transactions; active and passive (FXP: File exchange protocol) Support for LXF, GXF, MXF OP1a, Self-Contained MOV (QuickTime), MP4/M4V Import support for Pinnacle, Quantel, MXF OP-Atom, MXF OP1b, Reference MOV (QuickTime), AS-03/-10/-11, MPEG-ES/PS/TS/MTS/EVO/VOB/M2V			
19.1	Playout Server (Main and Back-up) Integrated Playout Server shall deliver the exceptional reliability, flexibility and format transparency that broadcast operations demand No single point of failure; redundant power, networks, media paths. High-availability NAS storage System supports integration to the best of the world's automation, branding, graphics, file server, storage and master control. Support hybrid baseband + IP capability Future-proofed, 100% software-based media server solution Support integration of uncompressed, compressed IP and UHD/HD/SD SDI I/O	1 lot		
	Server Hardware 2RU Rack Mount 2x Intel E5-2680v3 (2x 12 cores, 24 cores total) 8x 8GB (64 GB) DDR4-2133 CAS-15-15-15 (or optimal configuration based on server manufacturer) 2x 80 GB RAID 1 recommended 4x 240 GB SSD RAID 5 recommended 4x 2TB 7.2K RPM RAID 5 recommended 1x 1 Gb/s management 1x 1 Gb/s control (automation) 1x 1 Gb/s video 1x 10 Gb/s video, Intel 82599 chipset 1x VGA monitor port 3 USB 3.0 ports (1 front, 2 rear) Dedicated Hewlett Packard Enterprise Integrated Lights-Out (iLO) Ethernet Port Minimum: Windows® Server 2012 R2 Standard 64-bit Embedded OS GPU co-processing engine for advanced SD/HD/UHD Up/Down/Cross-conversion processing, branding & graphics	1 lot		
	GRAPHICS BRANDING Bit Depth 32 bit 24 bit graphics (RGB), 8 bit alpha	1 lot		
	Graphic Video Format (Lossless compression) Custom sizing Up to 10 VIA video files running simultaneously VIA video files coverage up to 1x screen resolution	1 lot		
	Layouts Maximum of 10 layouts loaded simultaneously Multiple individually controllable elements per layout	1 lot		
	Rolls and Crawls Up to 4 rolls and/or crawls Up to 1/3 screen coverage at one time	1 lot		
	Clocks and Stills No practical limit	1 lot		
	DVE	1 lot		

	1 lot		
Quantity Two 2D DVEs Two DVEs on screen simultaneously	1 lot		
Sources One active source per DVE at a time 2 internal video playback channels 1 internal video playback channel and 1 live input	1 lot		
Control User-defined templates Automation triggering of templates Template-defined position and control Template-defined crop and video resizing	1 lot		
Broadcast I/O	1 lot		
IP Inputs 2 Inputs MPEG2 TS, H.264 or MPEG2 video	1 lot		
IP Outputs 1 Output MPEG2 TS, H.264 or MPEG2 video Additional options configurable	1 lot		
HD-SDI Inputs 2 Inputs via HD-BNC (hybrid only)	1 lot		
HD-SDI Outputs 2 Outputs via HD-BNC (hybrid only) — video configurable	1 lot		
HD-SDI Embedded Audio In 16 AES per channel	1 lot		
HD-SDI Embedded Audio Out 16 AES per channel	1 lot		
Video Formats 1080i, 720p, 480i, 480p	1 lot		
Scan Rates (fps) 60, 59.94, 50, 29.97, 25	1 lot		
Audio Format (uncompressed) PCM (16, 20, 24 bit, 48 KHz) — SMPTE ST 2022-6 & HD SDI	1 lot		
Aspect Ratios 16:9, 4:3	1 lot		
Closed Captioning EIA-608, EIA708: from file (SCC, STL, PAC, etc.), from media, live (EEG iCap), cross convert OP-42, OP-47: from file (SCC, STL, PAC, etc.), from media, Cross convert	1 lot		
Genlock (Ref In) Standard (SMPTE ST 2059-2 (PTP)	1 lot		

