



# Teaching & Learning Space Design Guide



# OVERVIEW

With Instructional Technology, the most important factor to consider is the ways technology will enhance the communication of the course material from the faculty to the students. Technology should not detract from learning or be make teaching more difficult. It should offer an excellent user experience for instructors whether the room is being used for the very first time or has been used all semester.

At Crestron, we work with all types of educational institutions from universities, colleges, trade schools, private schools, and K-12 school districts around the world. While system requirements are often unique, there are common learning space types for the education market. We created this design guide to serve two types of readers:

For Designers and Specifiers of educational technology, each design has been crafted to be used as-is or can be customized to your system requirements. This guide can help explain to faculty and staff how a type of space will be used.

For those who are new to technology design, they can use these examples to quickly understand the different use cases or to request specific space types from architects, consultants, facility managers, or AV integrators.

All of the application drawings, line diagrams, Revit files, CAD Blocks, and Crestron quotes which include an educational discount can be found on the [Crestron Design Database](#).

If you have any questions, or need assistance with any of your system designs, please contact the dedicated Sales Support Services team at:  
[techsales@crestron.com](mailto:techsales@crestron.com) | 888-273-7876 (Option 3)



## FEATURES

# OVERVIEW



### Crestron XiO Cloud® Solution

Zero touch provisioning and management utilizing Crestron XiO Cloud® service with direct connection to Microsoft® Azure® IoT Hub



### .AV Framework™ Web Based Configuration

Web-based configuration with zero programming utilizing Crestron .AV Framework™

## DM NVX

### DM NVX® AV Over IP Solution

Pixel perfect processing with zero latency AV over IP utilizing DM NVX™ endpoints

## DM® Lite

### DM Lite® AV Solution

An ecosystem of low cost interchangeable signal extenders utilizing DM Lite AV Solutions



### DigitalMedia™ AV Platform Distribution

A complete end-to-end traditional video distribution system utilizing a Crestron DigitalMedia switcher



### AirMedia® Wireless Presentation Platform

Wireless collaboration presentation using a laptop, tablet or smartphone utilizing Crestron AirMedia wireless technology



### Dante® Network Audio

Complete media networking solution that enables digital audio distribution via standard ethernet networks that delivers ultra low latency audio

## **.AV Framework** **Web Based Configuration**

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With Crestron .AV Framework web based configuration you can deploy simple, scalable Crestron Enterprise Room Solutions without any programming. If you know how to use a web browser, then you can deploy a Crestron system using .AV Framework web based configuration.

You can open the .AV Framework setup and management tool in your favorite web browser to easily select sources and displays, configure device control for Blu-Ray Disc® players, cable TV and video servers. Easily add a TSW-X70 series touch screen and automatically generate the GUI for single or multiple display system.

Easily add an MPC 3-Series® button panel for simple control of single display systems. With .AV Framework web based configuration you can also add a PoE occupancy sensor for additional system automation. Easily deploy to multiple rooms by saving your configuration to a standard XML file and then push it out to hundreds or even thousands of rooms at once over the network!

With .AV Framework web based configuration you get a consistent user experience in every room by automatically generating a consistent GUI so every room works the same and anyone can easily use it, all with NO PROGRAMMING!

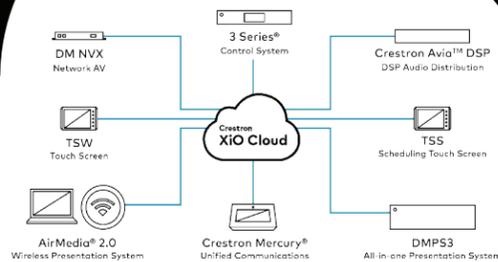




Microsoft  
Azure®

Crestron  
**XiO CLOUD**™

- 100% Direct Cloud Solution
- No Additional Hardware/Software/Infrastructure
- Hyperscale Bandwidth & Global Availability
- Bidirectional Data Monitoring/Management
- AV, UC, VC, IT, Environmental, Scheduling Reporting
- Enterprise Grade Security Down To The Device Level



## XiO Cloud Service

NATIVE SUPPORT BUILT INTO  
DOZENS OF MODELS, COVERING  
ALL WORKSPACE FUNCTIONALITY

- AV over IP
- AV Distribution & Control
- IoAV Alliance/ OPS Slot Displays
- Native Integrated UC/VC systems
- Audio/DSP
- Wireless Presentation
- Touchscreens
- Open-Platform Room Scheduling
- Digital Signage
- 3rd Party Devices (via API/SDK)
- Zero Fees for Maintenance & Updates

END-TO-END AZURE® IOT SECURITY  
AND MANAGEMENT:

- Per Device Certificates
- Per Device Enable/Disable
- TLS Security
- X.509 Support
- HTTPS, AMQP, MQTT over webSockets
- IP Whitelisting/Blacklisting
- Device Provisioning Service
- Firmware/Software Updates
- Device to Cloud/Cloud to Device Messaging
- File Upload from Device
- Device Twin Management
- API/SDK Support for 3rd Party Device/Driver Integration

[XiO Cloud Supported Devices](#)

The Crestron XiO Cloud® service is Crestron's unifying IoT based platform for remotely provisioning, monitoring, and managing Crestron devices across an enterprise or an entire client base. Supports a direct device-to-cloud connection via the Microsoft® Azure® software IoT Hub without requiring any additional hardware.

**CLICK HERE**

**Crestron XiO Cloud®**  
Technology Operations  
Management Platform

**Access all of your workplace technology in one place**

From personal spaces to lecture halls, lobbies to lounges, esports to video walls, you can see and control all your digital workplace and content distribution technology everywhere.

# ALL-IN-ONE CLASSROOM

CLASSROOM DESIGN FOR 15 – 45 STUDENTS WITH WIRED AND WIRELESS PRESENTATION CAPABILITIES FOR VIDEO AND AUDIO, ONE PROJECTOR, ALONG WITH TOUCH SCREEN CONTROL

- Complete 4K AV presentation control and signal routing using the DMPS3-4K-250-C
- DMPS3-4K-250-C can accommodate different sources such as, PCs, laptops, document cameras, and more
- DMPS3-4K-250-C has built-in DSP and power amplifier, so no need for extra equipment such as, DSPs and amplifiers, simplifying the design and saving money
- Students can wirelessly present content from laptops, smart phones, and tablets utilizing the AM-3200 for seamless collaboration and sharing
- Students can present two sources simultaneously with the AirMedia Canvas feature. AirMedia Canvas supports a maximum of two sources out of the box or nine sources with a software license (sold separately, coming soon)
  - AirMedia Canvas automatically configures the best possible layout based on the number of active sources, the type of sources, and their aspect ratios

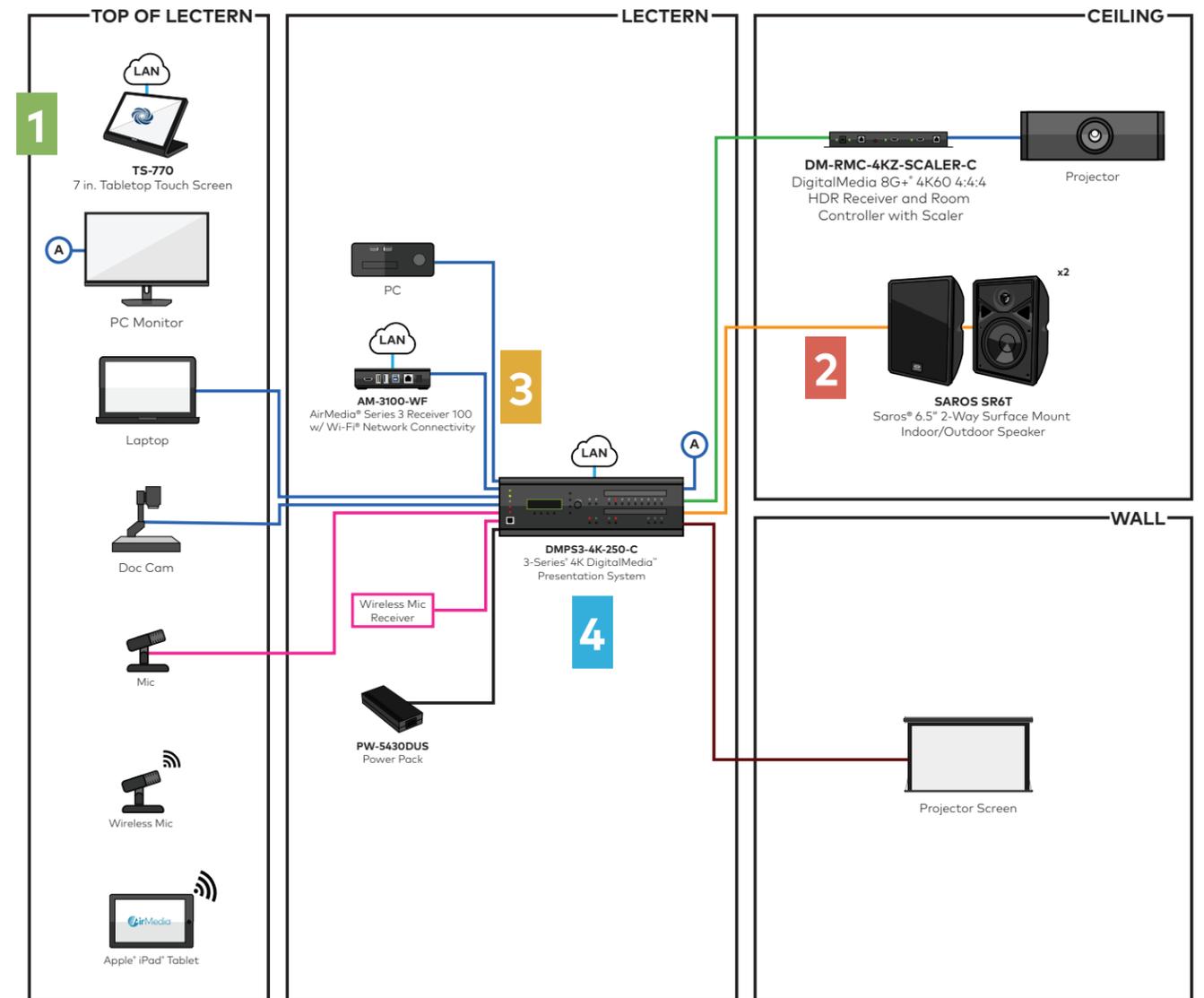
## FEATURES



## BOM EXAMPLE

| COUNT | NAME                |
|-------|---------------------|
| 1     | AM-3100-WF          |
| 1     | DMPS3-4K-250-C      |
| 1     | DM-RMC-4KZ-SCALER-C |
| 1     | PW-5430DUS          |
| 2     | SAROS SR6T          |
| 1     | TS-770              |

## SAMPLE SYSTEM DRAWING



Wire Legend: ● CAT 5/6 ● HDMI® CABLE ● DM ● SPEAKER ● AUDIO ● CONTROL ● POWER

## KEY FEATURES

- Instructors can easily route students' content of their choice to the display using an easy-to-use touchscreen
- Native branded audio system with direct connection to the DMPS3-4K-250-C as part of the Crestron ecosystem
- Cloud capabilities embedded at the device level, without requiring programming or additional on-premises hardware/software/infrastructure
- Built-in digital signal processor and power amplifier allows the unit to directly drive a pair of stereo speakers

# STANDARD CLASSROOM

## CLASSROOM DESIGN FOR 15 – 45 STUDENTS WITH MULTIPLE WIRED PRESENTATION SOURCES, ONE PROJECTOR AND BUTTON PANEL CONTROL

- Complete 4K60 4:4:4 AV presentation system with enhanced HDMI® video switching with the HD-PS401
- Automatic switching of inputs between PC, Doc Cam and laptop
- HD-PS401 features a 4K60 4:4:4 video scaler, when this is enabled, text overlay, image overlay, and a background image can be displayed on-screen if desired.
  - Text overlay can be used to display dynamic or fixed text for purposes such as displaying special instructions for testing, class schedules/agendas, announcements, alerts, or other messaging
- Out of the box functionality means deploying this classroom campus wide is simple to scale
- Advanced security features and protocols using 802.1X authentication, Active Directory® credential management, PKI authentication, TLS, SSH, and HTTPS, provides a true enterprise-grade AV switcher and IT compliant design

