

Samsung & Cisco Webex Hybrid Classroom Solution

Future of learning. On display.

Smart Signage | Flip | Webex Room Kit solution



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About Cisco

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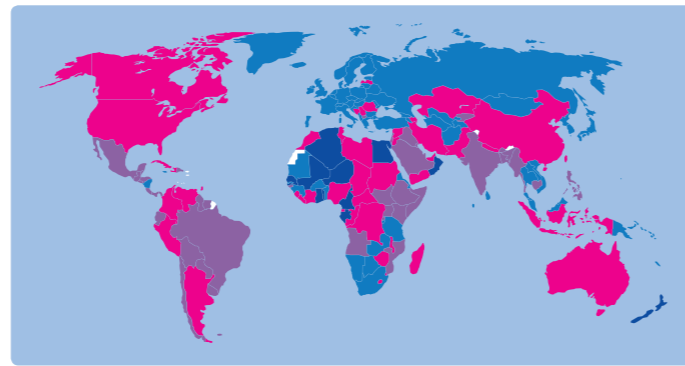
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Changes in the education environment

Educators worldwide face a monumental task adapting their classrooms to ensure the safety of their students in response to the global pandemic. Some schools have had to close and reopen multiple times in response to fluctuating local health conditions. As a result, there is increased demand for a more cohesive digital education experience that utilizes a range of interactive content to support classrooms in the unpredictable environment created by the pandemic. Many educators have shifted to combine face-to-face teaching with online learning. The rapid change to this hybrid education format has put pressure on educational administrators to find the best possible tools and create the optimal classroom setup for academic achievement for students of all ages.

Global monitoring of school closures caused by pandemic



*Source: <https://en.unesco.org/covid19/educationresponse>

New trend: Hybrid learning

Hybrid learning allows students be taught through a mix of in-person and online activities. Students are encouraged to interact with and learn from one another during in-class instruction sessions. Additionally, teachers can share multimedia and other helpful online resources to enhance and reinforce discussions in class with highly engaging materials and information that aren't always available in traditional in-person classrooms. Hybrid learning can also keep students more engaged in their learning, before during and after formal instruction and gives added flexibility to school schedules.

*Source: <https://tophat.com/glossary/h/hybrid-learning/>

"If online learning – or a hybrid online/in-person model - extends into the next academic year (2020-2021) the new normal may prove better than the old. Having raced to close gaps to virtual teaching and learning, K-12 education will likely seek to continue the expanded technology infrastructure, flexibility, and virtual learning benefits to improve education long-term.

- Dr. Christine Greenhow, Associate Professor of Educational Psychology and Educational Technology, Michigan State University.

*Source: <https://www.sciline.org/covid-expert-quotes/online-learning>



Hybrid learning's benefit

- Mixed learning environments combine the most beneficial features of face-to-face and online learning.
- Active participation - Students can participate in live, face-to-face classroom learning and teachers can provide immediate feedback.
 - Greater flexibility - With flexible tools class time can be more productive and schools can save on costs by operating more efficiently.

Difficulties in introducing new solutions

Educators and administrators face several challenges in creating an effective classroom setup for hybrid learning. Even with an optimized solution, implementation of a new tool can be challenging.

Different learning experience

It can be challenging for teachers to provide an equally enriching experience for students in person and online simultaneously. Teachers can't prepare lesson plans solely geared toward the students in the room but focusing entirely on digital tools may also alienate those who are physically present.

Learning with new tools

Overcoming the learning curve of using new technology tools requires time and energy for teachers and for students who are already stretched thin. Students and teachers all come from different backgrounds and may have different comfort levels learning how to use new technology effectively.

Integrating and maintaining new technology

Educational IT managers require tools and systems that are easy to maintain and work well within their existing technology infrastructures. Deploying and integrating new tools can create an additional burden not only at setup but also in training new users and ongoing maintenance.



Why Samsung & Cisco

Leading technology providers Samsung and Cisco offer a solution designed to overcome these common hurdles in hybrid classroom learning. Samsung's industry-leading visual technology provides best-in-class performance for seamless viewing and learning experience between in-person and online. And it is secured by Knox for security and is also available in a range sizes for any classroom with various sized line-up from 55 inches to large 85 inches display. Samsung displays paired with Cisco's intelligent video conferencing platform featuring auto-framing and speaker setting, create a seamless video experience for students and teachers.

Samsung × Cisco Webex

<p>Crystal clear visuals</p> <p>Showcase clear and life-like visuals of both students and teacher as if they are in the same space together and provide enriching educational content with leading picture quality</p>	<p>Hybrid & blended learning solution</p> <p>Delivering an engaging high definition experience that is both natural for teachers to teach and students to learn. Ideate with integrated whiteboards, share with visuals and have fun with virtual games</p>
<p>Intuitive usability</p> <p>An intuitive user experience based on simple UI that is easy to use for both teachers and students creates a more productive classroom environment without long learning curve</p>	<p>Natural and easy to use</p> <p>Consistent join experience at home and in the classroom with "touchless" voice control, transcription and recording so no class is ever missed. See students as home life size as they would be in class</p>
<p>Powerful security</p> <p>The hybrid classroom and all educational content are safely secured with Samsung's powerful proprietary security features powered by Knox</p>	<p>Integrates with Google Classroom and LMS</p> <p>Scheduling and class assignments automatically populate the Webex class devices for easy class starts – either one touch or voice control. Recordings and transcriptions populate back into LMS for easy access</p>

Choose the right solution for your classroom

Every school and each classroom is unique. It's important to choose the right technology solution for your setup. Samsung and Cisco's solutions are customizable and able to fit a wide variety of classroom arrangements and sizes.