	AUDIO	1 lot		
	Channels and Formats 8 pairs embedded per I/O channel (4 pairs if using 24-bit PCM with SD video	1 lot		
	Processing and Storage 16, 20, or 24-bit PCM, 48kHz	1 lot		
	Compressed Audio Dolby Digital (AC-3) and Dolby E pass-through	1 lot		
	Loudness Correction Linear Acoustics AERO	1 lot		
	AFD Pass-through or ARC	1 lot		
19.2	Playout Client (1x) Playout System Client minimum specification Processor Any desktop CPU Memory 8+ GB RAM Drive(s) Any HDD Network 1Gb Ethernet or Wifi	1 lot		
20.1	Master Control Switcher Master Control System is capable of operating in a software touchscreen master system and a hardware control panel. The system manages the manual and automated switching of video from remote sources through central router, playout server with graphics automation capabilities with a simple touch of the screen in a single and multichannel environment. Advance user interface that bring efficiencies to master control system. The master control system should be controlled by known Broadcast Automation in the market right now. Master Control System provides integrated graphics, and automation operations through a unified touchscreen interface. Graphics keys are assignable on the Master Control Panel with different layouts. Graphics control for "On Air" operation is taken on and off the keys manually or through automation process. Designed to fit into your playout environment, MCS features a rich set of control interfaces. Supporting most popular automation systems via IP, serial or GPI control, MCS can be easily configured for unattended 24/7 operation. However, when manual control is required, included touchscreen GUI via Dashboard™ or optional hard control panel make hands-on operation a snap. MCS also interfaces with Core router or any 3rd party routers via popular control protocols. From a single control interface, up to multiple channels can be integrated. Channels may be independently controlled (either manually or through automation),or be ganged together for simplified multi-format or multi-language applications. Adding additional channels to the system are easy.	1 lot		
20.2	Master Control Switcher- Playlist Playlist Client minimum specification Processor Any desktop CPU Memory 8+ GB RAM Drive(s) Any HDD Network 1Gb Ethernet or Wifi	1 lot		

20.3	Master Control Switcher- Graphics MINIMUM RECOMMENDED SYSTEM REQUIREMENT: P Z2 TWR Workstation G9 IDS Windows 11 Pro 64 Intel Core i7-12700 2.10G 25MB 12 cores 65W 16GB (1x16GB) DDR5 4800 UDIMM NECC Memory NVIDIA T1000 4 GB LP Blower Fan 4mDP PCIe x16	1 lot		
20.4	Back-Up Switcher Backup Swither with 16x16 Switcher I/O Configurations. Clean and Quiet – Provides, eliminates downstream signal interruption. Two channels of clean and quiet output each with access to all inputs on the device. Each channel is independent and supports a variety of transition types including, V-fade, Cut-fade, fade-cut, and cross fade, in addition to an immediate cut transition.	1 lot		
21.1	ON AIR NAS Storage NAS Storage shall be high-performance online storage system specifically designed for broadcast and production facilities, including news, sports and live-event applications Shall deliver unparalleled levels of bandwidth and storage to support the most demanding media workflows, NAS storage provides sharable and scalable storage throughout the content lifecycle. Flexible capacity & bandwidth Allows scaling of storage & bandwidth, without affecting existing media or interrupting on-air operations Faster time to air - True shared storage access facilitates collaboration and eliminates file copying, providing a fast-turnaround editorial environment and a shorter time to air Easy to manage- Shall Allow unattended drive rebuilds, supports remote monitoring and diagnostics, and includes an informative web user interface Superior codec support Supports virtually unlimited storage bandwidth supports a huge selection of codecs, including HD codecs above 100Mbps, such as AVC-Ultra, Sony XAVC, DVCPRO, ProRes, and DNxHD/DNxHR On-air scalability to over a petabyte of online shared storage with RAID-6 storage protection RAID-6 provides high availability, protecting against drive, controller and storage chassis failures, while maintaining system throughput Redundant Power Supply - Dual hot-swappable power supplies per enclosure Single storage nodes 3,000 Mb/s shared bandwidth (guaranteed), minimum 40TB of capacity 1x external metadata controllers Suitable solution for entry-level channel launch, customers with lower bandwidth requirements, real-time performance and peace-of-mind redundancy MINIMUM RECOMMENDED SYSTEM REQUIREMENT: System - HPE DL360, Intel 8-core Xeon CPU Memory - 64 GB DDR4 Network - Dual 10/25GB SFP28 Drive Controller - 12Gb/s Hardware RAID Controller and standard RAID 6 protection System Drives - Mirrored 480 GB SSD OS drives, rear accessible Power Supply - 1+1 hot-swappable power supplies 1+1+1 hot-swappable fans Protection Levels - RAID-6 Form Factor - 2U Racked Weight (w/HDD) - 24.5 kg (54 lbs) Dimensions - 8.73 x 44.54 x 73.02 cm 3.44 x 17.54 x 28.75 in Input Power Requirements - 100-240 VAC 50/60Hz Power Consumption (steady state/peak) - 500W	1 lot		
22.1	Compliance Recording (1 Channel SD/HD/Analog) Support Single Channel SD/HD/IP Recording / Multichannel compliance ingest (SD/HD/IP)	1set		

