GOVERNMENT OF INDIA (Ministry of Home Affairs) DIRECTORATE GENERAL

CENTRAL RESERVE POLICE FORCE

EAST BLOCK-7, SEC-1, R.K. PURAM, NEW DELHI-110066

No. B.V-7/2019-20-C (VCR)

Dated, the May'2019

To

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 Block No. 10, CGO Complex
 Lodhi Road, New Delhi-03
- 6. Liaison Office, Assam Rifle Room No-171, North Block, MHA New Delhi -01

Subject: Regarding QRs/TDs of Virtual Class Room.

Please find enclosed QRs and TDs of Virtual Class Room as Annexure-A & Annexure-B respectively duly approved by the competent authority for is forwarded herewith further necessary action.

Encl: (QRs & TDs of Virtual Class Room)

{P.R.Jha, DC (Comn)}

For DIG (Equipment)
Directorate General, CRPF

QRs of Virtual Class Room

	S. N	QRs of Virtual Class Room					
	S. I		Specification				
7		General:-					
	1	Virtual	Class room should have the below mentioned features				
		and functionalitie	and functionalities:				
		Ultra-Immersive	Learning and Training Virtual Classroom with video				
	а	stream having No	stream having Nos of seats Training/Learning Room/Seminar Hall (as				
		per user requirem	nent).				
İ	b						
ŀ	_	Number of sites connectivity as required by user for Virtual class room.					
-		Point to Point (P2P)					
-	d						
1	e	End-to-End secur	re communication between all locations with VC				
		endpoints.					
	f	Two-way interactive	ve discussion between any two-given locations across				
	1	user network.	and given recations across				
	·	Multiple-way inter	cactive discussion between multiple locations in a				
	g	single VC call.	aboute discussion between multiple locations in a				
-							
		device from and	content during video/audio call any time, any VC				
1		device nom any	location during P2P and P2MP calls via following				
		methods:-					
	h		MI cable				
		ii) VG	ii) VGA cable with 3.5mm stereo input				
			reless content sharing device				
			ny, Miracast) or equivalent solution.				
	2	VIDEO CONFERN	CING CODEC				
	а	Package	Full High Definition Video Conferencing Codec				
			It should support H.323 & SIP standards for				
		Vidoo Stondondo	communications.				
	b	Video Standards and Resolutions	It should support interoperability and bandwidth				
		and Resolutions	saving using video compression H.261, H.263,				
	-		H.264 AVC, H.264 SVC, H.264 High Profile/H.265				
	l		It should support 1080p@60fps, 1080p@30 fps,				
-			720p@60fps, 720p@30fps & FCIF.				
			It should support content sharing using standard				
		Content	based H.239 & BFCP.				
	c	Standards and	It should also support audio from PC used for				
		Resolutions	content sharing.				
	İ		It should transmit both people and content				
	İ		simultaneously to the far end location at 1080p				
┝			60fps				
			It should support G.711, G.728, G.729A, G.722, G.722.1, AAC-LD or better				
		Audio Standards	It should support 20KHz or better bandwidth with				
			crystal clear audio and stereo sound.				
		and Features	Automatic Gain Control and Automatic Noise				
			Suppression Suppression				
			Keyboard noise reduction and instant adaptation				
			echo cancellation				

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S. N.	Parameter	Specification
		2 x HDMI/HDCI input for connecting 2 Full HD
	·	cameras
		1 x HDMI/DVI input to share FHD content from
	Video and Audio	PC/Laptop/Document camera.
е	Inputs	1 x VGA input for content sharing through
	Imputs	PC/Laptop (Optional As per user requirement)
,		1 x Microphone Inputs to support minimum 4
		ceiling microphones.
		2 x RCA/3.5mm stereo line-in
f	Video and Audio	2 x HDMI output for connecting main monitor &
	Outputs	second monitor.
	Outputs	1 x HDMI or USB output for connecting third
		monitor or conference recording using local DVR.
		1 x RCA/3.5 mm stereo line-out
	Other Interfaces	1 x 10/100/1000 LAN port
g	Other interfaces	2 x USB for software upgrade and connecting
		external devices
	1	1 x RS-232/DB9 or equivalent
1_		H.323 and SIP bandwidth up to 6 Mbps
h	Network Features	IPv4 and IPv6 support from day one
	Network reatures	Auto Gatekeeper Discovery, IP Precedence & QoS
		with support for H.323 based lost packet recovery.
		It should support inbuilt multiparty feature with
i	Multisite Feature	support for 1+5 or more sites at 720p through
		additional license from day one.
		Media Encryption (H.323, SIP): AES-128, AES-256
j		
	Security	Authenticated access to admin menus, web interface and telnet API
		Local account password policy configuration
		Global Directory/Centralized Directory/ LDAP
		support
	Other	
k	Standards/features	H224/H.281, H.323 Annex Q, H.225, H.245,
	2 1011111111111111111111111111111111111	H.241, H.239, H.243, H.460
3	Video Conferencing	Camera (For capturing White Board) (Optional):-
	Qty as per user req	, ,
a.	Camera Type	1/2.33" CMOS or better, 1920 x 1080, 60/50 fps
b.	Zoom	Minimum 10X Optical
c.	Horizontal &	*
	Vertical Field of	Horizontal FOV: 65° or more, Vertical FOV: 39° or
	View	more
d.	Pan &Tilt Range	Pan: +/-100° or more, Tilt: +20/-30° or better
e.	Min. illumination	
	and Exposure	Minimum 50 Lux, Auto-iris, AGC
f.		be from the same OEM as the VC codec for complete
-	interoperability.	·

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s. N	Param	eter Specification				
4	Automatic Speaker Tracking Camera (For tracking Trainer and					
	Trainee) (Qt	y as per user requirement)				
		Should be compatible with the OEM camera provided with				
		Base VC system.				
		The system should be capable to automatically zoom in on				
		an active speaker at least 30 feet or more distance from the				
		VC Camera system.				
		Option-I:-				
		It should be possible to connect such two systems via				
		Cascading Mode to ensure every part of the meeting room				
		participants can be focused on to find the appropriate				
		active speaker.				
		OR				
		Option-II:- Speaker tracking camera for trainees/trainer				
		1 11 1				
	04444	should be provided with the camera focusing wired/wireless audio system or camera focusing look at me				
	Standard Features	buttons. For tracking the trainer system should enable the				
	reatures	far site to view the trainer whenever moves from				
	,	l control of the cont				
		whiteboard to another or from podium to whiteboard				
		without even making any noise or sound.				
		(As per user requirement)				
		The system should be capable to show a single stream				
		video of both the active speaker and everyone in the room				
		in a PIP view.				
		The system should have an option to turn the PIP view off.				
		The system should be able to produce data listing the				
		number of participants at the beginning, middle, and end				
		of the VC call.				
		The system should provide an option to turn ON or OFF				
		this feature.				
		The device should be from the same OEM as the VC codec				
5	Tableton Mic	for complete interoperability. rophone (Optional):- Qty as per user requirement				
	rusiotop mic	It should offer consistent, reliable, 360°voice pickup.				
		It should support 22 KHz of high-fidelity audio.				
		Audio cable should be supplied with each microphone.				
	Standard	The microphone should have additional port for connecting				
	Features	another microphone in cascading mode. Lighted button for Mute indication				
		The microphone should be capable to getting directly connected to the VC codec with a digital interface				
		connection.				
		The microphone should be from the same OEM as the VC				
		codec.				
		My Pel				