## FEATURES

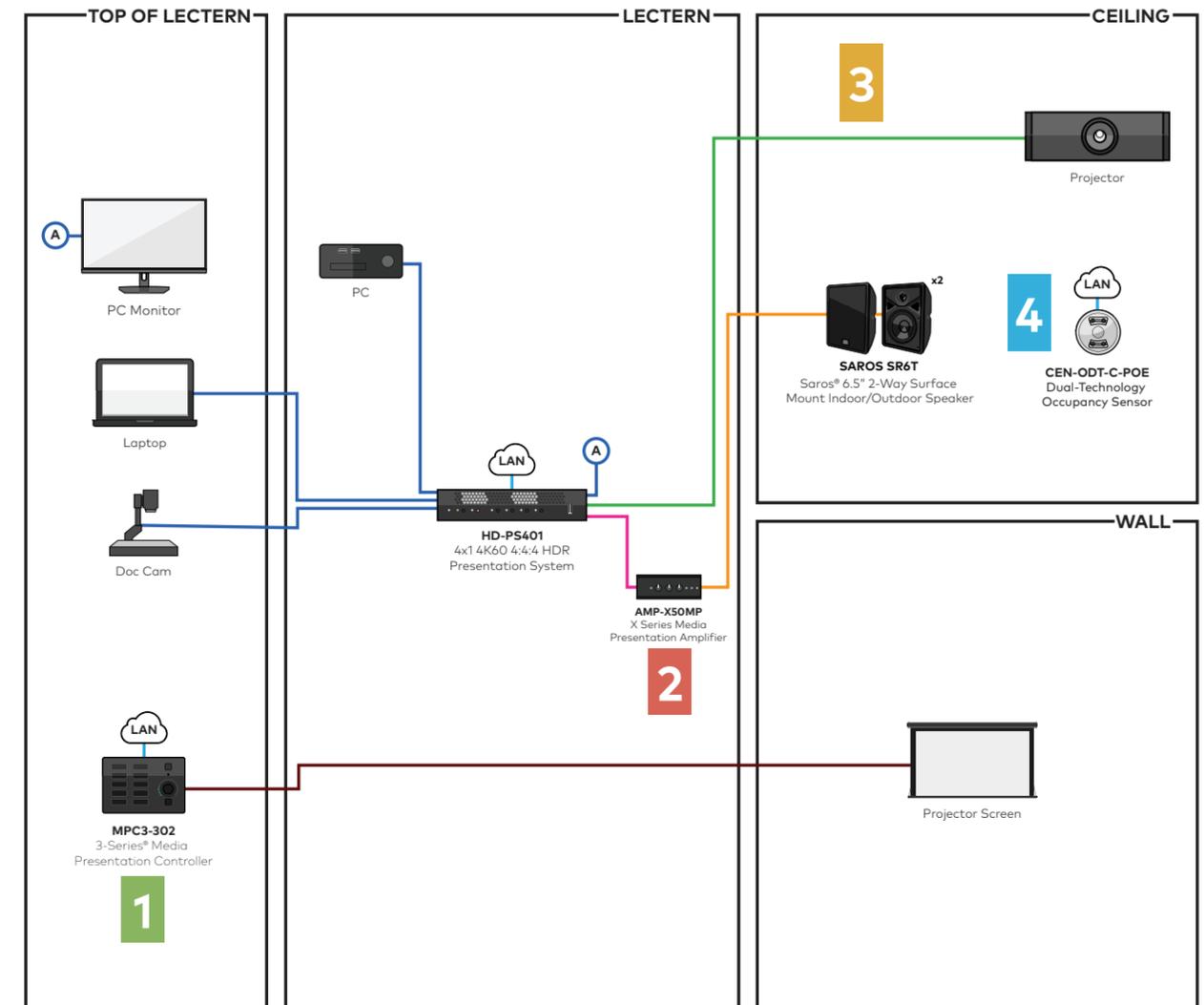
Crestron **DIGITALMEDIA™** .AVFramework

Crestron **XIO CLOUD®**

## BOM EXAMPLE

| COUNT | NAME          |
|-------|---------------|
| 1     | HD-PS401      |
| 1     | AMP-X50MP     |
| 1     | MPC3-302      |
| 1     | CEN-ODT-C-POE |
| 2     | SAROS SR6T    |

## SAMPLE SYSTEM DRAWING



Wire Legend: ● CAT 5/6 ● HDMI® CABLE ● DM ● SPEAKER ● AUDIO ● CONTROL ● POWER

## KEY FEATURES

- 1** Built in 3-Series® control processor allows for integration and control of room peripherals such as lighting, shades and HVAC
- 2** Compact and versatile power amplifier easily installs into the lectern
- 3** The DM Lite output is designed using HDBaseT Alliance specifications, ensuring interoperability with other HDBaseT certified devices. The DM Lite output can be connected directly to an HDBaseT device.
- 4** Integrated PoE occupancy sensor can automate the room when motion is detected

# BUDGET FRIENDLY CLASSROOM

SIMPLE, YET COST-EFFECTIVE DESIGN TO HANDLE WIRED AND WIRELESS PRESENTATION FROM SEVERAL SOURCES ALL GOING TO ONE PROJECTOR WITH BUTTON PANEL CONTROL

- Commercial grade and purpose built equipment offering enterprise grade security at the device level making for an IT compliant design
- Utilize low cost and high performance signal extension using Crestron DM Lite™ as part of the entire Crestron ecosystem
- Securely present wirelessly using a laptop, tablet, or smartphone using the AM-3200 featuring enterprise grade security
- 100% IoT cloud solution using Crestron XiO Cloud® service with a direct connection to Microsoft® Azure® IoT hub with access to the Crestron Help Desk
- Students can hear instructional videos and more with premium quality, utilizing native Crestron speakers and amplifier

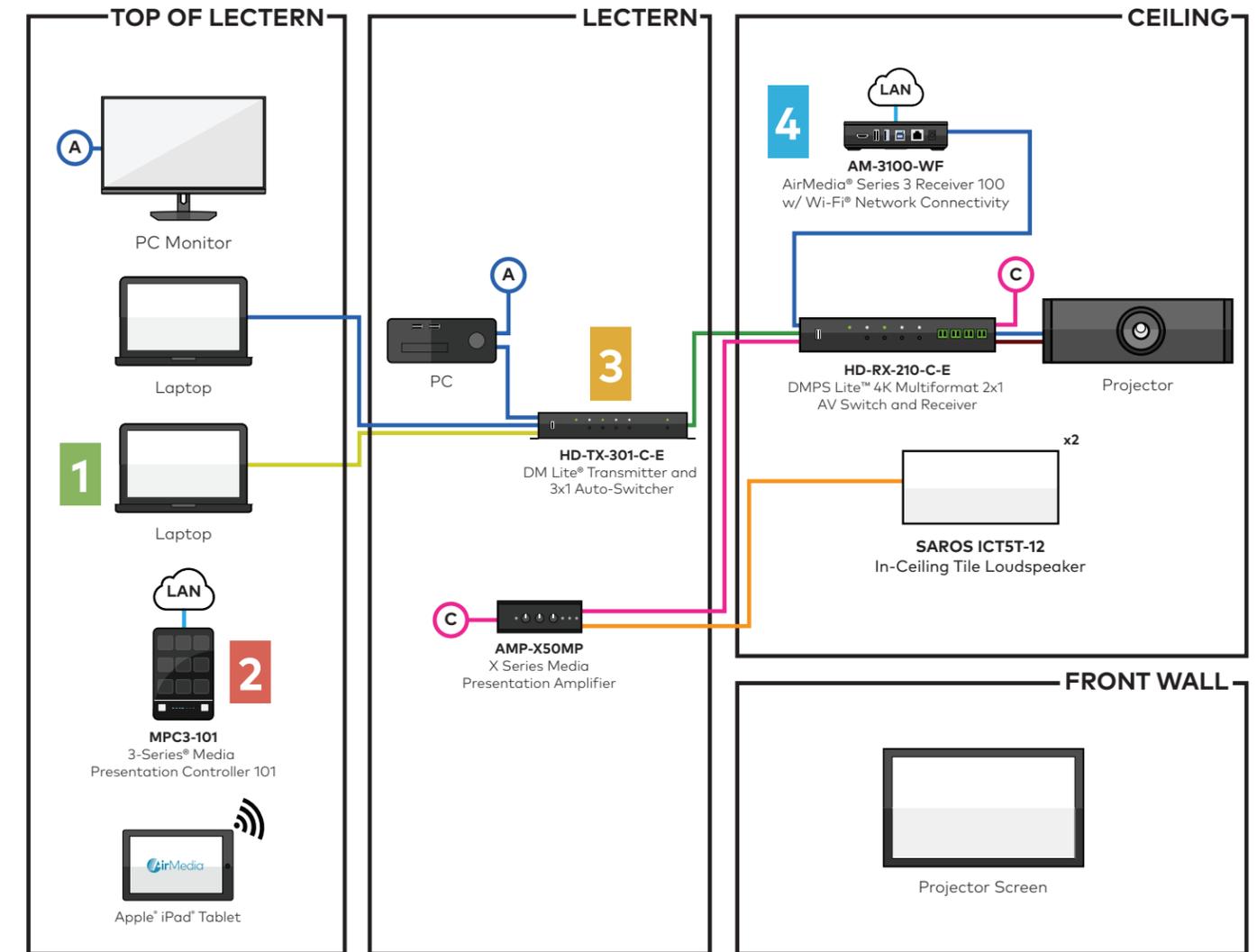
## FEATURES



## BOM EXAMPLE

| COUNT | NAME             |
|-------|------------------|
| 1     | AM-3100-WF       |
| 1     | HD-MD-4K-400-KIT |
| 1     | AMP-X50MP        |
| 2     | SAROS ICT5T-12   |
| 1     | MPC3-101         |

## SAMPLE SYSTEM DRAWING



**Wire Legend:** ● CAT 5/6 ● HDMI® CABLE ● DM ● SPEAKER ● AUDIO ● CONTROL ● VGA

## KEY FEATURES

- 1 Supports VGA for legacy devices between the HDMI and VGA inputs enables plug-and-play simplicity
- 2 Easily control input selection with the wall mounted PoE 3-Series Control System®.
- 3 Handles 4K video resolutions up to 1080p 4:2:0 and 4K30 4:4:4
- 4 Display customizable welcome splash screen in the room utilizing the AM-3100-WF

# DUAL PROJECTOR CLASSROOM

LARGER CAPACITY CLASSROOM FEATURING DUAL PROJECTORS, MULTIPLE VIDEO SOURCES, WIRELESS PRESENTATION AND TOUCH SCREEN CONTROL

- The HD-PS622 provides a 4K60 4:4:4 AV presentation system with enhanced HDMI® video switching and audio presentation capabilities for the space
- Wirelessly present with the AirMedia® Series 3 Receiver 100 (AM-3100-WF). Enabling secure wireless collaboration in the space for students and instructors
- Instructors and presenters can be heard loud and clear at the lectern with a direct microphone connection to the HD-PS622
- With the 4K60 4:4:4 video scaler, each mirrored HDMI and DM Lite output shares a single 4K60 4:4:4 video scaler. By default, input resolutions are automatically scaled to match the native resolution of the display device, resulting in optimal image quality
- Featuring dual projectors/screens and a camera, content and room feeds can be displayed with versatility in the room

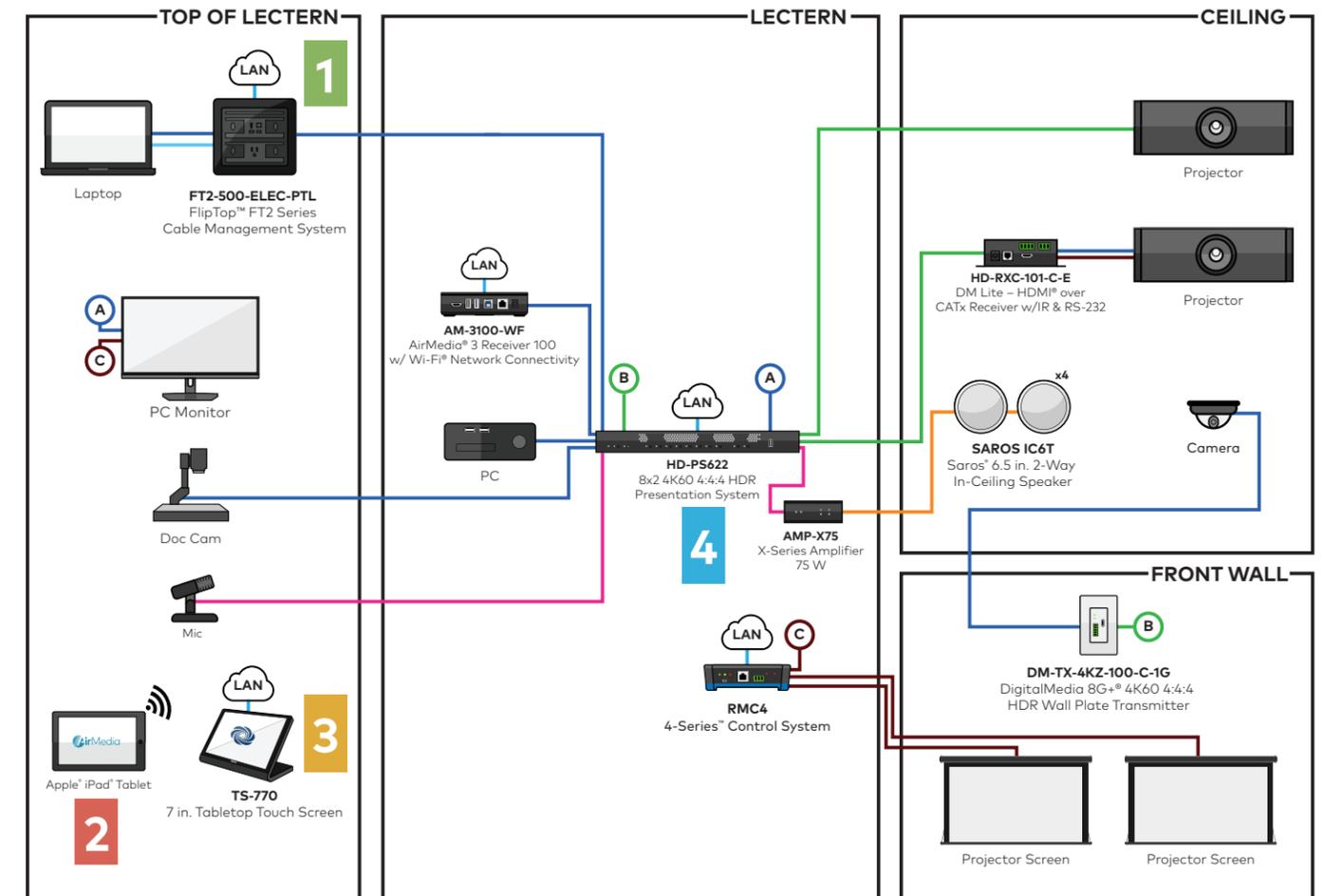
## FEATURES



## BOM EXAMPLE

| COUNT | NAME               |
|-------|--------------------|
| 1     | AM-3100-WF         |
| 1     | HD-PS622           |
| 1     | AMPX75             |
| 1     | RMC4               |
| 1     | TS-770             |
| 1     | FT2-500-ELEC-PTL   |
| 1     | HD-RXC-101-C-E     |
| 4     | SAROS ICT          |
| 1     | DM-TX-4KZ-100-C-1G |