	Allow automated File Transfer and Removal after Ingest. Support easy ingest overlay time and date separately on each recorded file or stream Support re-Record Easy Ingest Capture Delay Compensation Option Shall ingest any type of feed: analog/digital/ SDI/DVB /IP/ASI/TS Multiple sources and formats Allow common file format options with SD and HD resolution Allow remote access and control of the ingest workstation Shall have system and software status indicators Should be flexible for different operations Should be stable for 24/7 operation Support for standalone or automated operation User Scenarios: MCR & PCR recordings Off-Air Recorder Outside Broadcasting Recorder Specification Supported TV Formats: SD/HD, High Definitionn1080i,720P Standard Definition: NTSC,PAL Supported Codec and File Format DV,DVCPro, IMXDVCProHD,SDCAM, XDCAM HD, XDCAM HD422, MPEG2 LONG GOP,MPEG2 up to 10801 422AVC Intra, H.264, MXFOP1a, MXFOpAton & MXF AS-02,AS-03 AS-11		
23.1	Metal rack The metal rack shall have a perforated swing door at the front and back, it must be at least 45-RU equipped with dual power strip circuit breakers and earth-grounding termination, rack mounts, dual electrical power strips with top-rack Fan blowers, and must have individual current monitoring in each center top of rack to monitor the current load of each rack.	6	
23.2	Rack PDU status of the power supply at all times. The PDU outlet must be at least 10 outlets per strip (x2) for main power and backup power and of high quality.	12	
24	Furniture (2x) 2 Position Console, 2x Single Position Console, 6 Swivel Chairs	1 lot	
25	Under raised floor cable tray The bidder should provide cable tray made of either metal or hard plastic it must be closed all sides to prevent rotten bites of the cables inlet and outlet shall have brush guard. Please refer to the sample layout.	1 lot	
26	Installation materials Gigabit router, gigabit switch, Network router, network switch materials must be High quality and high efficiency products came from globally known brand it shall be rack mounted. (Quantity of units/pieces/ports is discretion of the system integrator but it shall be all are rack mounted). Audio cables, coaxial cables UTP/Ethernet cables must be from globally known manufacturer. cable tie, cable management marker, Software, Hardware and all other installation materials must be high quality. Note: Winning Bidder/System Integrator are not allowed to pull out/takeout all excess installation materials including tools, test instruments. All left-over installation materials are considered as PCO property.	1 lot	
27	Electrical Installations Electrical works for this particular project are the following: Winning Bidder/System Integrator shall provide and install electrical wiring from PCO provided main electrical supply panel going to racks, console tables, and all other areas where the bidder will install the supplied equipment.	3	
28.1	Operation Manual Hard Copy 3 copies (1 copy for engineering, 1 copy for end user/operator and 1 copy for PCO central engineering office)	3	
28.2	Service Maintenance Manual Hard Copy 3 copies (1 copy for engineering, 1 copy for end user/operator and 1 copy for PCO central engineering office)	3	
28.3	Operation and Service Maintenance Manual Soft Copy (flash drive) 3 copies (1 copy for engineering, 1 copy for end user/operator and 1 copy for PCO central engineering office)	3	

29	Integration & Service Integration and Service,	1 lot		
30	Commissioning & Training	1 lot		
31	Technical Support 1 year On-site Technical support (see 2.2.1.1 and 2.2.1.2 of TOR)	1 lot		
32	Storage/Warehouse Winning Bidder/System Integrator must secure storage or warehouse suited to their supplied equipment at VMH. PCO will not held responsible to any damage, loss of their supplied equipment during installation to final acceptance.			