The how the se of the

Ceiling Mounted Microphones (Optional):- Qty as requirement Standard Features The ceiling microphone system should be su all cables and accessories to mount the sy false ceiling in a VC room. It should offer consistent, reliable, 360° voice	pplied with
Standard Features The ceiling microphone system should be su all cables and accessories to mount the sy false ceiling in a VC room.	pplied with
Features all cables and accessories to mount the sy false ceiling in a VC room.	pplied with
false ceiling in a VC room.	
false ceiling in a VC room.	stem on a
It should offer consistent reliable 360° voice	
VOICE	pickup.
It should be a digital microphone with three	ee or more
cardioid elements or better per microphone.	
Total coverage area for one ceiling microphone	should be
at least 350 square feet or more.	
The ceiling microphone should be capable	to getting
connected in cascading mode (up to 4 microph	nones).
The ceiling microphone should be capable	to getting
directly connected with a digital interface con	nection to
Video Conferencing Codec/Digital Aud	io Signal
Processor	
7 Digital Audio Signal Processor (Optional):- Qty as	per user
requirement	
Standard The device should come with 16 Inputs and 16 Should support 20KHz bandwidth steree A	Outputs.
Should Support Zolkitz Balluwidth Steleo A	EC on all
input channels.	
10-bands of parametric or up to 31-bands gra	phic EQ.
It should provide complete control of devices	over built-
in Ethernet or RS-232	
Should be compatible with both digital	
Microphone arrays and traditional analog microphone	ophones.
Should have an option to cascade multip	le DSP to
support more audio inputs and outputs.	
Optional modular telephony interface cards	(single or
dual-line PSTN, or VoIP telephony cards)	should be
available to expand the functionality. Seamless integration with VC Codec	
8 Wireless Content Sharing Device (Optional):- Qty as	
requirement	per user
Standard It should be possible to share multiple	(up to 4
Features simultaneously)	(up to 4
Content input/resolution:	
■ 1 x HDMI/4K@30fps	
• Airplay 1080p@30fps	
• Miracast 1080p@30fps	
Content output/resolution:	
■ 1 x HDMI/4K@60fps. RGB444	į
0111	annotation
when connected to a touch enabled display.	
It should provide an option to save the	annotated
content.	
Should have a 3.5mm audio output port	-

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S. N.	Parameter	Specification					
		Should have dual network connectivity support:					
		■ 1 x Ethernet 10/100/1000					
		• 802.11ac Wi-Fi wireless networking; IEEE					
		802.11a/b/g/n compatible					
		Should support auto-sensing PoE+ or power through dedicated adapter.					
9	84"/85"/86	" 4K LED Display (Optional) :- Nos and size of display					
	as per user r	- · · · · · · · · · · · · · · · · · · ·					
		tion: 3840x2160 4K Ultra HD					
	b) Contrast F	Ratio: 1200:1 or higher					
	c) Brightness	s: 350 cd/m² or higher					
	d) Viewing Ar	ngle (Horizontal/ Vertical): 178° / 178°					
	e) 2 HDMI or						
	f) Ethernet/	RJ 45-1 and RS 232					
}		n of UL and FCC					
10	<u> </u>	Display (Optional) :- Nos of display as per user					
	requirement						
	a. Resolution	: 3840x2160 4K Ultra HD					
	b. Contrast R	atio: 1200:1 or higher					
•	c. Brightness	: 350 cd /m² or higher					
	d. Viewing Ar	ngle (Horizontal/ Vertical): 178° / 178°					
	e. 2 HDMI or	more					
		RJ 45-1 and RS 232					
	g. Certification	n of UL and FCC					
11	55" 4K LED Display (Optional) :- Nos of display as per user requirement						
		: 3840x2160 4K Ultra HD					
		atio: 1200:1 or higher					
	c. Brightness	: 350 cd /m² or higher					
	d. Viewing Angle (Horizontal/ Vertical): 178° / 178°						
	e. 2 HDMI or	more					
	f. Ethernet/I	RJ 45-1 and RS 232					
	g. Certification	on of UL and FCC					
12							
	Display Panel(Optional) :- Nos and size of interactive display as pe						
	user require	ment					
a.	Resolution: 3	840x2160 4K Ultra HD					
b.	Contrast Rat	io: 1200:1					
c.	Viewing Angl	e (Horizontal / Vertical): 178° / 178°					
d.	2 or more I	IDMI and 1 DP (USB ports as per requirement) with audio					
	connectivity						

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s.n.	Specification/	Paramet	er	
e.	Ethernet/RJ 4	5-1 and	RS 232	
f.	Brightness: 35	0 cd/m ²	or higher	
g.	Tempered glas	s with An	ti-glare coating	
h.				
i.	Built in touch	ooints: Mi	nimum 10 point touch	
13	Touch enabled content monitor with annotation for trainees			
			user requirement	
a.	Screen Size		15" or more	
b.	Resolution		1920x1080 (full HD)	
c.	Connectivity		RS-485/RS-232	
d.	Annotation cap	ability	Available	
e.	White boarding	<u> </u>	Available	
f.	Input connectiv	vity	VGA/HDMI, USB Port	
14	Ceiling Docum	ent Cam	era(Optional):- Qty as per user requirement	
a.	Shooting Area	A minim	num of 380X285 mm shooting area or better	
b.	Zoom		d have a 20X optical zoom or better	
c.	Focus		d have Auto/Manual Focus option	
d.	Image Sensor	· · · · · · · · · · · · · · · · · · ·	d have a 1/3" Image Sensor	
e.	Total Pixel	 	d have a minimum of 5,000,000 or better	
f.	Resolution	It should	d have ≥1000TV line or more	
g.	Image Save	SD card	or better	
h.	Signal	It should	d support the following resolutions:	
	Support	1024×76	58, 1280×1024, 1280×720, 1920×1080 or more.	
i.	White Balance	It should	d have option of Auto/ Manual White Balance.	
j.	Multimedia	It shou	ld have the following Functions: Color/BW,	
			, mirror, rotate, text/graphic, brightness	
•	Function	control, freeze, preview/shooting, electric volume		
			split screen, RGB3×2 matrix	
k.	RS-232 Input		l have RS-232 Port for Control	
1.	Control Made		g Control Options are required:	
	Control Modes		ontrol Panel	
	`		Remote Controller	
m.	Laser mark		RS-232 Control or better	
15				
а	Speakers and Power Amplifier (Optional):- Qty as per user requirement Ceiling Speakers			
	Frequency Range		80 Hz - 20 KHz	
	Power Capacity	·	80 Watts Continuous Program	
			Power 40 Watts Continuous Pink Noise	
	Nominal Coverage		130° Conical Coverage	
	Nominal Sensitivity		86 dB SPL, 1W @ 1 m (3.3ft)	
	Maximum SPL @		102dB	
	Nominal Impedance		16 ohms	