Small class room (Up to 10 people)

Samsung's 55- or 65-inch Flip display paired with Cisco's Room Kit Mini is ideal for smaller classrooms. The interactive display paired with Cisco's streamlined collaboration software ensure easy collaboration for all participants.



Medium sized class room (11- 20 people)

For midsize hybrid classrooms, the interactive Flip display can be installed in the front of the classroom with 55- or 65-inch options. An extra display can also be added to the back of the room with Cisco's Room Kit ensuring students who are participating in the class remotely can be seen by the teacher as easily as those in person.



With smaller in-person class sizes that also need to support a larger number of online students participating simultaneously, Samsung Smart Signage can be added to the back of the classroom with Cisco's Room Kit solution. Working in tandem with Samsung's Flip display in the front of the room, this setup ensures teachers can interact effectively both with students in the room and on screen.



Large sized class room (Over 20 people)

For larger classrooms, Samsung's more sizable Flip variants of 65- or 85-inches can be displayed in front of the classroom. This also enables teachers to be remote as needed or to allow other guest instructors to participate in the lesson while maintaining needed physical distance. Samsung's Smart Signage can also be installed in the back of the classroom along with Cisco's Room Kit Pro and advance camera for a wider viewing angle ensuring the entire class is visible.



Key benefits

Integrated hybrid learning solutions from Samsung and Cisco hold the potential to improve classroom learning in a number of ways. Technology tools built for the live, online learning environment with face-to-face learning are creating a new paradigm in education. This new model not only benefits teachers with additional resources for instruction, but also provides a more cohesive learning experience for students impacted by physical school closures. Additionally, it gives much needed flexibility for administrators to provide a simple and safe solution that removes barriers to receiving a high-quality education from anywhere.

Student

Enhanced tools for learning

Samsung and Cisco's seamless video classroom experience helps students stay connected to their teachers as well as their peers. In addition academic performance can be improved with a wider range of communication tools and compelling, interactive content. Students participating in an effective hybrid classroom with Samsung and Cisco technology are able to easily access class materials and participate in group learning wherever they are.

- Seamless classroom experience
- Interactive and rich content
- Simple UX and UI



Teacher

Optimized features for teaching

Samsung and Cisco's bundled solutions for hybrid learning provide teachers with the best tools such as annotation, document viewer and web browser for all participants and their engagement. The hybrid classroom can be adapted to fit the needs of any space or configuration and Samsung displays offer an uninterrupted teaching environment of the highest quality. Powerful connectivity ensures lessons develop seamlessly and an easy-to-use user experience ensures the teacher's focus can remain on the lesson and students.

- Optimized teaching solution
- Enhanced usability
- Multiple mixed offering



Admin/manager

Easy integration for management

IT managers and school administrators benefit from a plug-and-play setup that allows for quick installation and implementation. With powerful security and regular firmware updates, administrators can have peace of mind with a platform that is guaranteed to be safe. Creating a hybrid classroom with Samsung and Cisco technology will also ensure easy integration with other existing platforms and is compatible with third-party solutions.

- Plug-and-play setup
- Advanced integration
- Powerful security and network firmware updates
- Additional benefits of signage for emergency situations

Case study

In early 2020, Oak Meadow School found itself in the same position as many educational institutions at the onset of the pandemic, trying to create a meaningful learning environment for students while safely isolated at home. School leadership had to quickly identify and implement tools and resources for teachers and students while keeping in line with important health and safety requirements. Identifying the right solution was critical to help their students not fall behind.



Challenge

Keeping students engaged

Oak Meadow School needed a solution that went beyond online learning. The goal to create a blended learning environment that kept at-home students from feeling isolated while having a constant connection to teachers and collaborative learning required a technology solution that would also keep students engaged in their own learning. Oak Meadow School sought a solution that provided an effective and user-friendly platform for online teaching so that students could continue to have a rich learning experience. To accomplish this would differentiate Oak Meadow from other schools taking a more simple online approach.

About Oak Meadow school

Founded in 1977, Oak Meadow School cultivates confident, independent, and compassionate lifelong learners by providing the tools and experiences needed to embark on rich, meaningful journeys as responsible citizens of the world. Oak Meadow School supports the development of innovative best practices for 21st century learners with a creative and well-rounded curriculum designed for advanced student learning

Solution

Samsung & Cisco hybrid classroom solution

Samsung and Cisco's bundle solution featuring Samsung's QBR display and Cisco's Room Kit Mini enabled Oak Meadow School to create a hybrid learning environment for multiple classrooms. The solution gave teachers the ability to directly connect with students from home while continuing to use in-room physical features such as a whiteboard. Students were also able to directly participate in their learning by directly communicating with the teacher and their peers. The crystal-clear displays also allowed teachers to show digital content while also giving teachers and students the ability to communicate face-to-face in real time.



Result

High-functioning hybrid learning Environment

The Samsung and Cisco bundle allowed Oak Meadow School to create the exact hybrid learning experience they were looking for and establish a safe classroom environment during the global pandemic. Teachers have expressed their satisfaction in this environment and were able to provide interactive educational content utilizing integrated third-party solutions. Most importantly, the school was able to improve student achievement and engagement. Samsung and Cisco's powerful tools provided the critical features, flexible options and straightforward usability Oak Meadow School needed to create a successful hybrid classroom for their teachers and students.