## SAMPLE SYSTEM DRAWING



**Wire Legend:** ● CAT 5/6 ● HDMI® CABLE ● DM ● SPEAKER ● AUDIO ● CONTROL ● POWER

## KEY FEATURES

- Simple to use connectivity at the lectern, including video, network and power
- Use any tablet or laptop to easily move around the space and wirelessly present
- Easy to use touch screen provides a consistent user experience for instructors so they do not waste any time getting their class up and running
- Built into the HD-PS622, a logo or photo can be uploaded and then used as a background image whenever active video content is not being displayed.

# TIERED CLASSROOM

THE MOST POPULAR, SINGLE BOX CLASSROOM SOLUTION CRESTRON OFFERS FOR COMMON TEACHING SOURCES WITH DISCREET OUTPUTS FOR TWO OR THREE PROJECTORS AND TOUCH SCREEN CONTROL

- 100% IoT Cloud Solution - Easy to deploy, manage and monitor with easy access to the Crestron Help Desk
- Consistent user experience on the touch screen across all rooms so professors/instructors can be up and running on time without delaying their classes
- Use optional HD-CONV-USB-300 to convert Video and Audio to USB back to Room PC for soft-codec conferencing
- A/V/USB/Control multi layer technology to control displays
- High level enterprise grade security down to the device level using protocols that are already utilized at universities
- Students can clearly hear the instructor speaking and instructional videos throughout the space with optimal quality
- Control and preview content at the lectern with the PC monitor before routing throughout the space
- Simple configuration and changes with no programming using .AV Framework web-based configuration

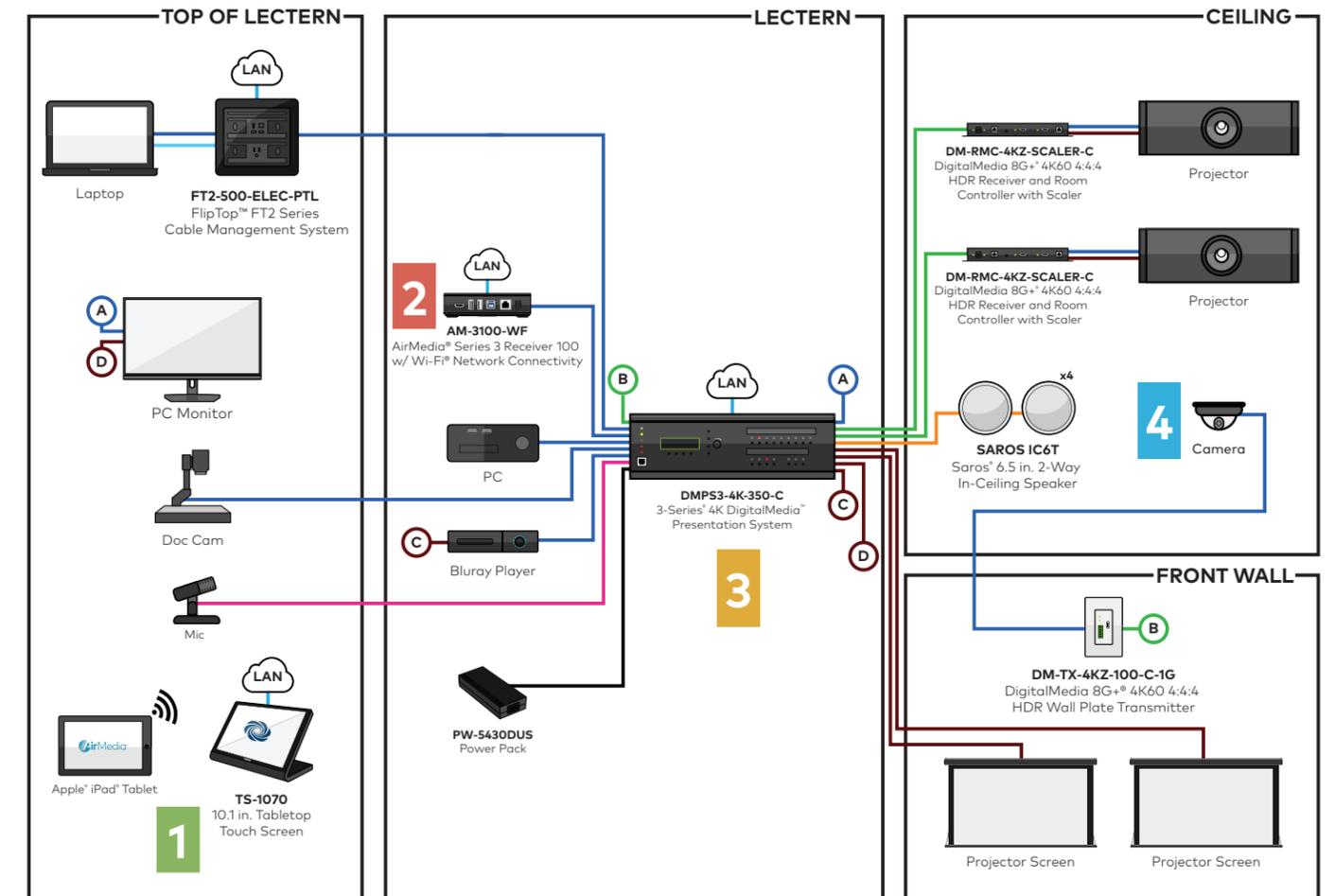
## FEATURES



## BOM EXAMPLE

| COUNT | NAME                |
|-------|---------------------|
| 1     | AM-3100-WF          |
| 1     | DMPS3-4K-350-C      |
| 1     | DM-RMC-4KZ-SCALER-C |
| 1     | DM-TX-4KZ-100-C-1G  |
| 1     | FT2-500-ELEC-PTL    |
| 1     | FT2A-CBLR-GR-4K-HD  |
| 1     | FT2A-CBLR-GR-CAT6   |
| 1     | FT2A-CBLR-GR-4K-HD  |
| 1     | FT2A-PWR-US-2       |
| 1     | PW-5430DUS          |
| 4     | SAROS IC6T          |
| 1     | TS-1070             |

## SAMPLE SYSTEM DRAWING



**Wire Legend:** ● CAT 5/6 ● HDMI® CABLE ● DM ● SPEAKER ● AUDIO ● CONTROL ● POWER

## KEY FEATURES

- 1 Easily control and switch video sources at the lectern as well as access the IT/AV help desk with the tap of a button
- 2 Instructors can actively present content and teach while walking around the space using wireless presentation with the AM-3100-WF
- 3 Simplified design with less SKU's using the all-in-one DMPS3-4K-350-C
- 4 Display the camera feed on either or both projector screens

# AUDITORIUM

LARGE LEARNING SPACE OR PERFORMANCE AREA WITH A CAPACITY OF 100 – 300 STUDENTS WITH MULTIPLE DISPLAYS, VIDEO CONFERENCING, AND LECTURE CAPTURE OR STREAMING AND TOUCH SCREEN CONTROL

- Fully customizable solution streaming flawless video with lossless audio distributed to multiple displays and projector screens
- Integrated video conferencing solution with the UC-C100-Z kit which integrates seamlessly with 3rd party microphones, cameras, and DSPs
  - Allows customers to choose and purchase appropriate equipment for the space
- Zero latency 4K video over existing 1Gb network infrastructure
- Instructors and presenters can preview content by simply routing it to the lectern display before presenting to other displays in the space
  - DM NVX AV-over-IP allows for flexible content routing of any source to any display
- Easily bring in remote participants and special guest speakers over Zoom® with the integrated Crestron Flex UC-C100-Z kit
- Presenters can control the space from anywhere with a laptop or tablet with XPanel software
- Any physical 4 series processor could be a virtual processor using VC-4

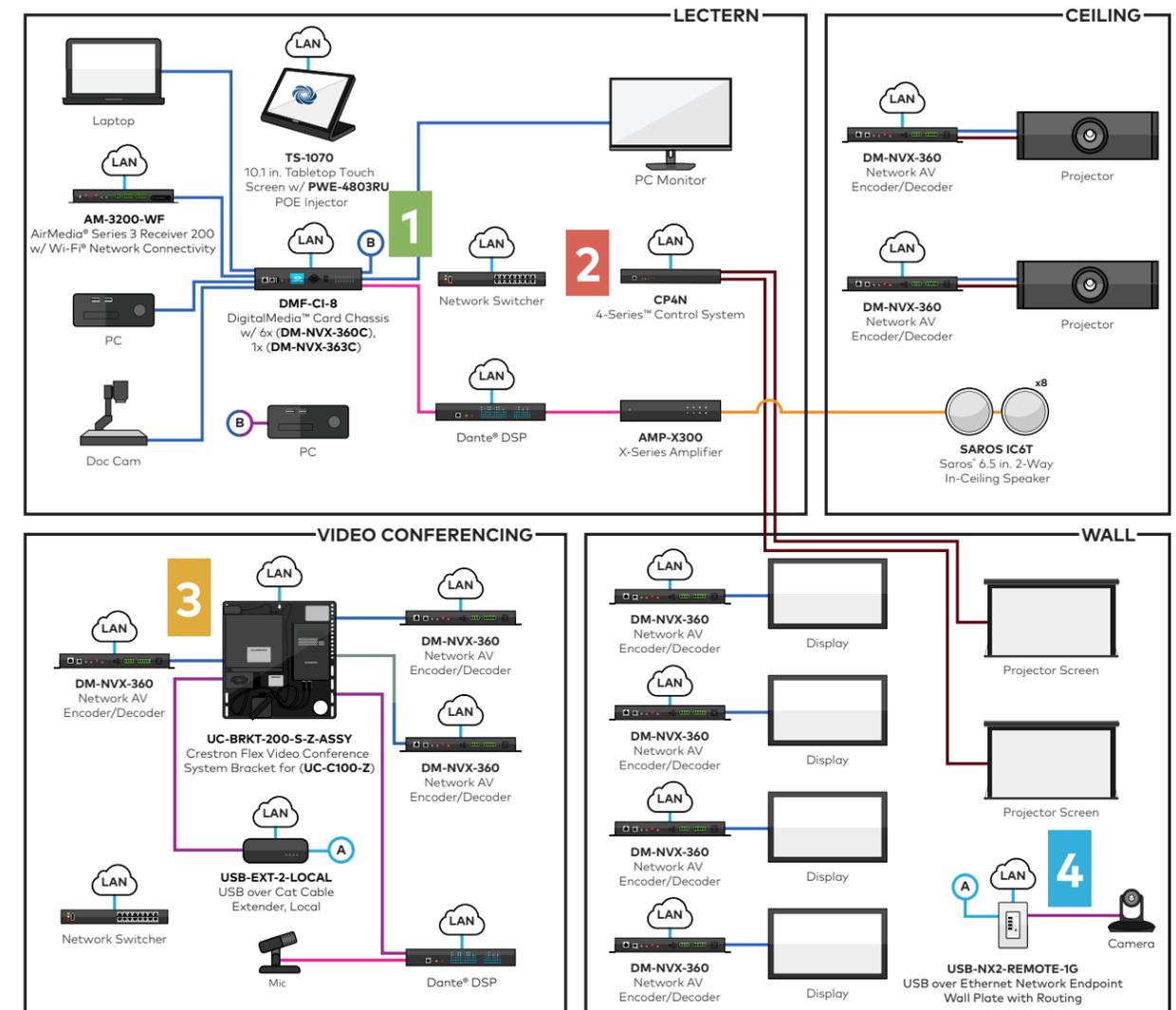
## FEATURES



## BOM EXAMPLE

| COUNT | NAME              |
|-------|-------------------|
| 1     | AM-3200-WF        |
| 1     | AMP-X300          |
| 1     | CP4N              |
| 1     | DMF-CI-8          |
| 9     | DM-NVX-360        |
| 6     | DM-NVX-360C       |
| 1     | DM-NVX-363C       |
| 1     | USB-EXT-2-LOCAL   |
| 1     | TS-1070           |
| 8     | SAROS IC6T        |
| 1     | USB-NX2-REMOTE-1G |
| 1     | UC-C100-Z         |