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S.N	. Parameter	· · · · · · · · · · · · · · · · · · ·	Specification		
b	FOH Speakers				
	Frequency Ra	nge	60 Hz - 20 KHz		
	(-10dB)	8-	00 112 - 20 KHZ		
	Power Capaci	ty	200 Watts Continuous Program		
		J	Power100 Watts Continuous Pink Noise		
	Coverage Angl	e	100° x 100° Coverage		
	Nominal Sens	itivity	90 dB SPL, 1W @ 1m (3.3ft)		
	Maximum SPI	@ 1m	110 dB		
	Nominal Impe	dance	8 Ohms		
<u>c</u>	Power Amplif	ier			
a.	Rated Output	Power	Min. 100 Watts per channel @ 8Ω		
b.	Number of cha	nnels	2 Channels		
c.	Sensitivity		1.4V		
<u>d.</u>	Input Impedar	ice	20.0 ΚΩ		
e.	Signal-to-Noise		>97 dB		
f.		Harmonic			
	Distortion (THI		3.070		
16	PODIUM (Opti	onal):- Use	er can specify as per their requirement		
17	Gooseneck M	licrophone	es for local speech re-art		
	Gooseneck Microphones for local speech re-enforcement of Trainees (Optional):- Qty as per user requirement				
	The Microphon	e should h	lave a frequency response of 40 Hz. 4 17 000		
	The Microphone should have a frequency response of 40 Hz to 17,000 Hz or better.				
	The Microphone should have a Cardioids Polar Pattern.				
	Ine Microphon	e should c	ome up with standard 3 DIN VID Comme		
	Line Cartriage s	mould be a	1 20mm Condenser		
18	The Cartridge should be a 20mm Condenser Wireless Lapel/ Head worn Microphone (Optional):- Qty as per				
	user requirement				
	The Microphone should have Frequency hand of LILE 000 MI				
	The microphone should have at least Step 8 Digital Variable Squelch				
	Control Method				
	The microphone should have a ±10ppm Frequency Stability.				
	The microphone should have Auto Scan Receive Mode.				
	The Microphone should have a frequency response of 40Hz to 17000				
	112 of better.				
9	Central Infrast	ructure –	Minimum15 Ports MCU Solution		
	(Optional):- Qty as per user requirement				
		The MCU	must be a dedicated hardware-based		
i	Hardware s	solution fro	om the same OEM as the endpoint.		
		The MCU s	hould support Redundant Power Supply.		
	Capacity 7	The solution	on must support 15 HD1080p30 ports. It		
	r	nust be so	calable to support 50 HD1080p30 ports on		
	ĺt	he same	box/server by adding additional licenses		
			,		
	ĺc	only & w	ithout the need to add hardware and		

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S.N.	Parameter	Specification
		There must not be any artificial limits imposed in terms of number of conference rooms/concurrent conferences. Keeping future scalability into consideration, the number of concurrent conferences must be equal to at least the port capacity being asked for. Additionally, it should be possible to pre assign 100 meeting rooms dedicated for end users. It must be possible to see at least 20 sites simultaneously on the screen. The end points must have the capability to change their local video layout from remote control. The MCU must support 25 layouts.
iii	Resolution support	The MCU must support resolutions up to 1080p@60fps.
iv	Other components	The solution must have native support for H.323 & SIP with the ability of 100 devices registration for H.323 gatekeeper and SIP registrar from day one. The number of concurrent calls supported must be 15 from day one and be scalable to
		100 on the same server by through software license. This must be a dedicated, physically separate server to avoid a single point of failure. The solution must include a management, scheduling and
		provisioning component(s) with capacity of at least 100 devices. This must be a dedicated, physically separate server to avoid a single point of failure. The management system should support provisioning, bandwidth & device management/software upgrade and
		scheduling of 3 rd party video endpoints in addition to the video endpoints of the OEM of the management server. It must be possible to have an Integrated presence-awareness feature that allows users to verify contact availability and status, and seamless enterprise directory integration which simplifies management and ensures contact list accuracy.
		The solution must include a firewall traversal component for SIP & H.323 video endpoints. It must support at least 15 calls. This must be a dedicate, physically separate server to avoid a single point of failure. Should support firewall traversal solution using the H.460 and SIP protocol.
v	Protocols	The solution must include the ability to allow calls from smart phones, tablets and PCs/laptops. The solution must support H.261, H.263, H.264 AVC,
		H.264 SVC, H.264 High Profile/H.265

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.N	Parameter	Specification			
N.	Parameter	tary 1 114 support content sharing using standard			
	8,	the MCU should support content sharing based H.239 and BFCP over H.323 & SIP to up to			
1		reprocessor resolution			
		All components of the solution must support H.323 and SIP			
		_ · · · · · · · · · · · · · · · · · ·			
		It should support G.711, G.729A, G.722, G.722.1, AAC-LD			
		or better Leabard support 20KHz bandwidth with crystal clear audio			
		1 4			
		and stereo sound.			
		D. End Comera Control			
		Coin Control and Automatic Noise Supplession			
		Automatic Gain Control and Macontino on H.323, SIP and			
vi	Security	11 000			
		to the interoperable with standards-based			
vii	1 -	if they are from a different OEM for an ene			
	lity	end points, even if they are from a distribution of the control of			
		1 11 he supplied from day one.			
		Should be supplied from day of should be supplied from the should be supplie			
	Cables and	connectors.			
20	Input / ou	Input / output panels for video, audio & network easing have			
	VGA/ PC Audio/ Speaker/ Control/Microphone/ Ethernet/ USB etc.				
0.1		· · · · · · · · · · · · · · · · · · ·			
21	(Optional):- As per user requirement				
	Switching 8	b Distribution System:			
22	Required S	Switching & Distribution System for establishing the virtual			
	It should support G.711, G.729A, G.722, G.722.1, AAC-LE or better It should support 20KHz bandwidth with crystal clear audic and stereo sound. The MCU must support Lecture Mode, Presentation Mode of Far End Camera Control. Automatic Gain Control and Automatic Noise Suppression The solution must support encryption on H.323, SIP and H.320. Interoperability Interoper				
	Room Inter	riors (Carpeting, Wall Panelling, Acoustic Ceiling)			
23					
	(Optional):-	As per user requirement			
	i .				
24	(Ontional: 9	Oty as per user requirement)			
	Online UPS	5/7.5/10 KVA or higher capacity			
25		- Nos and capacity of UPS as per user requirement			
	(Optional):	- Nos and capacity of ord as per user require			