Model		QB55R	QB65R	QB75R	QM55R	QM65R	QM75R		
Panel	Diagonal Size	55	65	75	55	65	75		
	Class	55.6	64.5	74.5	54.6	64.5	74.5		
	Measured	Edge LED BLU	Edge LED BLU	Edge LED BLU	Edge LED BLU	Edge LED BLU	Edge LED BLU		
	Type	UHD (3840 x 2160)	UHD (3840 x 2160)	UHD (3840 x 2160)	UHD (3840 x 2160)	UHD (3840 x 2160)	UHD (3840 x 2160)		
	Resolution	0.315 x 0.315	0.372 x 0.372	0.42975 x 0.42975	0.315 x 0.315	0.372 x 0.372	0.42975 x 0.42975		
	Pixel Pitch (mm)	1209.6(H) x 680.4(V)	1428.48 (H) x 803.52 (V)	1650.24 (H) x 928.26 (V)	1209.6(H) x 680.4(V)	1428.48 (H) x 803.52 (V)	1650.24 (H) x 928.26 (V)		
	Active Display Area	350	350	350	500	500	500		
	Brightness(Typ.)	4000:1	4000:1	4000:1	4000:1	4000:1	4000:1		
	Contrast Ratio (Typ.)	178/178	178/178	178/178	178/178	178/178	178/178		
	Viewing Angle(H/V)	8ms(Typ.)	8ms(Typ.)	8ms(Typ.)	8ms(Typ.)	8ms(Typ.)	8ms(Typ.)		
	Response Time (G to G)	16.7M(True Display), 1.07B(Dithered 10bit)							
	Display Colors	92% (DCI-P3, CIE 1976)	92% (DCI-P3, CIE 1976)	92% (DCI-P3, CIE 1976)	92% (DCI-P3, CIE 1976)	92% (DCI-P3, CIE 1976)	92% (DCI-P3, CIE 1976)		
	Color Gamut	16/7	16/7	16/7	24/7	24/7	24/7		
Operation Hour	2%	2%	2%	25%	25%	44%			
Haze	MEGA	MEGA	MEGA	MEGA	MEGA	MEGA			
Dynamic C/R	30 - 81kHz	30 - 81kHz	30 - 81kHz	30 - 81kHz	30 - 81kHz	30 - 81kHz			
H-Scanning Frequency	48 - 75Hz	48 - 75Hz	48 - 75Hz	48 - 75Hz	48 - 75Hz	48 - 75Hz			
V-Scanning Frequency	594MHz	594MHz	594MHz	594MHz	594MHz	594MHz			
Maximum Pixel Frequency	Built in Speaker(10W + 10W)	Built in Speaker(10W + 10W)	Built in Speaker(10W + 10W)	Built in Speaker(10W + 10W)	Built in Speaker(10W + 10W)	Built in Speaker(10W + 10W)			
Sound	Speaker Type								
Connectivity	INPUT	RGB	DVI-D	DVI-D	DVI-D	DVI-D, Display Port 1.2 (1)	DVI-D, Display Port 1.2 (1)		
		VIDEO	HDMI 2.0 (2)	HDMI 2.0 (2)	HDMI 2.0 (2)	HDMI 2.0 (2)	HDMI 2.0 (2)		
		HDCP	HDCP 2.2	HDCP 2.2	HDCP 2.2	HDCP 2.2	HDCP 2.2		
		AUDIO	Stereo Mini Jack, DVI/HDMI/Audio(Common)						
		USB	USB 2.0 x 2	USB 2.0 x 2	USB 2.0 x 2	USB 2.0 x 2	USB 2.0 x 2		
		EXTERNAL CONTROL	RS232C(in/out) thru stereo jack, RJ45						
	OUTPUT	RGB	N/A	N/A	N/A	HDMI 2.0 (Loop-out)	HDMI 2.0 (Loop-out)		
		VIDEO	N/A	N/A	N/A	N/A	N/A		
		AUDIO	Stereo Mini Jack	Stereo Mini Jack	Stereo Mini Jack	Stereo Mini Jack	Stereo Mini Jack		
		Power Out	N/A	N/A	N/A	N/A	N/A		
		USB	N/A	N/A	N/A	N/A	N/A		
		EXTERNAL SENSOR	IR	IR	IR	IR	IR		
	Tuner	N/A	N/A	N/A	N/A	N/A	N/A		
Power	Type	Internal	Internal	Internal	Internal	Internal	Internal		
	Power Supply	AC100 - 240 V, 50/60 Hz	AC100 - 240 V, 50/60 Hz	AC100 - 240 V, 50/60 Hz	AC100 - 240 V, 50/60 Hz	AC100 - 240 V, 50/60 Hz	AC100 - 240 V, 50/60 Hz		
	Power Consumption	Max[W/h]	143	181.5	231	143	181.5	231	
		Typical[W/h]	108	128	150	108	131	178	
		Rating[W/h]	130	165	210	130	165	210	
		BTU(Max)	487.6	618.9	787.7	487.6	618.9	787.7	
		Sleep mode	0.5	0.5	0.5	0.5	0.5	0.5	
		Off mode	N/A	N/A	N/A	N/A	N/A	N/A	