## SAMPLE SYSTEM DRAWING



Wire Legend: ● CAT 5/6 ● HDMI® CABLE ● DISPLAY ● SPEAKER ● AUDIO ● CONTROL ● USB

## KEY FEATURES

- Integrated DM NVX card based encoders allow for flexible content routing to any of the DM NVX decoders in the space
- CP4N 4-Series™ control processor allows for control of the projector screens and other room functions such as lighting, shades and HVAC
- Crestron Flex can easily be integrated into the DM NVX AV-over-IP ecosystem
- USB-NX2-REMOTE-1G extender allows for the camera to be placed anywhere in the room and easily connect to the Crestron Flex system

# LECTURE HALL

THIS IS AN EXAMPLE OF A LARGE TEACHING ENVIRONMENT BUILT FOR 50 – 200 STUDENTS WITH VARIOUS SOURCES, A CAMERA, MULTIPLE DISPLAYS, LECTURE CAPTURE, AUDIO PROCESSING, AND TOUCH SCREEN CONTROL

- IT-Friendly and network compliant design that is easy to manage and service
- Enterprise grade security down to the device level that is already utilized at Universities
- Lecturers can present wirelessly from a tablet or laptop with the AM-3200 and move freely throughout the space
- Zero latency 4K video distribution to multiple projectors so no matter where you are seated you can see content
- The integrated DM® system allows for multiple input sources for content like laptops, document cameras, Blu-Ray Disc® players, and PTZ cameras
- The system easily integrates into lecture capturing systems so the lectures can be recorded and played back later

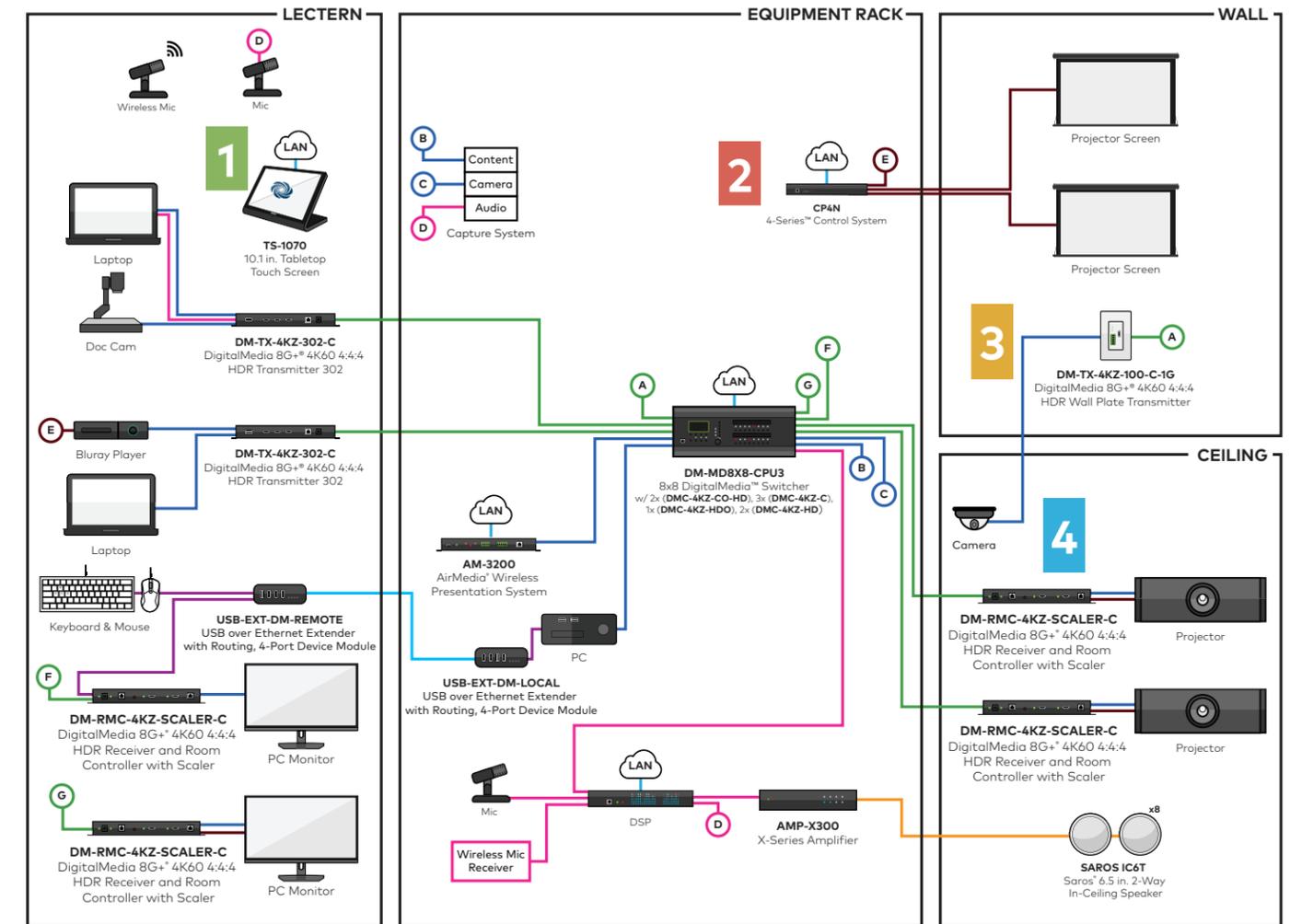
## FEATURES



## BOM EXAMPLE

| COUNT | NAME                |
|-------|---------------------|
| 1     | AM-3200             |
| 1     | AMP-X300            |
| 1     | CP4N                |
| 3     | DMC-4KZ-C           |
| 2     | DMC-4KZ-HD          |
| 2     | DMC-4KZ-CO-HD       |
| 1     | DMC-4KZ-HDO         |
| 1     | DM-MD8X8-CPU3       |
| 4     | DM-RMC-4KZ-SCALER-C |
| 1     | DM-TX-4KZ-100-C-1G  |
| 2     | DM-TX-4KZ-302-C     |
| 8     | SAROS IC6T          |
| 1     | USB-EXT-DM-LOCAL    |
| 1     | USB-EXT-DM-REMOTE   |
| 1     | TS-1070             |

## SAMPLE SYSTEM DRAWING



Wire Legend: ● CAT 5/6 ● HDMI® CABLE ● DM ● SPEAKER ● AUDIO ● CONTROL

## KEY FEATURES

- Control content sourcing and room controls right from an intuitive and easy to use UI on the TS-1070 touch screen
- Integrated CP4N 4-Series™ control processor allows for control of room controls and projector screens
- DM® wall plates allow for flexible installation with signal extensibility back to the DigitalMedia™ switcher
- The built-in scaler on the DM-RMC-4KZ-SCALER-C ensures an optimal image, scaling the encoded source resolution up or down to match the native resolution of the projector

# CAFETORIUM/COMMONS

FLEXIBLE SPACE WHERE STUDENTS EAT, STUDY, AND GATHER (SOMETIMES A FOOD COURT) WHICH CAN BE CONVERTED FOR EVENTS, MEETINGS, OR TOWN HALLS. THESE SPACES TEND TO HAVE MULTIPLE DISPLAYS, ONE TO TWO PLACES FOR WIRED OR WIRELESS PRESENTATION, MICS, AND SOUND REINFORCEMENT

- Distribute presentations and Town Hall's throughout an entire building as part of the Crestron® IoT EcoSystem
- Utilizing DM NVX® endpoints, distribute flawless 4K60 4:4:4 HDR video throughout the space and building to multiple displays
- Enterprise grade security at the device level makes for a network compliant and IT friendly solution
- Zero-Touch/Zero-Programming provisioning and data gathering in Microsoft® Azure® IoT Hub
- Simple and consistent user experience for presenters
- Integrate seamlessly into existing equipment in the space such as DSPs, wireless microphones and displays

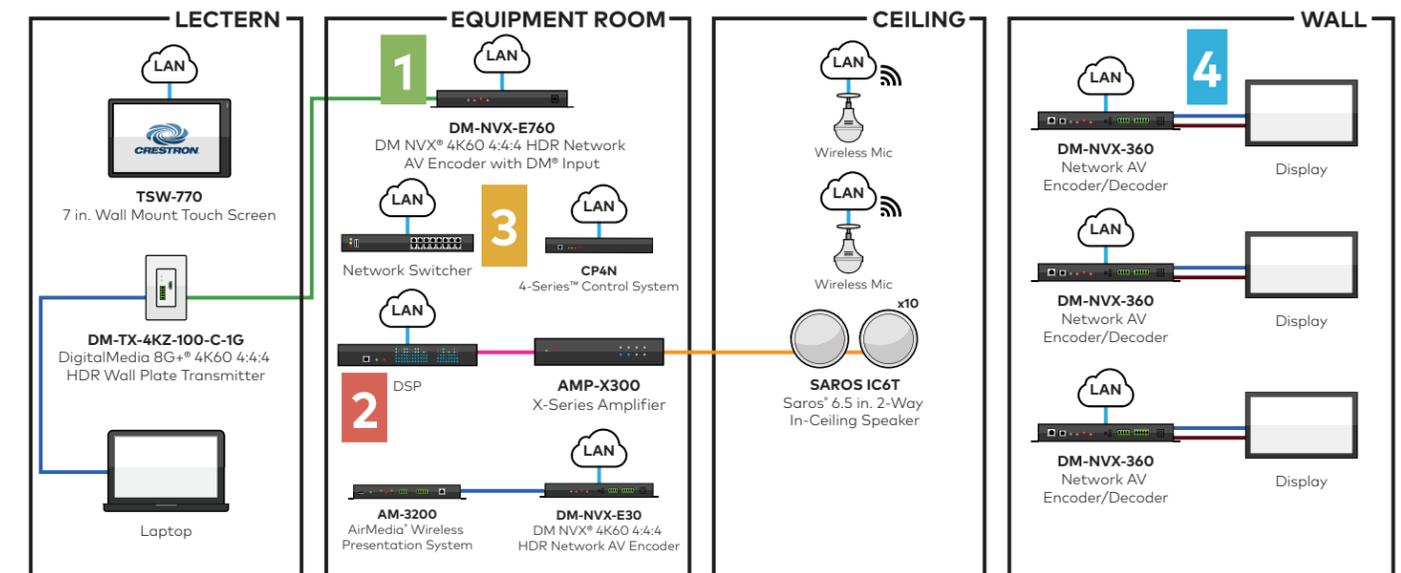
## FEATURES



## BOM EXAMPLE

| COUNT | NAME               |
|-------|--------------------|
| 1     | CP4N               |
| 1     | AMP-X300           |
| 1     | AM-3200            |
| 1     | DM-NVX-E30         |
| 3     | DM-NVX-360         |
| 1     | DM-NVX-E760        |
| 1     | DM-TX-4KZ-100-C-1G |
| 10    | SAROS IC6T         |
| 1     | TSW-770            |

## SAMPLE SYSTEM DRAWING



Wire Legend: ● CAT 5/6 ● HDMI® CABLE ● DM ● SPEAKER ● AUDIO ● CONTROL

## KEY FEATURES

- DM-NVX-E760 transmits and bridges HDBaseT® content from the wall plate into the AV-over-IP ecosystem
- Integrates seamlessly with 3rd party DSPs
- Control environmental controls such as lighting, shades, HVAC and more with the CP4N 4-Series™ control processor
- 4K60 4:4:4 video quality and flexible routing using DM NVX AV-over-IP

# SIMULATION LAB

## DESIGN FOR TRAINING AND SIMULATIONS FOR DIFFERENT MEDICAL FIELDS, NURSING, OR EVEN NON-MEDICAL USES LIKE ENGINEERING OR ROBOTICS

- Flexible space for instructional trainings and simulations such as different medical fields
- Simple collaboration for students and instructors with simple content routing from anywhere utilizing the commercial grade touch screen
- Distribute impeccable 4K60 4:4:4 HDR video throughout the space utilizing DM NVX® AV over IP
- Turn any static screen into digital signage with seamless integration with any 3rd party digital signage player
- Simple integration into existing owner furnished equipment such as IP cameras, monitors, and mics
- Enterprise grade security at the device level such as 802.1x and Active Directory® credential management
- Lowest total cost of ownership using DM NVX® AV over IP and Crestron XiO Cloud® service