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S.N	Parameter/ Specification
26	Air Conditioning: AC Type, Capacity & Quantity decided by user (Optional)
27	Room Design & Furniture Real Estate Setup: User can specify as per their requirement (Optional)

WO/RM R.S.Dhaka Assam Rifles

INSP. L.P.Singh

BSF

AC.I Rajendra Singh NSG

INSP. Chittar Mal

Black

SSB

Mahesh Kumar Gaur, AC

umar Gaur, AC S.S. Sikarwar, DC ITBP CISF

P.R.Jha,DC(Comn) CRPF

Rajnish Kumar, PSO(E) BPR&D

Harjinder Singh, DIG(Eqpt)
CRPF

Ajay Kumar Yadav, IPS, IGP(Comn &IT)
CRPF

CRPF

D.S.Rawar, DIG(Comn)

Md. Javed Akthar, IPS, ADG (Comn)
CRPF

Approved/Not Approved

Rajeev Rai Bhatnagar, IPS DG, CRPF

how 16h

TDs of Virtual Class Room

1	General:-		Directives
1	Acheral:-		
	Virtual (Class room should have the below	
	mentioned features		
		earning and Training Virtual Classroom	
a		having Nos of seats Training/Learning	
		l (as per user requirement).	
L.	Number of sites co	nnectivity as required by user for Virtual	
ъ	class room.		Board wi
C	Point to Point (P2P)		Board wi
d	Point to Multipoint	(P2MP)	practically for
	End-to-End secure	communication between all locations	sl no (a)
e ·	with VC endpoints.		(d), (f) to (1
_	Two-way interactiv	re discussion between any two-given	and firm w
f	locations across use	!	submit OE
	Multiple-way inter	ractive discussion between multiple	certificate fo
g	locations in a single		sl no (e).
		content during video/audio call any time,	
	any VC device from	any location during P2P and P2MP calls	
	via following method		
h		II cable	
''	1	cable with 3.5mm stereo input	
	1	eless content sharing device	
	(AirPla		
2	VIDEO CONFERNO		
		Full High Definition Video Conferencing	Board w
а	Package	Codec Contention Video Contenting	check
			practically.
		It should support H.323 & SIP	Board w
		standards for communications. It should support interoperability and	practically
ь	Video Standards	bandwidth saving using video	and firm w
	and Resolutions	compression H.261, H.263, H.264 AVC,	submit OE
		H.264 SVC, H.264 High Profile/H.265	certificate 1
		It should support 1080p@60fps,	protocols.
		1080p@30fps, 720p@60fps,	
		720p@30fps & FCIF.	Board w
		It should support content sharing using standard based H.239 & BFCP.	check
	Content	It should also support audio from PC	practically
С	Standards and	used for content sharing.	and firm w
	Resolutions	It should transmit both people and	submit OF
		content simultaneously to the far end	certificate
		location at 1080p 60fps	protocols.
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_	1 h. Sha (Qo 4 July es T	-
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	_	Secification	Trial Directives
N.	Parameter	Specification	
		It should support G.711, G.728, G.729A,	Board will
		G 722, G.722.1, AAC-LD or better	check
		It should support 20KHz or better	practically
	Audio	bandwidth with crystal clear audio and	and firm
d	Standards and	bandwidth with Cryster of	will submit
u	Features	stereo sound. Automatic Gain Control and Automatic	OEM
	reatures		certificate
		Noise Suppression	for
		Keyboard noise reduction and instant	protocols.
		adaptation echo cancellation	Board will
		2 x HDMI/HDCI input for connecting 2	check
		Full HD cameras	
		1 x HDMI/DVI input to share FHD content	practically
		from DC /I apton/Document camera.	
	Arria and Andio	1 x VGA input for content sharing through	
е	Video and Audio	PC/Laptop	
	Inputs	(Optional As per user requirement)	
		1 x Microphone Inputs to support	
		minimum 4 ceiling microphones.	
İ		minimum 4 centre in etargo line-in	
	·	2 x RCA/3.5mm stereo line-in	Board will
f		2 x HDMI output for connecting main	check
_	Video and Audio	monitor & second monitor.	
	Outputs	1 4 DIAMI OF USB OULDUL IOI COMMODELLE	- I -
	Outputs	third monitor or conference recording	5
		using local DVR.	
		1 x RCA/3.5 mm stereo line-out	Board will
		1 x 10/100/1000 LAN port	Doar
١.,	Other Interfaces	the street of th	check
8	S Caror save	connecting external devices	practically
		connecting external devices	
		1 x RS-232/DB9 or equivalent	Board will
		H.323 and SIP bandwidth up to 6 Mbps	check
		IPv4 and IPv6 support from day one	4:11
	Network Features	Assta Catalzeener Discovery, IP Precedence	,U - 1 mm
1		& QoS with support for H.323 based los	st will submi
		packet recovery.	OEM
	, ,	Patomotiva	certificate
			for protocol
			,
-		It should support inbuilt multipar	ty Dour a
	Martinita	c trans with support for 1+5 or more sit	es check
	i Multisite	at 720p through additional license fro	m practically
	Feature	day one.	
			Board wi
		Media Encryption (H.323, SIP): AES-12	check
		AES-256	practically
		Authenticated access to admin menu	and fir
1	j	Authenticated access to admin month	will subm
	Security	web interface and telnet API	icy OEM
		Local account password	certificate
		configuration	for Med
		Global Directory/Centralized Director	Encryption
1		LDAP support	Jr