		EXTERNAL CONTROL	RS232C(in/out) thru stereo jack, RJ45						
	Mechanical Spec	Dimension(mm)	1235.1 x 707.9 x 46.3	1453.9 x 831.0 x 46.3	1681.1 x 960.1 x 49.7	1235.1 x 707.9 x 46.3	1453.9 x 831.0 x 46.3	1681.1 x 960.1 x 49.7	
		Weight (kg)	Set	140.2 x 85.8 x 16.3	161.1 x 97.3 x 18.5	187.1 x 112.7 x 22.3	140.2 x 85.8 x 16.3	161.1 x 97.3 x 18.5	187.1 x 112.7 x 22.3
			Package	18.1	24.9	38.3	18.1	24.9	38.3
		VESA Mount	200 X 200	400 X 400	400 X 400	200 X 200	400 X 400	400 X 400	
Protection Glass		N/A	N/A	N/A	N/A	N/A	N/A		
Stand Type		Foot Stand (Optional)	No	No	Foot Stand (Optional)	No	No		
Bezel Width (Top/Side/Bot) (mm)		9.2mm(U/L/R), 11.2mm(B)	9.2mm(U/L/R), 11.2mm(B)	11.5mm(U/L/R), 12.5mm(B)	9.2mm(U/L/R), 11.2mm(B)	9.2mm(U/L/R), 11.2mm(B)	11.5mm(U/L/R), 12.5mm(B)		
Operation		Operating Temperature	0°C - 40°C	0°C - 40°C	0°C - 40°C	0°C - 40°C	0°C - 40°C	0°C - 40°C	
	Humidity	10~80%	10~80%	10~80%	10~80%	10~80%	10~80%		
Feature	Key	UHD Signage Display Slim & Light Signage with Built-in MagicInfo S6, SSSP 6.0							
	Special	H/W	Temperature Sensor, Pivot Display, Clock Battery (168hrs Clock Keeping), Built in Speaker(10W 2ch), IP5x Rating, Wi-Fi/BT		Temperature Sensor, Pivot Display, Clock Battery (168hrs Clock Keeping), Built in Speaker(10W 2ch), Video Wall Daisy Chain(HDCP2.2, 4EA, HDCP1.4, 7EA), IP5x Rating, Wi-Fi/BT				
		S/W	Auto Source Switching & Recovery, LFD Home UI, Button Lock, Hot key option, Plug&Play (Initial Setting)						
	Internal Player (Embedded H/W)	Processor	Cortex A72 1.7GHz Quad-Core CPU						
		On-Chip Cache	L1 Instruction Cache : 48KB, L1 Data Cache : 32KB, L2 Cache : 2MB						
		Memory	1.7GHz		1.7GHz		1.7GHz		
		Clock Speed	2.5GB		2.5GB		2.5GB		
		Main Memory Interface	LPDDR4 1.5GHz 64bit		LPDDR4 1.5GHz 64bit		LPDDR4 1.5GHz 64bit		
		Graphics	Graphic resolution : 1920x1080, Output resolution : 3840x2160 (Scale up from graphic processing result.)						
		Storage (FDM)	8GB (3.88GB Occupied by O/S, 4.12GB Available)						
	Multimedia	*Video Decoder : MPEG-1/2/4, H.263, H.264/AVC, UHD H.264/AVC, VC-1, AVS+, HEVC, JPEG, PNG, VP8, VP9 *Audio Decoder : AC3 (DD), MPEG							
	IO Ports	USB 2.0		USB 2.0		USB 2.0			
	Operating System	Tizen 4.0 (VDLinux)		Tizen 4.0 (VDLinux)		Tizen 4.0 (VDLinux)			
Certification	Operating System	60950-1		60950-1		60950-1			
	EMC	Class B		Class B		Class B			
	Environment	ENERGY STAR 8.0, Epeat		ENERGY STAR 8.0, Epeat		ENERGY STAR 8.0, Epeat			
	Security	802.1x(WPA2 Enterprise) : EAP-TLS, EAP-TLS, EAP-PEAP							
Accessories	Included	Quick Setup Guide, Warranty Card, Power Cord, Remote Controller, Batteries							
	Optional	Stand	STN-L4355F	No	No	STN-L4355F	No		
		Mount	WMN40705E (Land Only)	WMN42775E (Land Only)	WMN42775E (Land Only), WMN65755E	WMN40705E (Land Only)	WMN42775E (Land Only)		
		Specialty	CML400XK	CML450K	CML450K	CML400XK	CML450K		
		Media Player	N/A	N/A	N/A	N/A	N/A		