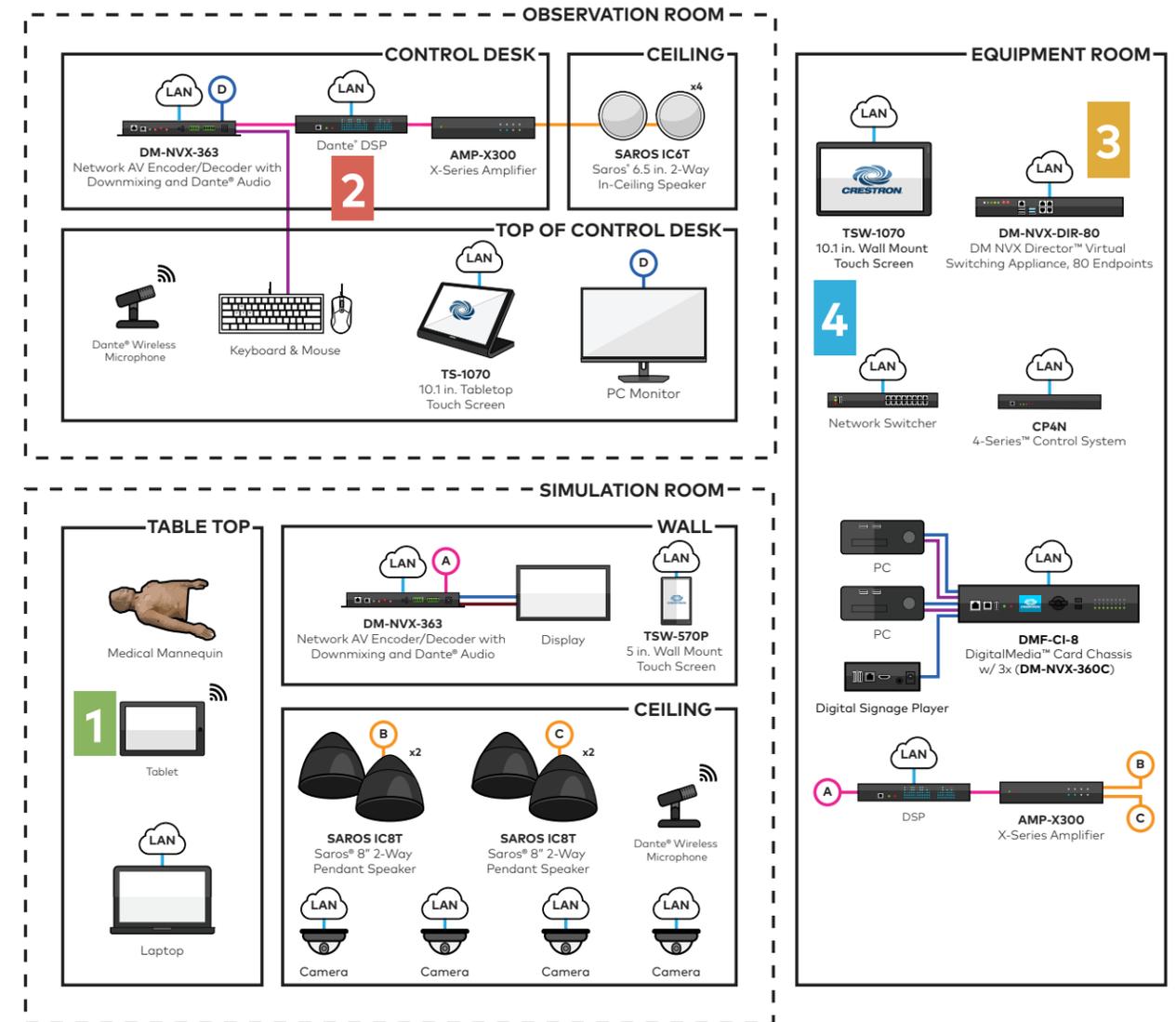
### BOM EXAMPLE

| COUNT | NAME            |
|-------|-----------------|
| 2     | AMP-X300        |
| 1     | CP4N            |
| 1     | DMF-CI-8        |
| 3     | DM-NVX-360C     |
| 2     | DM-NVX-363      |
| 1     | DM-NVX-DIR-80   |
| 2     | SAROS IC6T      |
| 8     | SAROS IC8T      |
| 1     | TS-1070         |
| 1     | TSW-1070        |
| 1     | TSW-1070-RMK-2  |
| 1     | TSW-UMB-570-PMK |
| 1     | TSW-570P        |

### FEATURES



## SAMPLE SYSTEM DRAWING



Wire Legend: ● CAT 5/6 ● HDMI® CABLE ● SPEAKER ● AUDIO ● USB

### KEY FEATURES

- Control the room with XPanel software on the tablet acting as a virtual touch screen
- Integrates seamlessly with Dante® audio-over-IP enabled devices
- The DM-NVX-DIR-80 virtually emulates the functionality of a traditional hardware-based DM™ matrix switcher, routing high-quality 4K streaming AV signals throughout the room
- Control the room and source content from a second touch screen in the equipment room

# ESPORTS LAB

AS ESPORTS IS A GROWING TREND, A DIGITAL BACKBONE FOR LAG-FREE GAME PLAY IS A REQUIREMENT WHETHER FOR PRACTICE OR COMPETITION. OFTEN THE COMPUTERS OR GAME CONSOLES NEED TO BE IN AN EQUIPMENT ROOM WHILE THE PLAYERS WILL BE IN A LAB OR COMPETITION SPACE

- Crucial lag free game play allows for gamers to play without compromise utilizing DM NVX® AV over IP with 4K60 4:4:4 HDR video
- Use existing 1Gb/Cat5e cabling so universities do not need to change their network infrastructure
- Using a combination of any 3rd party DSP, AMP-X300 and Saros® speakers, hear game play audio distributed loud and clear
- Seamless integration with Xbox® consoles, Playstation® consoles and others for the ultimate gaming experience
- Multi-layer technology including control and routing of USB devices
- As part of the Crestron® IoT Ecosystem, devices enable a simple system design with less SKU's

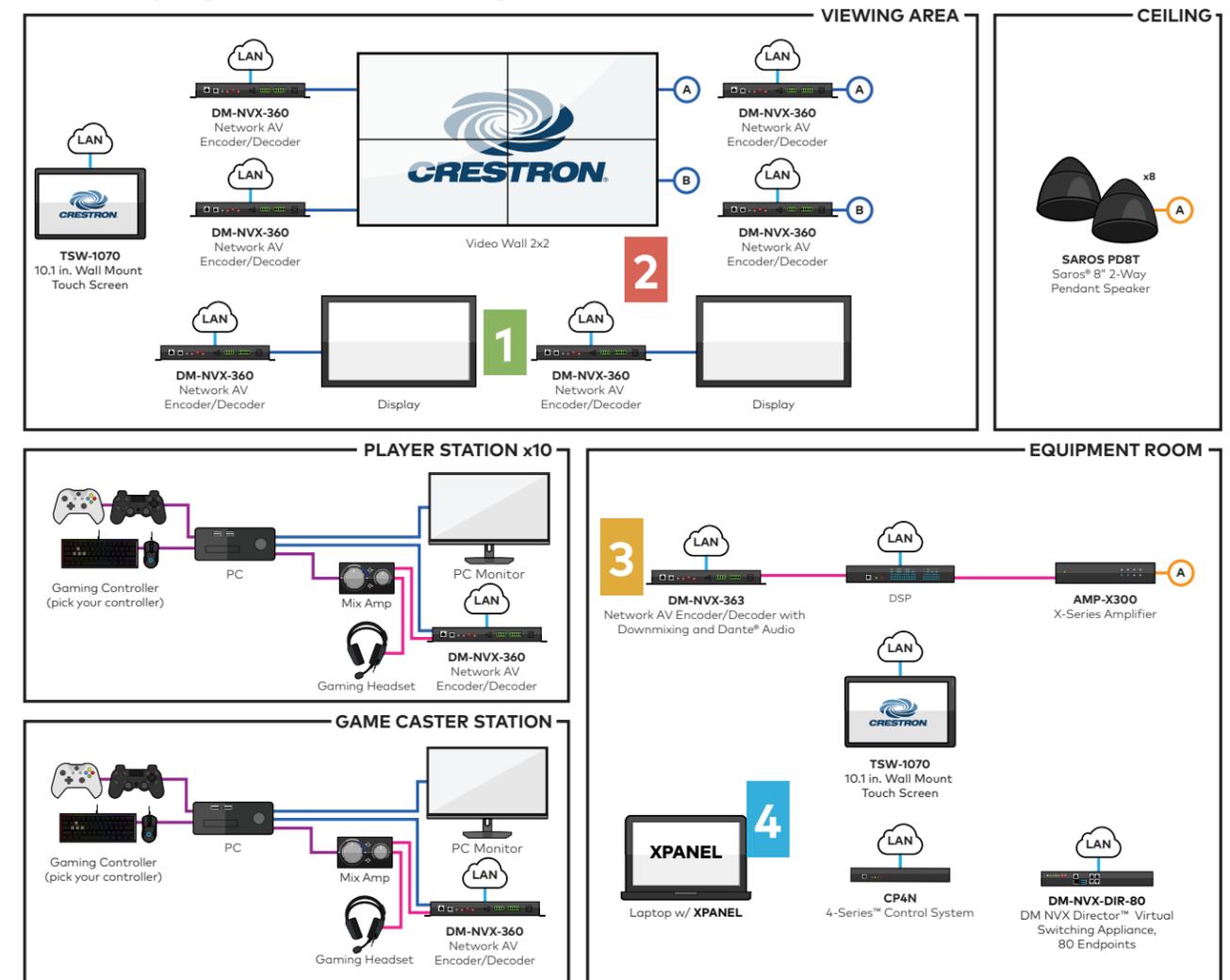
## FEATURES

**DM NVX**

## BOM EXAMPLE

| COUNT | NAME          |
|-------|---------------|
| 1     | AMP-X300      |
| 1     | CP4N          |
| 17    | DM-NVX-360    |
| 1     | DM-NVX-DIR-80 |
| 1     | DM-NVX-363    |
| 8     | SAROS PD8T    |
| 2     | TSW-1070      |

## SAMPLE SYSTEM DRAWING



Wire Legend: ● CAT 5/6 ● HDMI® CABLE ● SPEAKER ● AUDIO ● USB

## KEY FEATURES

- 1 With DM NVX, an image can be uploaded to the device for use as a background image on a display whenever active video content is not being displayed (University logos, gaming tournament names etc.)
- 2 A video wall composed of up to 64 individual displays can be configured using multiple DM NVX endpoints
- 3 DM NVX adaptive bit rate enables the encoder to automatically set the bit rate required for the input resolution of the stream.
- 4 Route any gaming console to the video wall for the audience to view using the TSW-1070 or content can be controlled from anywhere utilizing a laptop with XPanel software to emulate a virtual touch screen

# ACTIVE LEARNING SPACE / COLLABORATIVE CLASSROOM

ACTIVE LEARNING SPACE WHICH ALLOWS AN INSTRUCTOR TO SEND THEIR SIGNAL TO ALL THE DISPLAYS OR WHICH ENABLES STUDENTS TO WORK IN SMALL GROUPS AND VIEW THEIR OWN CONTENT ON A DISPLAY.