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s. N	Par	ameter	Specification	Trial Direc	tives
k	Other		H224/H.281, H.323 Annex Q,	Firm will s	
K	Standards	s/features	H.225, H.245, H.241, H.239,	OEM certific	ate.
			H.243, H.460		
3	Video Conferencing Camera (For capturing White Boa (Optional):- Qty as per user requirement 1/2.33" CMOS or better, 1920			rd)	
a.				Firm will s	hi+
a.	Camera T	ype	x 1080, 60/50 fps	OEM certific	
b.	Zoom			Board will	
		THE REAL PROPERTY OF THE PROPE	Minimum 10X Optical	practically	-
c.	Horizontal Field of Vi		Horizontal FOV: 65° or more,	Board will	check
d.		· · · · · · · · · · · · · · · · · · ·	Vertical FOV: 39° or more Pan: +/-100° or more, Tilt:	practically Board will	obeole
u.	Pan & Tilt	Range	+20/-30° or better	practically	CHECK
e.	Min. illur	nination and	Minimum 50 Lux, Auto-iris,	Board will	check
	Exposure		AGC	practically	
f.	B		from the same OEM as the VC	Board will	check
		complete interd		practically.	
4		c Speaker Tra er user require	cking Camera (For tracking Tra	ainer and Tra	inee)
	(Qty as pe		mpatible with the OEM camera	Board will	check
			Base VC system.	practically.	CIICCII
		The system		Board will	check
		•	zoom in on an active speaker	practically.	
		·	et or more distance from the VC		
		Camera syste Option-I:-	m.	Board will	ob ools
			possible to connect such two	practically.	CHECK
:		l .	Cascading Mode to ensure every	practically.	
		part of the m	eeting room participants can be		
			to find the appropriate active		
		speaker. OR			
		· ·	Speaker tracking camera for		
	Standard	· -	ner should be provided with the	:	
	Features	•	using wired/wireless audio		
			camera focusing look at me		
		•	tracking the trainer system		
			e the far site to view the trainer		
			ves from whiteboard to another		
		*	um to whiteboard without even		
			noise or sound.		
		(As per user r			
			should be capable to show a	Board will	check
			m video of both the active		
		ı -	everyone in the room in a PIP		
		view.	11.1.1	Dec1 '11	-l · 1
		The system state the PIP view of	should have an option to turn	Board will practically.	спеск
L	<u> </u>	Trice Lie view (/11.	practically.	

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S.N.	Parameter	Specification	D-1-1-5
		The system should be able to produce	Trial Directive
		data listing the number of participants at the beginning, middle, and end of the VC call.	practically.
		The system should provide an option to turn ON or OFF this feature.	practically
	M 11	The device should be from the same OEM as the VC codec for complete interoperability.	practically
5	Tabletop M	icrophone (Optional):- Qty as per user re	quirement
		voice pickup.	Board will check
		It should support 22 KHz of high-fidelity audio.	OEM certificate
	Standard	Audio cable should be supplied with each microphone.	practically
	Features	The microphone should have additional port for connecting another microphone in cascading mode.	Board will check practically
		Lighted button for Mute indication	Board will check practically
		The microphone should be capable to getting directly connected to the VC codec with a digital interface connection.	Board will check practically
		The microphone should be from the same OEM as the VC codec.	Board will check practically
6	Ceiling Mou	nted Microphones	
	(Optional):- (Qty as per user requirement	
	Standard Features	The ceiling microphone system should be supplied with all cables and accessories to mount the system on a false ceiling in a VC room.	Board will check practically.
		It should offer consistent, reliable, 360° voice pickup.	Board will check practically.
		better per microphone.	Firm will submit OEM certificate.
		square feet or more.	Firm will submit OEM certificate/Datashe et
		The ceiling microphone should be capable to getting connected in cascading mode (up to 4 microphones).	Board will check practically.
		11	Board will check practically.

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S	. N.	Parameter	r Specification	Maint Division
	7		dio Signal Processor	Trial Directives
	•	(Optional)	:- Qty as per user requirement	
卜		Standard	The device should come with 16	I Day 1
		Features	Inputs and 16 Outputs.	0.1100.11
		reacures		practically.
			Should support 20KHz bandwidth	
			stereo AEC on all input channels.	certificate/Datasheet.
İ			10-bands of parametric or up to 31-bands graphic EQ.	Firm will submit OEM
			It should provide complete control of	certificate/Datasheet
			devices over built-in Ethernet or RS-	
		,	232	practically.
			Should be compatible with both	Board will check
			digital Ceiling Microphone arrays	practically.
		·	and traditional analog microphones.	practically.
			Should have an option to cascade	Board will check
			multiple DSP to support more audio	practically.
			inputs and outputs.	practically.
			Optional modular telephony	Board will check
			interface cards (single or dual-line	practically.
			PSTN, or VoIP telephony cards)	proceedity.
			should be available to expand the	
			functionality.	
			Seamless integration with VC Codec	Board will check
L				practically.
1	8	Wireless C	ontent Sharing Device	
		(Optional):	 Qty as per user requirement 	
		Standard	It should be possible to share	Firm will submit OEM
		Features	multiple (up to 4 simultaneously)	certificate.
			Content input/resolution:	Board will check
			■ 1 x HDMI/4K, 30fps	practically.
			Airplay 1080p@30fps	
	1		Miracast 1080p@30fps	
			Content output/resolution:	
	.	-	■ 1 x HDMI/4K@60fps. RGB444	
	1		Should support content interaction	Board will check
			and annotation when connected to a	practically.
			touch enabled display.	
			It should provide an option to save	
		-	the annotated content.	
			Should have a 3.5mm audio output	Board will check
			port Should have deal	practically.
			Should have dual network	Board will check
			connectivity support:	practically.
			1X Ethernet 10/100/1000	
			• 802.11ac Wi-Fi wireless	
			networking; IEEE	ļ
		+	802.11a/b/g/n compatible	Doord 11 1
			Should support auto-sensing PoE+	Board will check
L			or power through dedicated adapter.	practically.

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S.N	. Specification/Parameter	Trial directive	
9	84"/85"/86" 4K LED Display	T	
	(Optional) :- Nos and size of d	lisplay as ner user requirement	
	4K Ultra HD	Board will check practically.	
	b) Contrast Ratio: 1200:1 o	r Firm will submit OEM certificate.	
	c) Brightness: 350 cd/m ² o	Firm will submit OEM certificate.	
	d) Viewing Angle (Horizontal) Vertical): 178° / 178°	Firm will submit OEM certificate.	
	e) 2 HDMI or more	Board will check practically.	
	f) Ethernet/RJ 45-1 and RS 232	Board will check practically.	
	g) Certification of UL and FCC	Firm will submit UL and FCC certificate.	
10	65" 4K LED Display		
	(Optional) :- Nos of display as	per user requirement	
	Ultra HD	Board will check practically.	
	nigner	Firm will submit OEM certificate.	
	c. Brightness: 350 cd/m² or higher	Firm will submit OEM certificate.	
	d. Viewing Angle (Horizontal/ Vertical): 178° / 178°	Firm will submit OEM certificate.	
	e. 2 HDMI or more	Board will check practically.	
	f. Ethernet/RJ 45-1 and RS 232	Board will check practically.	
	g. Certification of UL and FCC	Firm will submit UL and FCC certificate.	
11	55" 4K LED Display		
	(Optional) :- Nos of display as	per user requirement	
	Oltra HD	Board will check practically.	
	b. Contrast Ratio: 1200:1 or higher	Firm will submit OEM certificate.	
	c. Brightness: 350 cd/m² or higher	Firm will submit OEM certificate.	
	d. Viewing Angle (Horizontal/ Vertical): 178° / 178°	Firm will submit OEM certificate.	
	e. 2 HDMI or more	Board will check practically.	
	f. Ethernet/RJ 45-1 and RS 232	Board will check practically.	
	g. Certification of UL and FCC	Firm will submit UL and FCC certificate.	