Model		WM55R	WM65R	WM85R		
Panel	Diagonal Size	55"	65"	85"		
	Type	60Hz New Edge	60Hz New Edge	60Hz New Edge		
	Resolution	3,840 x 2,160 (Landscape)	3,840 x 2,160 (Landscape)	3,840 x 2,160 (Landscape)		
	Brightness(Typ.)	350 (without glass), 220 (with glass)	350 (without glass), 220 (with glass)	350 (without glass), 220 (with glass)		
	Contrast Ratio(Typ.)	4000:1 (Typ.)(without glass)	4000:1 (Typ.)(without glass)	4000:1 (Typ.)(without glass)		
	Viewing Angle(H/V)	178-178	178-178	178-178		
	Response Time(G-to-G)	8ms(Typ.)	8ms(Typ.)	6ms(Typ.)		
	Operation Hour	16/7	Built in Speaker (10W x 2)	Built in Speaker (10W x 2CH)		
	Sound	Speaker Type	Built in Speaker (10W x 2)	(Basic) HDMI 2 (With Tray) HDMI 3	HDMI 2(Rear), Front 1), DP1, OPS I/F	
	Connectivity	INPUT	RGB	N/A	N/A	
			VIDEO	(Basic) HDMI 2 (With Tray) HDMI 3	(Basic) HDMI 2 (With Tray) HDMI 3	HDMI 2(Rear), Front 1), DP1, OPS I/F
			AUDIO	N/A	N/A	N/A
USB			(Basic) USB1 (With Tray) USB 2, USB External (In/Out)1	(Basic) USB1 (With Tray) USB 2, USB External (In/Out)1	2(Rear/Front), 2.0/3.0 External(Front)	
OUTPUT		RGB	N/A	N/A	N/A	
		VIDEO	N/A	N/A	HDMI 1 (Screen Share in Front) *HDMI CEC for Cisco RoomKit-mini	
		AUDIO	N/A	N/A	1(Stereo Mini Jack)	
		Touch Out	(Basic) Touch Out 1 (USB Upstream Type), Audio Out 1 (With Tray) Touch Out 2, Audio Out 1, Screen Share(HDMI-Out)1	(Basic) Touch Out 1 (USB Upstream Type), Audio Out 1 (With Tray) Touch Out 2, Audio Out 1, Screen Share(HDMI-Out)1	Touch Out 2 (USB Upstream Type, Front 1, Rear1)	
INTERNAL		SENSOR	(Basic) Acceleration sensor (With Tray) Acceleration sensor, NFC	(Basic) Acceleration sensor (With Tray) Acceleration sensor, NFC	(Basic) Acceleration sensor	
EXTERNAL		CONTROL	RS232C thru stereo jack, RJ45 (MDC)	RS232C thru stereo jack, RJ45 (MDC)	RS232C thru stereo jack, RJ45 (MDC)	
Touch		Type	InGlass™	InGlass™	IR	
		# of Drawing	4 drawing (2048 level touch recognition)	4 drawing (2048 level touch recognition)	4 drawing (2048 level touch recognition)	
		Touch Pen Type	Passive Pen with magnet	Passive Pen with magnet	Passive Pen with magnet	
	Object Recognition Range	2mm/ 4mm / 8mm / 50mm , 2048 Level on Brush Mode	2mm/ 4mm / 8mm / 50mm , 2048 Level on Brush Mode	2mm/ 4mm / 8mm / 50mm , 2048 Level on Brush Mode		
	Touch Response Time	6.7ms	6.7ms	6.7ms		
	Power	Type	Internal	Internal	Internal	
		Power Supply	AC100-240V 50/60Hz	AC100-240V 50/60Hz	AC100-240V 50/60Hz	
Power Consumption		Max[W/h]	154	181.5	418 (OPS 19W/3.7A)	
		Typical[W/h]	80	100	151	
		Rating[W/h]	140	165	380 (OPS 19W/3.7A)	
		Stand-by[W/h]	0.5	0.5	0.5	
BTU[W/h]	525.14	618.915	1,425.38 (OPS 19W/3.7A)			
Dimension (mm)	Set	1297.4(W) x 768.2(H) x 59.9(D)	1522.4(W) x 897.6(H) x 62.9(D)	1942.8(W) x 1144.1(H) x 69.4 (D)		
	Package	1464(W) x 915(H) x 190(D)	1691(W) x 1055(H) x 198(D)	2136(W) x 1311(H) x 260(D)		
	Weight (kg)	Set	28.2	40.0	74.5	
		Package	35.2	50.6	91.5	
Mechanical Spec	Color	Light Gray	Light Gray	Charcoal Black		
	VESA Mount	400 x 400	400 x 400	600 x 400		
	Protection Glass	Yes	Yes	Yes		
	Stand Type	Moving Stand / Wallmount (WMN42775E)	No-Gap Wall Mount	Wall Mount		
	Media Player Option Type	N/A	N/A	OPS Slot support		
	Rotation	Yes	Landscape only with Flip No-Gap Wallmount (Available with rotation support 3rd party accessory as sensor/portrait UX already applied on Flip)	Landscape only		
	Power Cable Length	3m	3m	3m		
	Accessory	Cover-Jack	Cover-Jack	Power Cord, USB Upstream Cable(Zea), Pen(Zea, Black), OPS Box, Warranty/OSG		
	Operation	Operating Temperature	0°C - 40°C	0°C - 40°C	0°C - 40°C	
Feature	Key	Flip App				
	Special	H/W	Super Clear Coating, Temperature Sensor, Pivot Display, Clock Battery (168hrs Clock Keeping), Built in Speaker(10W x 2), WiFi Module Embedded			
		S/W	Super Clear Coating, Temperature Sensor, Pivot Display, Clock Battery (168hrs Clock Keeping), Built in Speaker(10W x 2), WiFi Module Embedded			
	Internal Player (Embedded H/W)	Platform	Muse-M (Tizen 5.0)	Muse-M (Tizen 5.0)	Muse-M (Tizen 5.0)	
		Processor	CA72 Quad(1.7GHz)	CA72 Quad(1.7GHz)	CA72 Quad(1.7GHz) 2MB L2	
		On-Chip Cache	L1 (I/D) : 32KB / 32KB L2 (Unified) : 1MB	L1 (I/D) : 32KB / 32KB L2 (Unified) : 1MB	L1 (I/D) : 32KB / 32KB L2 (Unified) : 1MB	
		Clock Speed	1.7GHz CPU Quad	1.7GHz CPU Quad	1.7GHz CPU Quad	
		Main Memory Interface	LPDDR4 1.6GHz 64bit 2.5GB	LPDDR4 1.6GHz 64bit 2.5GB	LPDDR4 1.6GHz 64bit 2.5GB	
		Graphics	2D & 3D Graphics Engine - Up to 1920x1080, 32bpp - Supports OpenGL ES	2D & 3D Graphics Engine - Up to 1920x1080, 32bpp - Supports OpenGL ES	GPU : MaliG51 MP4@760MHz	
		Storage	8GB (2.65GB Occupied by O/S, 5.35GB Available)	8GB (2.65GB Occupied by O/S, 5.35GB Available)	8GB (2.65GB Occupied by O/S, 5.35GB Available)	
	IO Ports	USB 2.0	USB 2.0	USB 2.0		
	Operating System	Samsung Proprietary OS(VDLinux)		Tizen 5.0 : Samsung Proprietary OS(VDLinux)		
	Certification	Security	802.1x(WPA2 Enterprise) : EAP-TLS, EAP-TLS, EAP-PEAP		802.1x(WPA2 Enterprise) : EAP-TLS, EAP-TLS, EAP-PEAP	
Included		Passive Pen(2), Power Cable, Touch Out Cable (USB upstream)		Power Cord, USB Upstream Cable(Zea), Pen(Zea, Black), OPS Box, Warranty/OSG		
Accessories	Optional	Stand	STN-WM55R	-		
		Wallmount	WMN42775E (Fixed installation)	WMN-WM65R		
		Tray	CY-TF65BRC	CY-TF65BRC		
		Specialty	Flip UX	Flip UX		