- Easily control content at the instructor station from multiple sources using a commercial grade touch screen with enterprise grade security
- Flexible 4K60 HDR video distribution using DM NVX and wirelessly present with an AM-3200
- Instructor can control the room wirelessly on a laptop or tablet using XPanel virtual touch screen software while they visit student collaboration tables
- Manage and monitor all devices with direct connection to Crestron XiO Cloud® service running in Microsoft® Azure® IoT hub

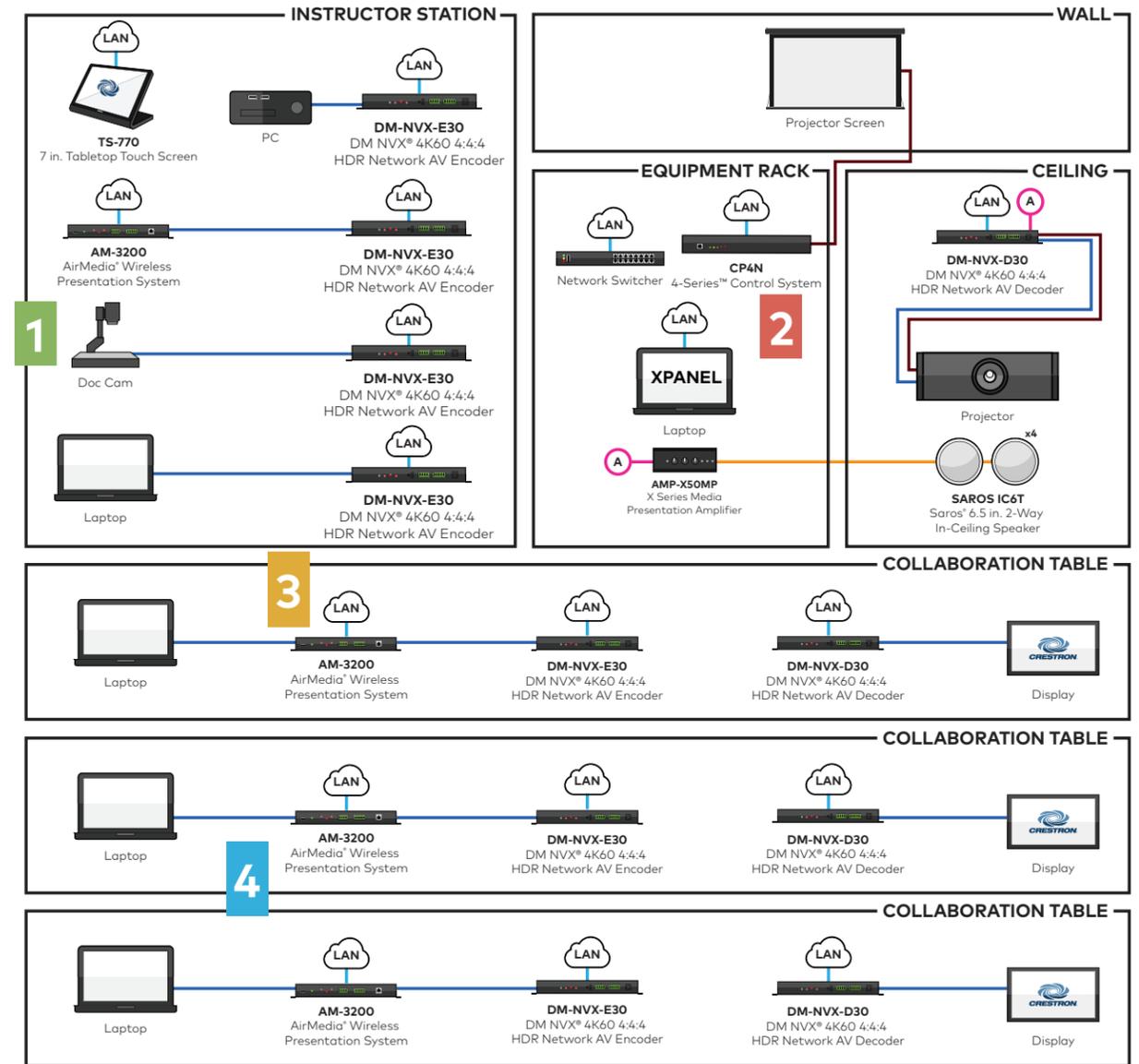
## FEATURES



## BOM EXAMPLE

| COUNT | NAME       |
|-------|------------|
| 4     | AM-3200    |
| 1     | AMP-X50MP  |
| 1     | CP4N       |
| 4     | DM-NVX-D30 |
| 7     | DM-NVX-E30 |
| 4     | SAROS IC6T |
| 1     | TS-1070    |

## SAMPLE SYSTEM DRAWING



Wire Legend: ● CAT 5/6 ● HDMI® CABLE ● SPEAKER ● AUDIO ● USB

## KEY FEATURES

- Route the document camera to any DM NVX decoder at any display
- Dim lights, control shades and room temperature with the integrated CP4N 4-Series™ control processor
- Students can wirelessly present sources simultaneously at the collaboration table using the AirMedia Canvas feature
- AM-3200 provides an HDMI® input and can act as a transmitter to present hardwired content

## FACULTY/ STUDENT MEETING ROOM

SMALL MEETING ROOM WITH A FLAT SCREEN DISPLAY USED TO DISPLAY CONTENT OR TO USE SOFTWARE-BASED VIDEO CONFERENCING LIKE ZOOM ROOMS™, MICROSOFT TEAMS®, OR WHATEVER SOFTWARE YOU CHOOSE DEPENDING ON YOUR CONFIGURATION<sup>1</sup>

- Allows for collaboration between in person participants and remote participants using Crestron Flex video conferencing solution with a smart camera, microphone and speaker all in a single device using the UC-SB1-CAM soundbar
- Supports native one touch join meetings (no PC required) via the corporate standard video conferencing platform (Microsoft Teams® or Zoom Rooms™ video conferencing platforms), while additionally supporting any other web-based video conferencing platform using a user's laptop (BYOD) without requiring any additional hardware or software
- The DMPS Lite™ switcher has auto display control and switching providing plug-n-play automation
- Crestron provides automation beyond starting a video conferencing meeting
  - AV, wireless presentation, lighting, shades, and room scheduling<sup>2</sup>
  - Empowers organizations to easily create and manage an efficient smart building ecosystem using a single platform

### FEATURES

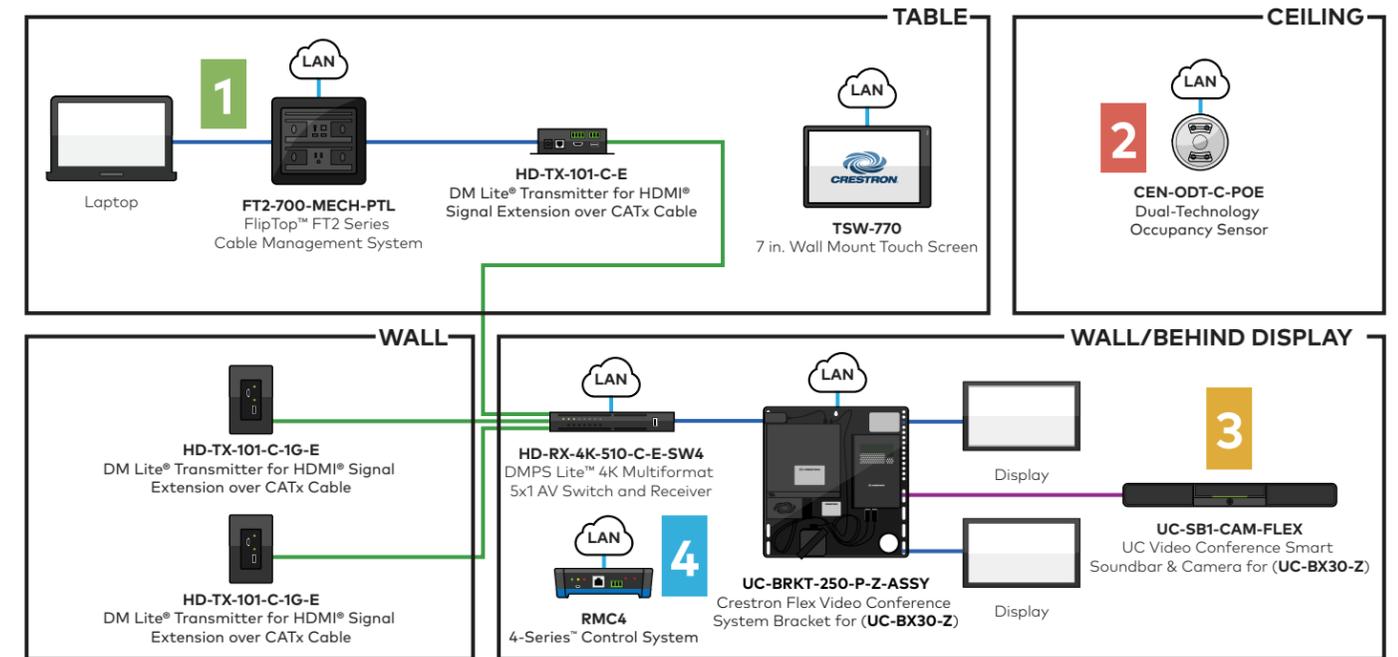


## DM® Lite

### BOM EXAMPLE

| COUNT | NAME                 |
|-------|----------------------|
| 1     | RMC4                 |
| 1     | CEN-ODT-C-POE        |
| 1     | FT2-700-MECH-PTL     |
| 1     | FT2A-CBLR-GR-4K-HD   |
| 1     | 1 FT2A-CBLR-GR-CAT6  |
| 1     | 1 FT2A-PWR-US-2      |
| 1     | HD-RX-4K-510-C-E-SW4 |
| 2     | HD-TX-101-C-1G-E     |
| 1     | HD-TX-101-C-E        |
| 1     | RMC4                 |
| 1     | UC-BX30-Z            |
| 1     | TSW-770              |

### SAMPLE SYSTEM DRAWING



Wire Legend: ● CAT 5/6 ● HDMI® CABLE ● DM ● USB

### KEY FEATURES

- Users can bring their own device and plug into the FlipTop™ cable management system effortlessly
- Integrated occupancy sensor automatically powers on the display when participants are sensed
- Space-saving videobar mounts directly above or below displays on wall for a seamless collaboration experience
- With the 4-Series™ control processor, easily fit behind the display and control all equipment in the room via the same touch screen as the video conferencing system

<sup>1</sup> Diagram showing Zoom Rooms kit

<sup>2</sup> Easily add Crestron scheduling panels outside of the room

# FITNESS CENTER

THIS IS A SIMPLE SYSTEM FOR EVERYTHING FROM A YOGA CLASS, SPIN CLASS, OR INSTRUCTOR-LED EXERCISES. THIS DESIGN OFFERS A WIRELESS KEYPAD TOGETHER WITH WIRED AUDIO INPUTS TO STREAM MUSIC OR AUDIO TO THE ROOM THROUGH THE AMP AND SPEAKERS

- Plug-n-play simplicity with no programming and right out of the box functionality
- Crestron cloud management provides visibility to all devices within an enterprise, both Crestron and 3rd party
- Simple design with less SKU's as part of a full end-to-end Crestron® EcoSystem
- Integrates seamlessly with existing products the customer wants to use or already has
- The AMP-X300 provides a professional amplifier solution for the fitness center that saves energy, space, and money
- Simple install with less parts, cables and connections

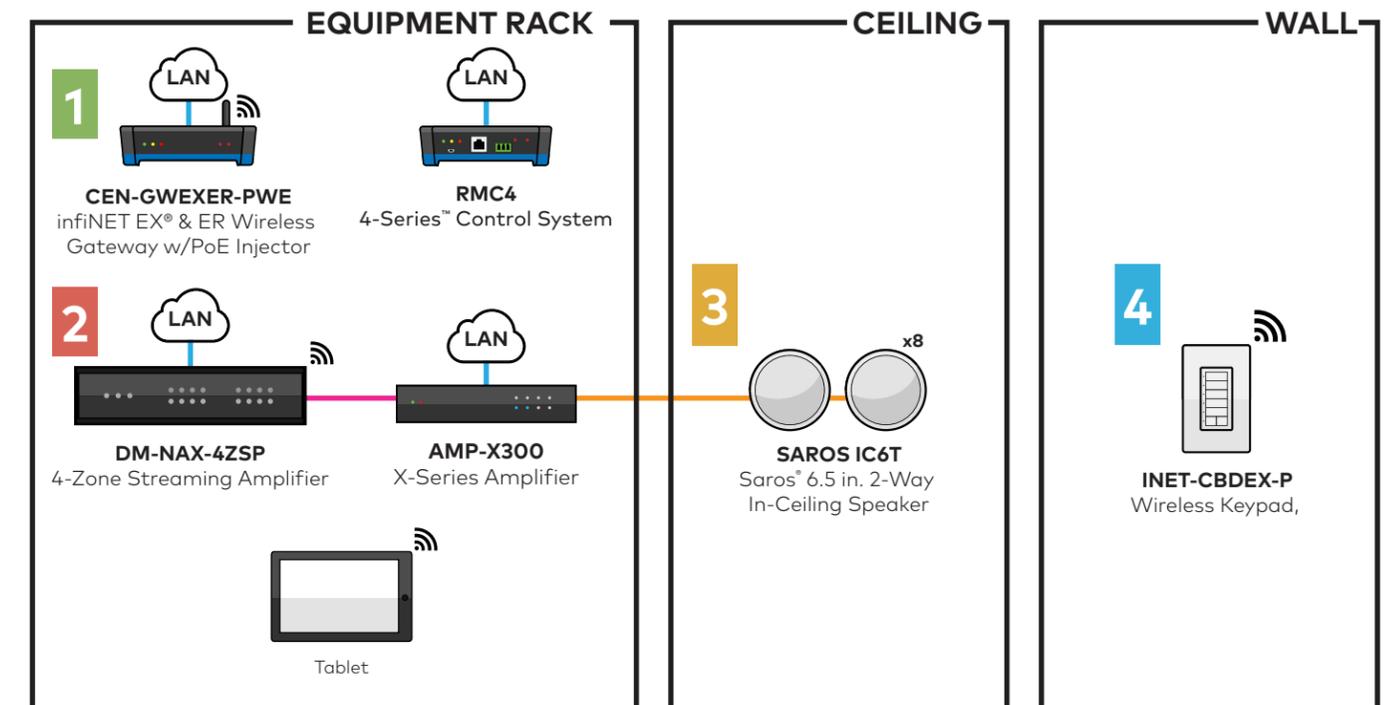
## FEATURES



## BOM EXAMPLE

| COUNT | NAME           |
|-------|----------------|
| 1     | AMP-X300       |
| 1     | CEN-GWEXER-PWE |
| 1     | INET-CBDEX-P   |
| 1     | DM-NAX-4ZSP    |
| 1     | RMC4           |
| 8     | SAROS IC6T     |