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S.N.	Specification/Para	meter	Trial directive
12	55"/65"/84"/85"	/86" LCD/LED touch	/interactive anti-glare
	Display Panel		
	(Optional) :- Nos and size of interactive display as per use		ve display as per user
	requirement		
a.	Resolution: 3840x2	160 4K Ultra HD	Board will check practically.
b.	Contrast Ratio: 120	00:1	Firm will submit OEM certificate.
c.	Viewing Angle (Hor	izontal / Vertical): 178° /	Firm will submit OEM certificate.
d.	2 or more HDMI	and 1 DP (USB ports as	Board will check
		vith audio connectivity	practically.
e.	Ethernet/RJ 45-1		Board will check practically.
f.	Brightness: 350 co	l/m² or higher	Firm will submit OEM certificate.
g.	Tempered glass wi	th Anti-glare coating	Board will check practically.
h.	Certification of UL and FCC		Firm will submit UL and
			FCC certificate.
i.	Built in touch poin	ts: Minimum 10 point	Board will check
	touch		practically and also firm
			will submit OEM
			certificate.
13	Touch enabled co	ntent monitor with anno	otation for trainees
	(Optional):- Qty a	s per user requirement	
a.	Screen Size	15" or more	BOO will check practically.
b.	Resolution	1920x1080 (full HD)	BOO will check
			practically and firm will
		·	submit OEM certificate.
c.	Connectivity	RS-485/RS-232	BOO will check
			practically.
d.	Annotation	Available	BOO will check
	capability		practically.
e.	White boarding	Available	BOO will check
			practically.
f.	Input	VGA/HDMI, USB Port	BOO will check
	connectivity		practically.

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S.N.	Parameter	Specification	Tri	al direc	tive
14	Ceiling Doc	ument Camera			
		Qty as per user requirement			-11-
a.	Shooting	A minimum of 380X285 mm	BOO	will	check
	Area	shooting area or better	practic		-11-
b.	Zoom	It should have a 20X optical	BOO	will	check
		zoom or better	practio		1 1.
c.	Focus	It should have Auto/Manual	BOO		check
		Focus option.	praction		1:4
d.	Image	It should have a 1/3" Image	Firm		submit
	Sensor	Sensor		ertifica	
e.	Total Pixel	It should have a minimum of	Firm	will	submit
		5,000,000 or better		ertifica	
f.		It should have ≥1000TV line or	Firm	will	submit
	Resolution	more	OEM c	ertifica	te.
					1 1
g.	Image Save	SD card or better		will	check
	Illiage Save		praction		1 1
h.		It should support the following	Firm	will	submit
	Signal	resolutions:	OEM o	ertifica	te.
	Support	1024×768, 1280×1024,			
		1280×720, 1920×1080 or			
		more.			
i.	White	It should have option of Auto/	BOO		check
	Balance	Manual White Balance.	practi		
j.		It should have the following		will	check
		Functions: Color/BW,	practi	cally.	
		negative, mirror, rotate,			
	Multimedia	text/graphic, brightness			
	Function	control, freeze,			
		preview/shooting, electric			
		volume control, split screen,			
		RGB3×2 matrix			
k.	RS-232	It should have RS-232 Port for		will	check
	Input	Control	practi		
1.		Following Control Options are	BOO		check
		required:	practi	cally.	
	Control	Control Panel Remote			•
	Modes	• Controller			
		• RS-232 Control or			
		better			
m.	Laser		BOO	will	check
111.	mark	Should be available	pract	ically.	

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S.N.	Parameter S	specification	Trial directive
15	Speakers and P		
		as per user requirement	
а	Ceiling Speaker		
	Frequency	80 Hz - 20 KHz	BOO will check practically
	Range		& also firm will submit
	(-10dB)		data sheet.
	Power Capacity	80 Watts Continuous	
		Program	
		Power 40 Watts Continuous Pink Noise	
	Nominal	130° Conical Coverage	
	Coverage	130 Comear Coverage	
	Nominal	86 dB SPL, 1W @ 1 m	
	Sensitivity	(3.3ft)	
	Maximum SPL	102dB	
	@ 1m:		
	Nominal	16 ohms	
	Impedance		
b	FOH Speakers		
	Frequency	60 Hz - 20 KHz	BOO will check practically
	Range		& also firm will submit
	(-10dB)	200 77 44 6	OEM data sheet.
,	Power Capacity	200 Watts Continuous Program	
		Power 100 Watts	
		Continuous Pink Noise	
	Coverage Angle	100° x 100° Coverage	
	Nominal	90 dB SPL, 1W @ 1 m	
	Sensitivity	(3.3ft)	
	Maximum SPL	110 dB	
	@ 1m	•	
	Nominal	8 Ohms	
	Impedance		
C	Power Amplifier		POOill abadaatia -ll-
a.	Rated Output Power		BOO will check practically & also firm will submit
b.	Number of	channel @ 8Ω 2 Channels	OEM data sheet.
D.	channels	2 Chamiles	OBW data sheet.
c.	Sensitivity	1.4V	
d.	Input	20.0 ΚΩ	
	Impedance		
e.	Signal-to-Noise	>97 dB	
	Ratio		
f.	Total Harmonic	< 0.5%	
	Distortion	·	
	(THD)		