Model	Room Kit Mini	Room Kit	Room Kit Pro
Software compatibility	Cisco Collaboration Endpoint Software Version 9.6 or later, and Cisco Webex Room OS	Cisco Collaboration Endpoint Software Version 9.0 or later, and Cisco Webex Room OS	Cisco Collaboration Endpoint (CE) Software Version 9.4 or later, or Cisco Webex Room OS
Default components in Cisco Webex Room Kit Pro	-	-	Cisco Webex Codec Pro, Cisco Webex Quad Camera (a package is also available with the Precision 60 camera), Cisco Touch 10 control unit, Wall mount for Quad Camera
Optional hardware components	HDMI presentation cable 8 m / 26.2 ft., 4 m / 13 ft. USB cable for USB passthrough feature, Screen Mount Kit	Cisco Table Microphone 20, Microphone extension cable, HDMI second monitor cable 1.5 m/4.9 ft., HDMI presentation cable 8 m/26.2 ft.	Cisco Table Microphone (with Euroblock plug), wall mount for Codec Pro, rack mount for Codec Pro, various cables
Bandwidth	Up to 6 Mbps point to point	Up to 6 Mbps point to point	Up to 6 Mbps point to point
Minimum bandwidth for resolution / frame rate	H.264 : 720p30 from 768 kbps, 720p60 from 1152 kbps, 1080p30 from 1472 kbps, 1080p60 from 2560 kbps		720p30 from 768 kbps, 720p60 from 1152 kbps, 1080p30 from 1472 kbps, 1080p60 from 2560 kbps
Firewall traversal	Cisco Expressway™ technology, H.460.18, H.460.19 firewall traversal	Cisco Expressway™ technology, H.460.18, H.460.19 firewall traversal	Cisco Expressway™ technology, H.460.18, H.460.19 firewall traversal
Video standards	H.264	H.264, H.265	H.264, H.265, H.263 for TANDBERG MXP interop only (check Admin Guide)
Video inputs	One HDMI output supports formats up to maximum 4K (3840 x 2160) at 30 fps, including HD1080p60, Consumer Electronics Control (CEC) 2.0		2 HDMI inputs support formats up to maximum 1080p60, 3 HDMI inputs support formats up to maximum UHD (3840 x 2160) @ 30 fps including HD1080p60, One 3G-SDI/HD-SDI input supports formats up to maximum 1080p60 Extended Display Identification Data (EDID), Consumer Electronics Control (CEC) 2.0
Video outputs	1 HDMI output supports formats up to 3840 x 2160p60 (4Kp60), Live video resolutions (encode and decode) up to 1920 x 1080p30 and p60 (HD1080p), Consumer Electronics Control (CEC) 2.0		2 HDMI outputs support formats up to 3840 x 2160@60 fps (4Kp60), 1 HDMI output supports formats up to 3840 x 2160@30 fps (4Kp30), CEC 2.0
Encode and decode	-	-	Video stream: Full HD 1080p60, Content stream: 4K 2160p15
Audio standards	G.711, G.722, G.722.1, G.729, AAC-LD, and Opus	G.711, G.722, G.722.1, G.729, AAC-LD, and Opus	G.711, G.722, G.722.1, G.729AB, 64 kbps and 128 kbps MPEG4 AAC-LD mono and stereo, OPUS
Audio features	High-quality 20 kHz audio, Automatic Gain Control (AGC), Automatic noise reduction, Active lip synchronization	High-quality 20 kHz audio, Prepared for subwoofer (line out), Prepared for inductive loop (line out), Automatic Gain Control (AGC), Automatic noise reduction, Active lip synchronization	High quality 20-kHz audio, 8 separate acoustic echo cancellers, 8-port audio mixer, 8 assignable equalizers, Automatic Gain Control (AGC), Automatic noise reduction, Active lip synchronization
Audio inputs	One audio in from HDMI, Internal microphones	Two microphones, 4-pin mini-jack, One audio in from HDMI, Internal microphone	8 microphones, 48V phantom powered, Euroblock connector, each with separate echo cancellers and noise reduction; all microphones can be set for balanced line level, 3 HDMI, digital: stereo PC/DVD input
Audio outputs	-	1 line out mini-jack (stereo)	6 balanced line level outputs, Euroblock connector, 3 HDMI outputs, HDMI input #1 supports Audio Return Channel (ARC) audio output to Quad Camera, 1 line out for subwoofer (Quad Camera)
Speakers	-	High-quality speakers: five speakers in balanced configuration, Frequency response 70 Hz to 20 kHz, Amplifier power: 24W, Max output level SPL 86 dB	High-quality speakers, Frequency response 70 Hz to 20 kHz, Max output level SPL 90 dB
Speaker tracking	-	6-element microphone array for accurate speaker tracking	6-element microphone array for accurate speaker tracking
MultiSite	H.239 (H.323) dual stream, Binary Floor Control Protocol (BFCP) (SIP) dual stream, Supports resolutions up to 3840 x 2160p5		
Dual stream	One HDMI input supports formats up to maximum 4K (3840 x 2160) at 30 fps, including HD1080p60, Consumer Electronics Control (CEC) 2.0	H.239 (H.323) dual stream, Binary Floor Control Protocol (BFCP) (SIP) dual stream, Supports resolutions up to 3840 x 2160p5	H.239 (H.323) dual stream, BFCP Session Initiation Protocol (SIP) dual stream, Supports resolutions up to 3840 x 2160p15 fps and 1080p60