## SAMPLE SYSTEM DRAWING



Wire Legend: ● CAT 5/6 ● SPEAKER ● AUDIO

## KEY FEATURES

- CEN-GWEXER-PWE wireless gateway provides infiNET EX® wireless communication to the keypad on the wall
- Stream music platform of choice natively using the DM-NAX-4ZSP with any 3rd party tablet
- Native branded audio providing enhanced audio quality
- Easily control the music, lighting, and shades with the INET-CBDEX-P right from the wall

# ATHLETICS LOUNGE

THIS IS AN AREA FOR SCHOOL ATHLETES TO STUDY, TO GET TUTORING, AND TO STRATEGIZE FOR THE NEXT GAME. IT ALLOWS A LAPTOP, GAMING CONSOLE, TABLET, OR OTHER DEVICES TO BE PLUGGED INTO ONE OR TWO WALL PLATES ALONG WITH AUDIO SUPPORT, CONTROL, AND SWITCHING

- Versatile space offering fully integrated audio and video into an existing space utilizing owner furnished equipment
- Easily control content using the remarkable TSR-310 remote with voice activation and a touch screen
  - Students can change inputs between Xbox and cable TV and control cable TV content
- Display up to 4K/60 4:4:4 HDR video to the projector
- Experience a true 7.1 surround sound for fully emersive audio experience
- Lowest total cost of ownership using DigitalMedia with the ability to change and expand the system in the future as needs change for the space
- Commercial grade and purpose built equipment offering enterprise grade security at the device level making for an IT friendly design

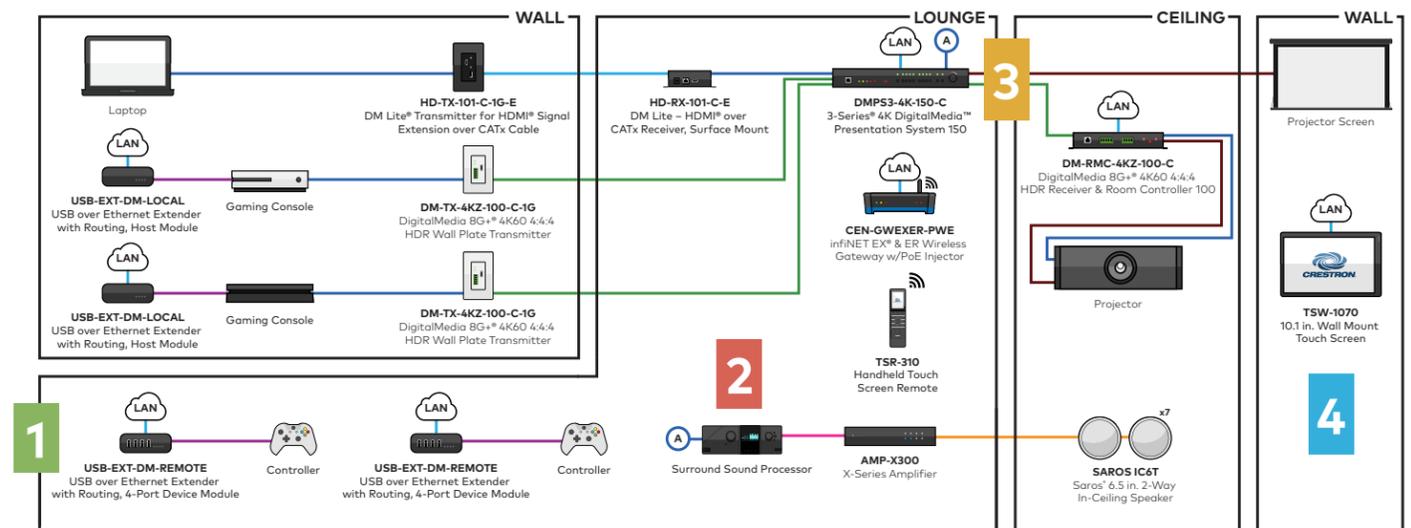
## FEATURES



## BOM EXAMPLE

| COUNT | NAME               |
|-------|--------------------|
| 1     | CEN-GWEXER-PWE     |
| 1     | DMPS3-4K-150-C     |
| 1     | DM-RMC-4KZ-100-C   |
| 2     | DM-TX-4KZ-100-C-1G |
| 1     | HD-RX-101-C-E      |
| 1     | HD-TX-101-C-1G-E   |
| 1     | TSR-310            |
| 7     | SAROS IC6T         |
| 1     | TSW-1070           |
| 2     | USB-EXT-DM-REMOTE  |
| 2     | USB-EXT-DM-LOCAL   |

## SAMPLE SYSTEM DRAWING



**Wire Legend:** ● CAT 5/6 ● HDMI\* CABLE ● DM ● SPEAKER ● AUDIO ● CONTROL ● USB

## KEY FEATURES

- Crestron USB over ethernet extending devices allow for flexibility when installing as consoles and controllers do not need to be near each other
- Crestron products integrate seamlessly with 3rd party surround sound processors for optimal audio processing
- The built-in scaler on the DM-RMC-4KZ-SCALER-C ensures an optimal image, scaling the encoded source resolution up or down to match the native resolution of the projector
- TSW-1070 at the wall gives students a second place to control the room for things like switching sources and controlling volume

# DIVISIBLE ROOM

MULTIPURPOSE SPACE WHERE SMALLER DIVISIBLE ROOMS CAN BE USED SEPARATELY OR COMBINED. WHILE EACH ROOM'S AV TECHNOLOGY CAN BE USED SEPARATELY, PARTITIONS CAN BE OPENED FOR THE SYSTEMS TO FUNCTION AS A SINGLE SPACE

- Multipurpose space integrates flexible technology and offers versatility for different event types
  - Allows universities and institutions to increase revenue by booking different types of events in the space
  - Crestron supports the University/Institution throughout the entire life cycle with future proof protection for customer investments by providing product upgrade/migration paths. This includes free firmware updates and open video conferencing/scheduling platform flexibility on a single platform
- Crestron supports HTML5 to enable easy propagation of customized backgrounds, corporate branding and logos throughout the workspace via .AV Framework configuration without programming
  - The space can display clients branding/logo throughout the space for the event
- With AirMedia® technology, users can wirelessly present content from laptops, smartphones, and tablet devices via an external Wi-Fi® wireless network
  - Outside guests do not need to be on the main network to present wirelessly, preventing security concerns

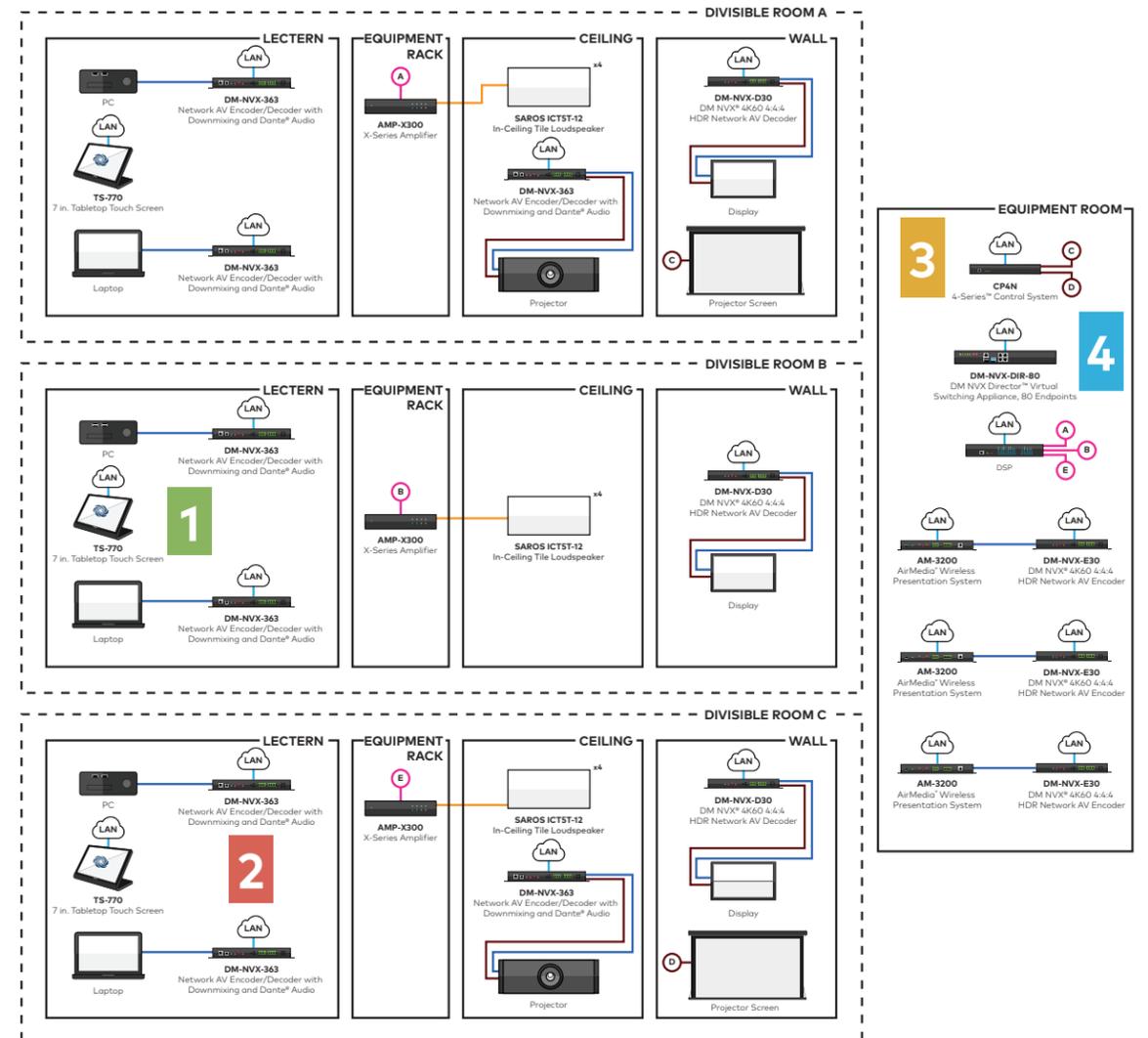
## FEATURES



## BOM EXAMPLE

| COUNT | NAME           |
|-------|----------------|
| 3     | AM-3200        |
| 3     | AMP-X300       |
| 1     | CP4N           |
| 1     | DM-NVX-DIR-80  |
| 3     | DM-NVX-D30     |
| 3     | DM-NVX-E30     |
| 8     | DM-NVX-363     |
| 12    | SAROS ICT5T-12 |
| 3     | TS-770         |

## SAMPLE SYSTEM DRAWING



Wire Legend: ● CAT 5/6 ● HDMI® CABLE ● SPEAKER ● AUDIO ● CONTROL

## KEY FEATURES

- Control the room via Bluetooth® connectivity to the touch screen with Crestron ONE™ mobile app. Safely use the room with minimal touching of communal surfaces
- DM NVX integrates the room as part of the AV-over-IP ecosystem and allows for events to be distributed campus wide
- The CP4N 4-Series™ control system integrates and automates technology and allows users in the space to control room functions such as lighting and shades
- The DM-NVX-DIR-80 provides an intuitive web-based user interface to facilitate system configuration, signal routing, and diagnostics of the complete AV network

## EXISTING CLASSROOM CONVERSION TO HYBRID

SYSTEM DESIGN FOR A LEARNING ENVIRONMENT CAPABLE OF IN-CLASS AND SIMULTANEOUS ONLINE LEARNING USING SOFTWARE-BASED VIDEO CONFERENCING LIKE ZOOM, TEAMS, AND MORE.