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	Parameter		Trial directive
	PODIUM(Op	tional):- User can specify as per	BOO will check
	their require		practically & firm
			will also submit
			OEM data sheet
17	Gooseneck	Microphones for local speech	re-enforcement of
	Trainees (O	ptional):- Qty as per user requireme	ent
-	The Micror	phone should have a frequency	BOO will check
		40 Hz to 17,000 Hz or better.	practically & firm
	The Microph	none should have a Cardioids Polar	will also submit
	Pattern.	Torio dilotta navo a cumunitari	OEM data sheet.
		none should come up with standard	
	3 PIN XLR C		
	The Cartrios	ge should be a 20mm Condenser	
18	Wireless La	pel/ Head worn Microphone	
	(Optional):-	Qty as per user requirement	BOO will check
		none should have Frequency band of	practically & firm
	UHF 900 M		will also submit
	The microp	hone should have at least Step 8	OEM data sheet.
	Digital Varia	able Squelch Control Method	OBW data SHEEL.
	1	phone should have a ±10ppm	
	Frequency S	Stability.	
		hone should have Auto Scan Receive	
	Mode.		
	The Micro	phone should have a frequency	
	response of	40Hz to 17000 Hz or better.	
19	Central Inf	rastructure – Minimum15 Ports MC	SU Solution
19	Central Inf	- Qty as per user requirement	
19	Central Inf	- Qty as per user requirement The MCU must be a dedicated	BOO will check
19	Central Inf	The MCU must be a dedicated hardware-based solution from the	BOO will check
19	Central Inf	- Qty as per user requirement The MCU must be a dedicated	BOO will check
	Central Inf (Optional):	The MCU must be a dedicated hardware-based solution from the	BOO will check practically.
	Central Inf (Optional):	The MCU must be a dedicated hardware-based solution from the same OEM as the endpoint. The MCU should support Redundant Power Supply.	BOO will check practically.
	Central Inf (Optional):	The MCU must be a dedicated hardware-based solution from the same OEM as the endpoint. The MCU should support Redundant Power Supply. The solution must support 15	BOO will check practically. BOO will check
	Central Inf (Optional):	The MCU must be a dedicated hardware-based solution from the same OEM as the endpoint. The MCU should support Redundant Power Supply. The solution must support 15	BOO will check practically. BOO will check practically & fire
	Central Inf (Optional):	The MCU must be a dedicated hardware-based solution from the same OEM as the endpoint. The MCU should support Redundant Power Supply. The solution must support 15 HD1080p30 ports. It must be	BOO will check practically. BOO will check practically & firm will also submit
	Central Inf (Optional): Hardware	The MCU must be a dedicated hardware-based solution from the same OEM as the endpoint. The MCU should support Redundant Power Supply. The solution must support 15 HD1080p30 ports. It must be scalable to support 50 HD1080p30	BOO will check practically. BOO will check practically & firm will also submit
	Central Inf (Optional):	The MCU must be a dedicated hardware-based solution from the same OEM as the endpoint. The MCU should support Redundant Power Supply. The solution must support 15 HD1080p30 ports. It must be scalable to support 50 HD1080p30 ports on the same box/server by	BOO will check practically. BOO will check practically & first will also submit OEM certificate.
	Central Inf (Optional): Hardware	The MCU must be a dedicated hardware-based solution from the same OEM as the endpoint. The MCU should support Redundant Power Supply. The solution must support 15 HD1080p30 ports. It must be scalable to support 50 HD1080p30 ports on the same box/server by adding additional licenses only &	BOO will check practically. BOO will check practically & firm will also submit OEM certificate.
	Central Inf (Optional): Hardware	The MCU must be a dedicated hardware-based solution from the same OEM as the endpoint. The MCU should support Redundant Power Supply. The solution must support 15 HD1080p30 ports. It must be scalable to support 50 HD1080p30 ports on the same box/server by adding additional licenses only & without the need to add hardware	BOO will check practically. BOO will check practically & firm will also submit OEM certificate.
	Central Inf (Optional): Hardware	The MCU must be a dedicated hardware-based solution from the same OEM as the endpoint. The MCU should support Redundant Power Supply. The solution must support 15 HD1080p30 ports. It must be scalable to support 50 HD1080p30 ports on the same box/server by adding additional licenses only & without the need to add hardware and cascading.	BOO will check practically. BOO will check practically & firm will also submit OEM certificate.
	Central Inf (Optional): Hardware	The MCU must be a dedicated hardware-based solution from the same OEM as the endpoint. The MCU should support Redundant Power Supply. The solution must support 15 HD1080p30 ports. It must be scalable to support 50 HD1080p30 ports on the same box/server by adding additional licenses only & without the need to add hardware and cascading. There must not be any artificial	BOO will check practically. BOO will check practically & firm will also submit OEM certificate.
i	Central Inf (Optional): Hardware	The MCU must be a dedicated hardware-based solution from the same OEM as the endpoint. The MCU should support Redundant Power Supply. The solution must support 15 HD1080p30 ports. It must be scalable to support 50 HD1080p30 ports on the same box/server by adding additional licenses only & without the need to add hardware and cascading. There must not be any artificial limits imposed in terms of number	BOO will check practically. BOO will check practically & firm will also submit OEM certificate. BOO will check practically.
	Central Inf (Optional): Hardware	The MCU must be a dedicated hardware-based solution from the same OEM as the endpoint. The MCU should support Redundant Power Supply. The solution must support 15 HD1080p30 ports. It must be scalable to support 50 HD1080p30 ports on the same box/server by adding additional licenses only & without the need to add hardware and cascading. There must not be any artificial limits imposed in terms of number of conference rooms/concurrent	BOO will check practically. BOO will check practically & firm will also submit OEM certificate. BOO will check practically.
i	Central Inf (Optional): Hardware	The MCU must be a dedicated hardware-based solution from the same OEM as the endpoint. The MCU should support Redundant Power Supply. The solution must support 15 HD1080p30 ports. It must be scalable to support 50 HD1080p30 ports on the same box/server by adding additional licenses only & without the need to add hardware and cascading. There must not be any artificial limits imposed in terms of number of conference rooms/concurrent conferences. Keeping future	BOO will check practically. BOO will check practically & firm will also submit OEM certificate. BOO will check practically.
i	Central Inf (Optional): Hardware	The MCU must be a dedicated hardware-based solution from the same OEM as the endpoint. The MCU should support Redundant Power Supply. The solution must support 15 HD1080p30 ports. It must be scalable to support 50 HD1080p30 ports on the same box/server by adding additional licenses only & without the need to add hardware and cascading. There must not be any artificial limits imposed in terms of number of conference rooms/concurrent conferences. Keeping future scalability into consideration, the	BOO will check practically. BOO will check practically & firm will also submit OEM certificate. BOO will check practically.
i	Central Inf (Optional): Hardware	The MCU must be a dedicated hardware-based solution from the same OEM as the endpoint. The MCU should support Redundant Power Supply. The solution must support 15 HD1080p30 ports. It must be scalable to support 50 HD1080p30 ports on the same box/server by adding additional licenses only & without the need to add hardware and cascading. There must not be any artificial limits imposed in terms of number of conference rooms/concurrent conferences. Keeping future scalability into consideration, the	BOO will check practically. BOO will check practically & firm will also submit OEM certificate. BOO will check practically.
i	Central Inf (Optional): Hardware	The MCU must be a dedicated hardware-based solution from the same OEM as the endpoint. The MCU should support Redundant Power Supply. The solution must support 15 HD1080p30 ports. It must be scalable to support 50 HD1080p30 ports on the same box/server by adding additional licenses only & without the need to add hardware and cascading. There must not be any artificial limits imposed in terms of number of conferences. Keeping future scalability into consideration, the number of concurrent conferences.	BOO will check practically. BOO will check practically & firm will also submit OEM certificate. BOO will check practically.
i	Central Inf (Optional): Hardware	The MCU must be a dedicated hardware-based solution from the same OEM as the endpoint. The MCU should support Redundant Power Supply. The solution must support 15 HD1080p30 ports. It must be scalable to support 50 HD1080p30 ports on the same box/server by adding additional licenses only & without the need to add hardware and cascading. There must not be any artificial limits imposed in terms of number of conferences. Keeping future scalability into consideration, the number of concurrent conferences must be equal to at least the port	BOO will check practically. BOO will check practically & firm will also submit OEM certificate. BOO will check practically.
i	Central Inf (Optional): Hardware	The MCU must be a dedicated hardware-based solution from the same OEM as the endpoint. The MCU should support Redundant Power Supply. The solution must support 15 HD1080p30 ports. It must be scalable to support 50 HD1080p30 ports on the same box/server by adding additional licenses only & without the need to add hardware and cascading. There must not be any artificial limits imposed in terms of number of conference rooms/concurrent conferences. Keeping future scalability into consideration, the number of concurrent conferences must be equal to at least the port capacity being asked for	BOO will check practically. BOO will check practically & firm will also submit OEM certificate. BOO will check practically.
i	Central Inf (Optional): Hardware	The MCU must be a dedicated hardware-based solution from the same OEM as the endpoint. The MCU should support Redundant Power Supply. The solution must support 15 HD1080p30 ports. It must be scalable to support 50 HD1080p30 ports on the same box/server by adding additional licenses only & without the need to add hardware and cascading. There must not be any artificial limits imposed in terms of number of conference rooms/concurrent conferences. Keeping future scalability into consideration, the number of concurrent conferences must be equal to at least the port capacity being asked for Additionally, it should be possible	BOO will check practically. BOO will check practically & firm will also submit OEM certificate. BOO will check practically.
i	Central Inf (Optional): Hardware	The MCU must be a dedicated hardware-based solution from the same OEM as the endpoint. The MCU should support Redundant Power Supply. The solution must support 15 HD1080p30 ports. It must be scalable to support 50 HD1080p30 ports on the same box/server by adding additional licenses only & without the need to add hardware and cascading. There must not be any artificial limits imposed in terms of number of conference rooms/concurrent conferences. Keeping future scalability into consideration, the number of concurrent conferences must be equal to at least the port capacity being asked for	BOO will check practically. BOO will check practically & firm will also submit OEM certificate. BOO will check practically.