Wireless sharing	Cisco Webex Teams App (up to 3840 x 2160p5), Cisco Webex Meetings App (up to 3840 x 2160p5), Cisco Intelligent Proximity client (up to 1920 x 1080p5)	Cisco Webex Teams app (up to 3840 x 2160p5), Cisco Intelligent Proximity client (up to 1920 x 1080p5)	Cisco Webex clients (up to 3840 x 2160p5), Cisco Intelligent Proximity client (up to 1920 x 1080p5)
Multipoint support	4-way embedded SIP/H.323 conferencing capability with MultiSite option	4-way embedded SIP/H.323 conferencing capability with MultiSite option	5-way embedded SIP/H.323 conferencing capability with MultiSite option
MultiSite features	Adaptive SIP/H.323 MultiSite : 3-way resolution up to 1080p30 + content up to 1080p15, 4-way resolution up to 720p30 + content up to 1080p15, Full individual audio and video transcoding, H.323/SIP/VoIP in the same conference, Support for presentation (H.239/BFCP) from any participant at resolutions up to 3840 x 2160p5, Best impression (automatic continuous presence layouts), Encryption and dual stream from any site		Adaptive SIP/H.323 MultiSite, 3-way resolution up to 1080p30 plus content up to 4Kp15, 4-way resolution up to 720p30 plus content up to 4Kp15, 5-way resolution up to 720p30 plus content up to 4Kp15, Full individual audio and video transcoding, H.323, SIP and VoIP in the same conference, Support for presentation (H.239, BFCP) from any participant at resolutions up to 3840 x 2160p5, Best impression (automatic continuous presence layouts), Encryption and dual stream from any site
Protocols		H.323, SIP, Cisco Webex	
Embedded encryption		H.323 and SIP point-to-point, Standards-based: H.235 v3 and Advanced Encryption Standard (AES), Automatic key generation and exchange	
IP network features	DNS lookup for service configuration, Differentiated services (Quality of Service [QoS]), IP-adaptive bandwidth management (including flow control), Automatic gatekeeper discovery, Dynamic playout and lip-sync buffering, H.245 Dual-Tone Multifrequency (DTMF) tones in H.323, RFC 4733 DTMF tones in SIP, Date and time support using Network Time Protocol (NTP), Media adaptation and resilience, Uniform Resource Identifier (URI) dialing, Dynamic Host Configuration Protocol (DHCP), 802.1X network authentication, 802.1Q Virtual LAN, 802.1p QoS and Class of Service (CoS)		DNS lookup for service configuration, Differentiated Services (DiffServ) (Quality of Service [QoS]), IP-adaptive bandwidth management (including flow control), Automatic gatekeeper discovery, Dynamic playout and lip-sync buffering, H.245 dual-tone multifrequency (DTMF) tones in H.323, DTMF tones in SIP, RFC 4733, Date and time support using Network Time Protocol (NTP), Packet loss-based down speeding, Uniform Resource Identifier (URI) dialing, TCP/IP, Dynamic Host Configuration Protocol (DHCP), 802.1X network authentication, 802.1Q Virtual LAN, 802.1p QoS and class of service, Cisco Media Assure and ClearPath
Call control	Cisco Unified Communications Manager (Unified CM), Native registration with Unified CM, Requires Unified CM Version 9.1(2) or later with device pack Room Kit Mini, Cisco Expressway, Native registration with Expressway, Cisco Webex Service, Third-party H.323 gatekeepers and standards-based SIP proxies	Cisco Unified Communications Manager (CUCM), Native registration CUCM, Requires CUCM Version 10.5.2 or later with device pack Room Kit Plus, Cisco Expressway, Native registration with Expressway, Cisco Webex, Third-party H.323 Gatekeepers and standards-based SIP proxies	Cisco Collaboration Cloud / Webex, Cisco Unified Communications Manager (CUCM), Native registration CUCM, Requires CUCM Version 10.5.2 or later with device pack for Room Kit Pro, Cisco TelePresence Video Communication Server (VCS), Native registration with VCS, Third-party H.323 gatekeepers and standards-based SIP proxies
IPv6 network support	Single call stack support for both H.323 and SIP, Dual-stack IPv4 and IPv6 for DHCP, SSH, HTTP, HTTPS, DNS, DiffServ, Support for both static and automatic IP configuration (stateless address auto configuration)		Single call stack support for both H.323 and SIP, Dual-stack IPv4 and IPv6 for DHCP, SSH, HTTP, HTTPS, DNS, DiffServ, Support for static IP address assignment, stateless auto-configuration, and DHCPv6
Security features	Management using HTTPS and SSH, IP administration password, Menu administration password, Disable IP services, Network settings protection, Privacy cover	Management using HTTPS and SSH, IP administration password, Menu administration password, Disable IP services, Network settings protection	Management using HTTPS and SSH, IP administration password, Password to access administration features on Touch controller, Disable IP services, Network settings protection