- A simple and scalable solution providing a consistent user experience
  - Allows users to use whatever technology they bring to the space or existing technology by integrating seamlessly with existing mics, speakers and cameras
- The UC-C100-Z supports Shure IntelliMix® Room digital signal processing (DSP) software to enable integration with custom audio components such as networked microphones and power amplifiers<sup>1</sup>
  - IntelliMix Room integrates seamlessly with the UC-C100-Z and runs on the UC Engine as software with no additional hardware requirements
- Control the room via Bluetooth® connectivity to the touch screen with Crestron ONE™ mobile app. Safely use the room with minimal touching of communal surfaces
- Complete and centralized 4K AV presentation control and signal routing using the DMPS3-4K-350-C
- Advanced support available with Crestron Flex Care for the UC-C100-Z
  - Unprecedented levels of coverage, ensuring that students and faculty never miss out on the promise of collaboration

### BOM EXAMPLE

| COUNT | NAME                |
|-------|---------------------|
| 1     | UC-C100-Z           |
| 1     | AMP-2210HT          |
| 2     | DM-RMC-4KZ-SCALER-C |
| 1     | DM-TX-4KZ-202-C     |
| 1     | PW-5430DUS          |
| 6     | SAROS IC16T         |
| 2     | USB-NX2-LOCAL-1G    |
| 2     | USB-NX2-REMOTE-1G   |

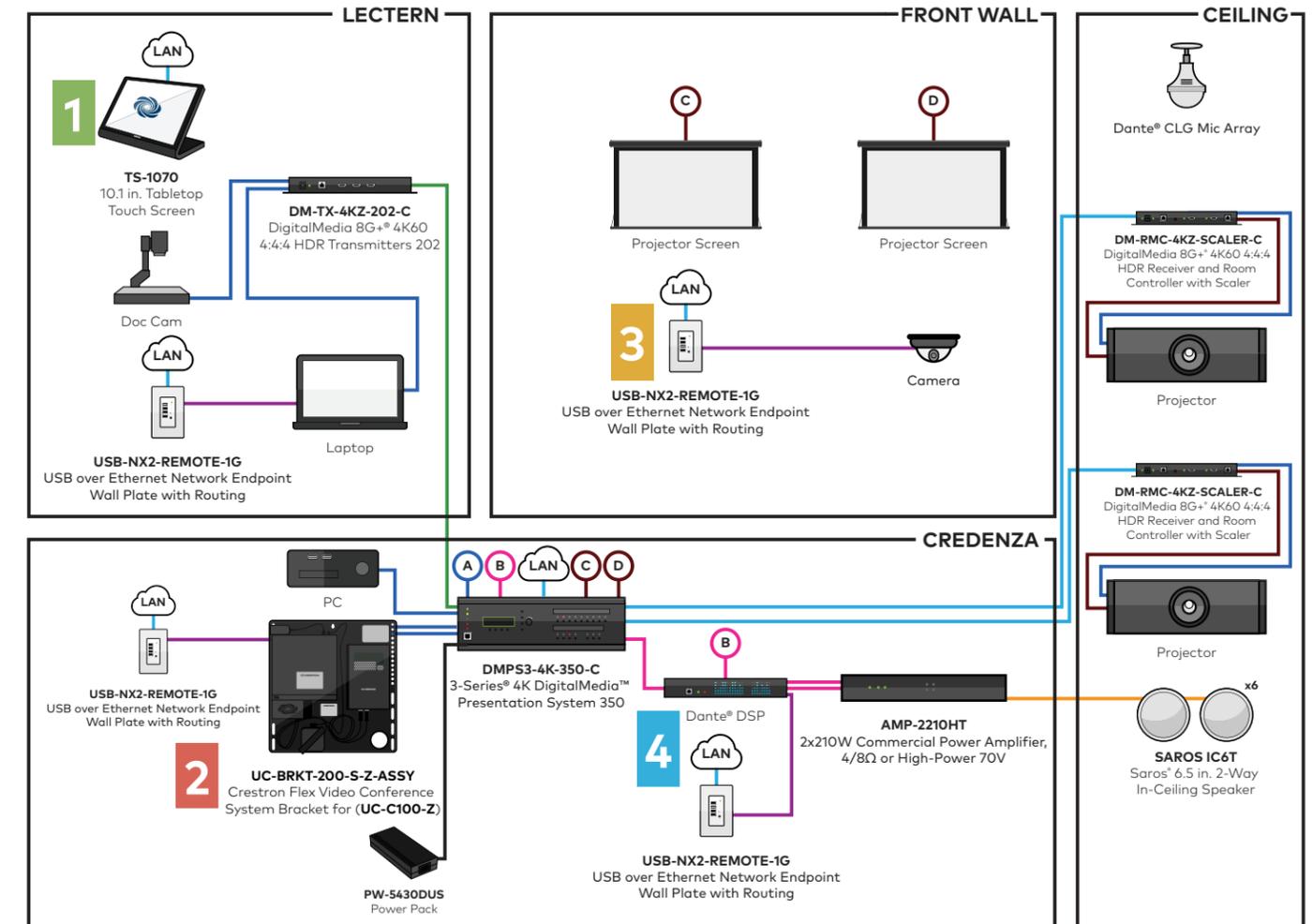
<sup>1</sup> If using IntelliMix DSP software, no need for a hardware based DSP as shown. However, a Dante enabled DSP is needed to support network audio as shown

### FEATURES



DM® Lite

### SAMPLE SYSTEM DRAWING



Wire Legend: ● CAT 5/6 ● HDMI® CABLE ● DM ● SPEAKER ● AUDIO ● CONTROL ● USB

### KEY FEATURES

- 1 Easily control the native Zoom Rooms UC interface from the same UI that controls the rest of the room
- 2 The UC-C100-Z system provides the essential components needed to seamlessly integrate into an existing space using existing mics, cameras and speakers
- 3 USB-NX2 devices allow for flexible installation by extending USB connectivity from devices
- 4 Integrates seamlessly with 3rd party Dante network audio enabled mics and DSPs

# HYBRID/HYFLEX CLASSROOM

AS MANY COURSES ARE BEING OFFERED WITH SOME STUDENTS LEARNING REMOTELY WHILE OTHERS ARE IN THE CLASSROOM, THIS DESIGN PROVIDES WIRED OR WIRELESS PRESENTATION WHILE CONNECTING TO A ZOOM MEETING.

- Native Zoom Rooms touch screen UI provides a consistent, simple user experience with one-touch meeting joins
- The UC-C100-Z kit integrates into existing cameras and DSPs allowing for hybrid collaboration between in person and remote participants
- When no source is connected, the AM-3200-WF displays a customizable welcome screen on the room display with simple instructions for connecting and presenting. Integration with Microsoft Exchange Server® (for Outlook® and Microsoft 365® software users), Google Calendar™, or Crestron Fusion® room scheduling software allows the space's availability and meeting details to appear on-screen
- With integration of the AM-3200-WF, the touch screen provides an additional view of the room schedule and meeting details as well as controls for input source selection, display power on/off, and display volume and mute
- Enterprise grade security at the device level such as 802.1x and Active Directory® credential management
- Zero touch deployed and managed from a 100% Cloud solution in Azure® IoT Hub

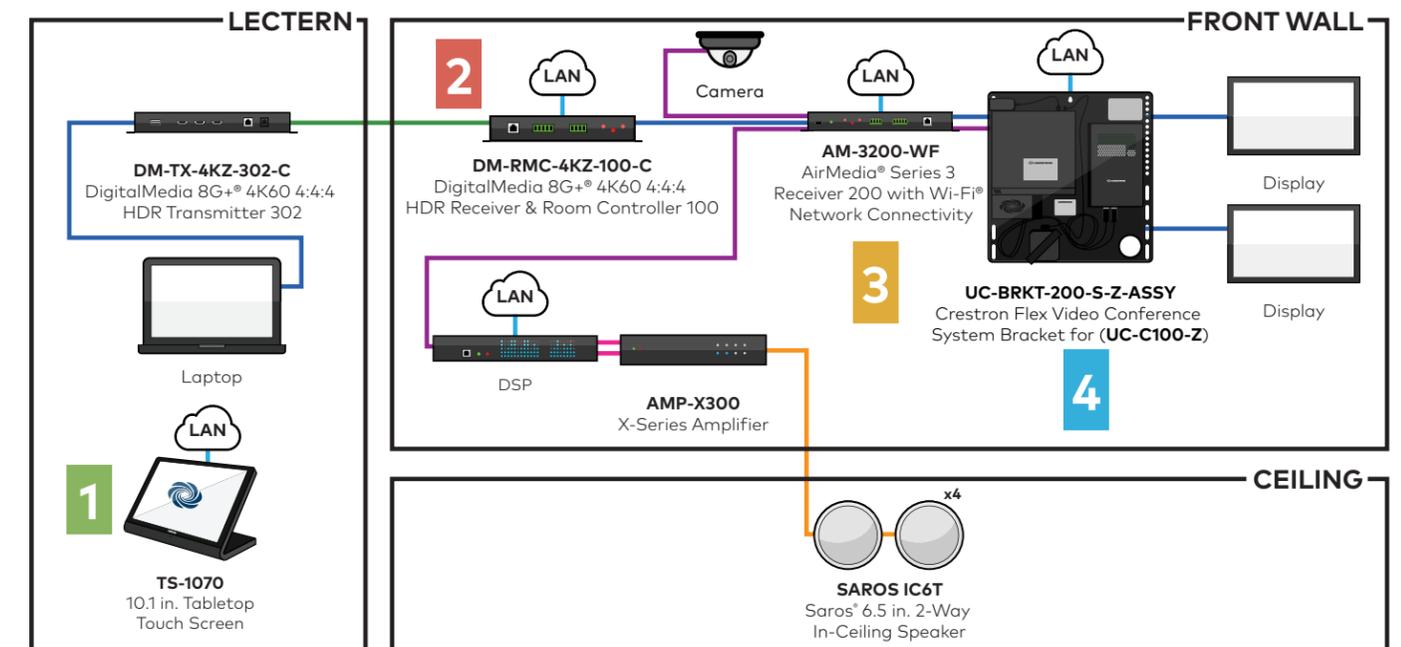
## FEATURES



## BOM EXAMPLE

| COUNT | NAME                 |
|-------|----------------------|
| 1     | AM-3200-WF           |
| 1     | AMP-X300             |
| 1     | DM-RMC-4KZ-100-C     |
| 1     | DM-TX-4KZ-302-C      |
| 4     | SAROS ICI6T-W-T-EACH |
| 1     | UC-C100-Z            |

## SAMPLE SYSTEM DRAWING



Wire Legend: ● CAT 5/6 ● HDMI® CABLE ● DM ● SPEAKER ● AUDIO ● USB

## KEY FEATURES

- 1 Easily control the video conferencing platform and other video inputs
- 2 Up to 4K60 4:4:4 and HDR video quality
- 3 In addition to wireless presentation, the AM-3200-WF includes USB and HDMI inputs and can be used as a content switcher
- 4 The UC-Engine-Z as part of the UC-C100-Z kit supports dual displays

## DESIGN RESOURCES

All featured designs can be found in the database below:

[Design Database](#)

[Application Drawings](#)

[Revit® Files](#)

[CAD Blocks](#)

[CSI Specs](#)

Contact us for more information | [crestron.com/education](https://crestron.com/education) | Crestron 24/7/365 True Blue Support 888.273.7876 |  
Crestron Technical Design Assistance 800.237.2041

#### World Headquarters

15 Volvo Drive  
Rockleigh, NJ 07647  
800.237.2041  
201.767.3400  
[crestron.com](https://crestron.com)

#### Latin America

Bldv. Manuel Avila Camacho 37-1A  
Col. Lomas de Chapultepec  
CP 11560  
México  
+52 (55) 9159.5900  
+ (305) 290.4978  
[crestron.com.mx](https://crestron.com.mx)

#### Crestron Europe B.V.

Oude Keerbergsebaan 2  
B-2820  
Rijmenam  
Belgium  
+32.15.50.99.50  
[crestron.com](https://crestron.com)

#### Australia

Level 5  
15 Help Street  
Chatswood NSW 2067  
Australia  
+61.1800.555.040  
[ANZHQ@crestron.com](mailto:ANZHQ@crestron.com)  
[crestron.com](https://crestron.com)

#### New Zealand

Unit 18  
144-160 Beaumont Street  
Westhaven, Auckland 1010  
New Zealand  
+64.800.273.787  
[ANZHQ@crestron.com](mailto:ANZHQ@crestron.com)  
[crestron.com](https://crestron.com)

#### Israel

14 Hata'as Street  
Kfar Saba, 4442514  
Israel  
+972.9.7685556  
[crestron.co.il](https://crestron.co.il)

#### India

Unit 101 & 102 RMZ Ecoworld  
Campus 6B Sarjapur Marathalli  
Outer Ring Road  
Bangalore 560103  
1.800.3005.8822  
[INDIAsalessupport@crestron.com](mailto:INDIAsalessupport@crestron.com)  
[crestron.com](https://crestron.com)

#### NE Asia

Suite 3101-02, 31/F Oxford House,  
Taikoo Place 979 Kings Road  
Hong Kong  
+852 800 969 996  
[NEAsalessupport@crestron.com](mailto:NEAsalessupport@crestron.com)  
[crestron.com](https://crestron.com)

#### China

487 Tian Lin Road Gems Park  
Block 25 Xu Hui District  
P.R.C. Shanghai 200233  
Toll Free Phone: 400.880.9700

#### SE Asia

31 Kaki Bukit Road 3  
#01-04 & #01-05  
Techlink  
Singapore 417818  
+65.6394.9380  
[crestron.com](https://crestron.com)

#### Japan

1736-3 Higashitsuda-Cho  
Matsue City 690-0011  
Japan  
+81.852.60.5185  
[crestronjapan.com](https://crestronjapan.com)

#### South Africa

Hampton Office Park Atterbury House  
20 Georgian Crescent East Bryanston  
Johannesburg  
South Africa