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S.N	Parameter	Specification	Trial directive
1		It must be possible to see at least 20	BOO will check
		sites simultaneously on the screen. The	practically.
		end points must have the capability to	
		change their local video layout from	
		remote control. The MCU must support	
		25 layouts.	,
iii	Resolution	The MCU must support resolutions up	Firm will submit
	support	to 1080p@60fps.	OEM certificate.
iv	Other	The solution must have native support	l l
	components	for H.323 & SIP with the ability of 100	OEM certificate.
		devices registration for H.323	
		gatekeeper and SIP registrar from day	
		one. The number of concurrent calls	·
		supported must be 15 from day one and	
		be scalable to 100 on the same server	
		by through software license. This must	
		be a dedicated, physically separate	
		server to avoid a single point of failure.	
		The solution must include a	BOO will check
		management, scheduling and	practically.
		provisioning component(s) with capacity	'
		of at least 100 devices.	
	*	This must be a dedicated, physically	
		separate server to avoid a single point of	
		failure.	
		The management system should	
		support provisioning, bandwidth &	
		device management/software upgrade	
		and scheduling of 3rd party video	
		endpoints in addition to the video	
		endpoints of the OEM of the	
İ		management server.	
		It must be possible to have an	l'
		Integrated presence-awareness feature	practically.
		that allows users to verify contact availability and status, and seamless	
		enterprise directory integration which	
		simplifies management and ensures	
		contact list accuracy.	

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		Specification	Trial directive
1	Parameter	The solution must include a firewall	Firm will submit
Ì		traversal component for SIP & H.323	OEM certificate.
-		raversal Component for Sir Sir Sir	
		video endpoints. It must support at	
		least 15 calls. This must be a dedicate,	
		physically separate server to avoid a	
		single point of failure.	
	1	should support firewall traversal	
		solution using the H.460 and SIP	
	1		
	-	The solution must include the ability to	BOO will check
		allow calls from smart phones, tablets	practically.
		allow calls from smart phones, tables	
		and PCs/laptops.	Firm will submit
v	Protocols	The solution must support H.261,	OFM certificate
		H.263, H.264 AVC, H.264 SVC, H.264	OPINI CCI timodico.
		High Profile/H.265	
		The MCII should support content	
		sharing using standard based H.239	
		and BFCP over H.323 & SIP to up to	
	*	HD1080@30fps resolution.	
	:	All components of the solution must	
	•	support H.323 and SIP from day one.	
		It should support G.711, G.729A,	1
		It should support G.711, G. 2019,	
		G.722, G.722.1, AAC-LD or better	-1
		It should support 20KHz bandwidth	
	· •	with crystal clear audio and stereo	
		sound.	-
		The MCU must support Lecture Mode,	
		Presentation Mode & Far End Camera	•]
		Control	
		Automatic Gain Control and Automatic	
		Noise Suppression	
		The solution must support encryption	Firm will submi
vi	Security	on H.323, SIP and H.320.	OEM certificate.
		the interoperable Wiff	BOO will chec
vii	Interoperabi	The solution must be interoperated the	f practically.
	lity	standards-based end points, even i	
		they are from a different OEM for all the	
		video ports. Any hardware required to	
		interoperability should be supplied from	1
ì		day one	
		The solution must support both dial-in	n
		and dial-out of calls.	
	O-blos one	Compostors: Input/output panels 10	r BOO will chec
20		o & network capille had individ	C practically.
	video, audi	ker/Control/Microphone/Ethernet/USB	
		Ker/ Control/ wherephone, Barerer,	
	etc.	f introl along room	
0.1	Lighting sy	stem for virtual class room.	·
21	(Optional):	As per user requirement & Distribution System: Required Swi	tching & Distributi
	1 - 1 - 1	& Dietribution System. Required Switch	
22	Switching	establishing the virtual class room.	

And She are the grant of the first of the fi

S.N	Parameter	Specification	Trial directive	
23	Room Interiors (Carpeting, Wall Panelling, Acoustic Ceiling)			
	(Optional):- A	(Optional):- As per user requirement		
0.4	Furniture: Cl	nairs & Tables		
24	(Optional):- As per user requirement			
25	Online UPS 5/7.5/10 or higher capacity			
25	(Optional):- Nos and capacity of UPS as per user requirement			
06	Air Condition	ning: AC Type, Capacity & Quantity decide	ed by user	
26	(Optional)			
	Room Design	& Furniture Real Estate Setup: User can	specify as per their	
27	requirement			
	(Optional)			

WO/RM R.S.Dhaka **Assam Rifles**

INSP. L.P.Singh **BSF**

AC.I Rajendra Singh

INSP. Chittar Mal **SSB**

NSG

Mahesh Kumar Gaur, AC S.S. Sikarwar, DC **ITBP**

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Approved/Not Approved

Rajeev Ra Bhatnagar, IPS DG, CRPF