Certificate management		Certificate Authority Proxy Function (CAPF) support for additional security, Manufacturer-Installed Certificates (MIC), Locally Significant Certificates (LSC), X.509 Digital Certificates (DER encoded binary), both DER and Base-64 formats are acceptable for the client and server certificates; certificates with a key size of 1024, 2048, and 4096 are supported	Certificate Authority Proxy Function (CAPF) support for additional security, Manufacturer-Installed Certificates (MIC), Locally Significant Certificates (LSC), X.509 Digital Certificates (DER encoded binary), both DER and Base-64 formats are acceptable for the client and server certificates; certificates with a key size of 1024, 2048, and 4096 are supported
Other interfaces	1 USB 2.0 port type A, 1 USB 2.0 port type C, 1 µUSB port, Factory reset pinhole	USB 2.0 port, µUSB, factory reset pinhole	2x USB A port, USB-B, uUSB, factory reset pinhole
Network interfaces	One Ethernet (RJ-45) 10/100/1000 for LAN, One Ethernet (RJ-45) for Cisco Touch 10 direct pairing, Wi-Fi 802.11a/b/g/n/ac 2.4 GHz/5 GHz, 2x2 MIMO	One Ethernet (RJ-45) 10/100/1000 for LAN, One Ethernet (RJ-45) for Cisco Touch 10 direct pairing, Wi-Fi 802.11a/b/g/n/ac 2.4 GHz/5 GHz, 2x2 MIMO	1 Ethernet (RJ-45) 10/100/1000 for LAN, 2 Ethernet (RJ-45) 10/100/1000 for direct pairing with camera (camera control), 2 Ethernet (RJ-45) 10/100/1000 with PoE, 1 dedicated for direct pairing with Touch 10, Wi-Fi 802.11a/b/g/n/ac 2.4 GHz and 5 GHz for LAN, 2x2 multiple input and multiple output (MIMO)
Power supplies	100 to 240 VAC, 50/60 Hz, 12V DC input, Average 20W, peak 70W, Must be used with power supply FSP FSP070-AHANZ or AcBel ADF019	100 to 240 VAC, 50/60 Hz, 12V DC input, Average 20W, peak 70W	100 to 240 VAC, 50/60 Hz, 12V DC input, Standby 6W, average 20W, peak 70W
Operating temperature and humidity	0°C to 35°C (32°F to 104°F) ambient temperature, 10% to 90% Relative Humidity (RH)	0°C to 40°C (32°F to 104°F) ambient temperature, 10% to 90% Relative Humidity (RH)	0°C to 40°C (32°F to 104°F) ambient temperature, 10% to 90% Relative Humidity (RH)
Storage and transport temperature	-20°C to 60°C (-4°F to 140°F) at RH 10% to 90% (noncondensing)	-20°C to 60°C (-4°F to 140°F) at RH 10% to 90% (noncondensing)	-20°C to 60°C (-4°F to 140°F) at RH 10% to 90% (noncondensing)
Locking mechanism		Kensington security lock	
Dimensions	Set	Width: 197 in. (50.0 cm), Height: 3.2 in. (8.1 cm), Depth: 3 in. (7.7 cm), Weight: 4 lb. (1.5 kg)	Width: 27.5 in. (70.0 cm), Height: 3.5 in. (10.6 cm), Depth: 2.9 in. (8.8 cm), Weight: 7 lb. (3.2 kg)
	Package	Width: 23.8 in. (60.5 cm), Height: 12.8 in. (32.6 cm), Depth: 8.5 in. (21.6 cm), Weight: 7 lb. (3.2 kg)	
Camera overview	4K UltraHD camera, Supports up to 60 fps (max 30 fps with best overview enabled), 8 MP image sensor, 1/4 CMOS, 5x zoom, 1/14 aperture, 120° horizontal field of view, Auto framing (face detect), Auto brightness, and white balance, Focus distance 1 m to infinity	5K UltraHD camera, Supports up to 60 fps (max 30 fps with speaker tracking and best overview enabled), 15.1 MP image sensor (5184 x 2916 pixels), 1/1.7 CMOS, 3x zoom, f/2.0 aperture, 83° horizontal field of view, 51.5° vertical field of view, Auto framing (audio + face detect), Auto focus, brightness, and white balance, Focus distance 1 m to infinity	5K Ultra HD camera, Support up to 60 fps, 15.1 MP image sensor, 1/1.7 CMOS, 6x digital zoom (3 tele-lenses each with 50° horizontal field of view), f/2.0 aperture, 83° horizontal field of view, 51.5° vertical field of view, Auto-framing (audio + face detect)

Model	P60
Resolution	1920 x 1080 at 60 fps
Zoom	10x Optical Zoom, 2x Digital Zoom, 20x Total Zoom
Pan and tilt	Pan range: +/- 100 degrees , Tilt range: +/- 20 degrees
Field of view (FoV)	Horizontal FoV: 80 degrees , Vertical FoV: 48.8 degrees
Focus distance	1.0m to infinity (wide)
F-value	1.5
Camera control	Ethernet
Focus, white balance, and brightness	Manual or automatic
IP network features	DNS lookup for service configuration , Date and Time support via NTP, TCP/IP, DHCP
Network interfaces	One LAN/Ethernet (RJ-45) 10/100 Mbit
Video interfaces	HDMI 1.4, 3G-SDI
Power	12V/3A, 100-120/200-240 VAC, 50/60 Hz
Operating temperature and humidity	0 to 40°C (32 to 104°F) ambient temperature , 10 to 90% relative humidity (RH)
Storage and transport temperature	-20 to 60°C (-4 to 140°F) at RH 10-90% (noncondensing)
Dimensions	Length: 10.6 in. (26.8 cm) , Height: 6 in. (15.2 cm), Depth: 6.4 in. (16.3 cm), Weight: 5.5 lbs (2.5 kg)

Note