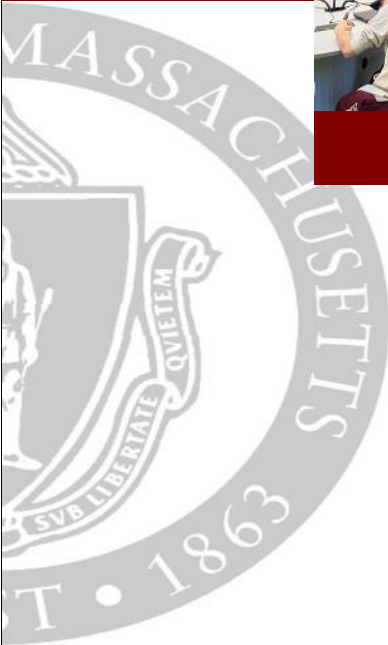




UMass Amherst  
Information Technology

Audio Video  
Technical Standards

April 2020



## Audio Video Technical Standards

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## 1. Introduction

The University of Massachusetts Amherst has a long history of integrating audio-visual media into the curriculum. New, emerging technologies have reshaped teaching and learning, placing additional demands on existing facilities and support staff. To effectively support the use of technology for teaching and learning as the needs of our students and faculty continue to grow, it is critical to have easy-to-use, consistent, and reliable solutions in place across campus. Standardizing equipment installations and configurations across similar spaces will lower the learning curve for both faculty and students and reduce the number of support issues. This document outlines equipment categories, types of spaces, requirements, and expectations for audio-visual equipment to be used on the Amherst campus. Any variance from these design practices and this equipment list is subject to review and approval by authorized UMass Amherst representatives to ensure we have clear decision rights on the final equipment list.

## 2. ADA Compliance

Supplier shall comply with the ADA by designing its Deliverables in a manner that supports assistive software or devices such as (but not limited to) large print interfaces, text-to-speech output, voice activated input, refreshable braille displays, alternate keyboard or pointer interfaces, and by other means to ensure that end users with disabilities have an equal and equitable opportunity to the use and enjoy the Deliverables in a manner consistent with the W3C Web Content Accessibility Guidelines (WCAG). Supplier shall provide to UMass Amherst a current completed Voluntary Product Accessibility Template (VPAT), with revisions to the VPAT as Deliverables are updated, to demonstrate compliance with the most current WCAG levels A and AA. If the Deliverables do not comply with the most current version of the WCAG levels A and AA, UMass Amherst reserves the right to terminate this Agreement, seek redress for harm incurred by end users and to adapt the Deliverables in order to comply with federal and state accessibility laws. UMass Amherst may also request roadmaps from the supplier for accessibility fixes with timelines.

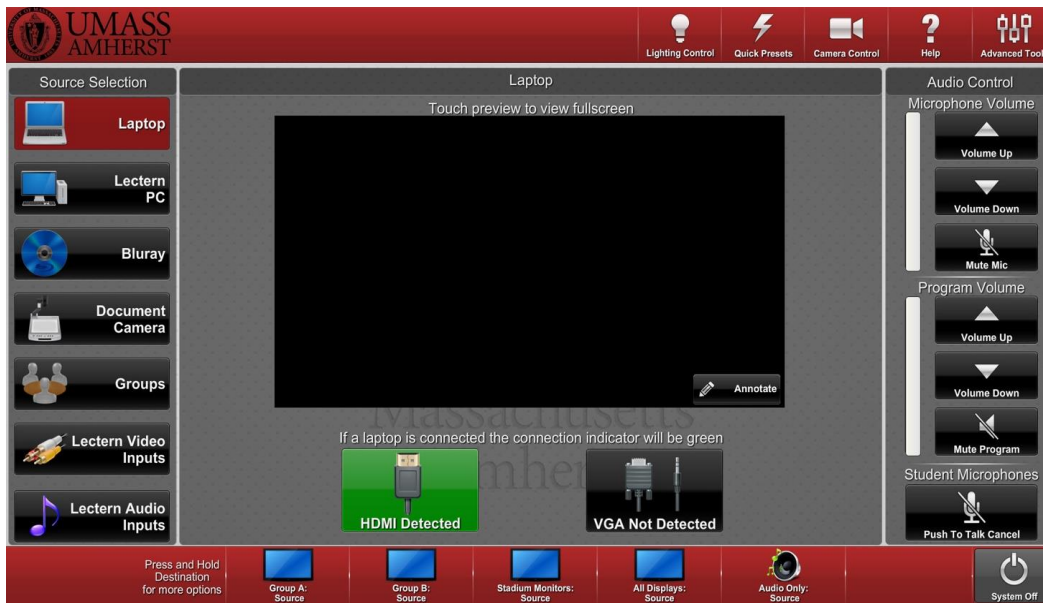
## 3. User Interfaces

To comply with industry best practices, all room A/V systems will be required to have an analog button panel control system user interface provided by the vendor. The interface will be designed to control audio-visual input and outputs for the room in which they are installed. If a touch-panel control interface is requested, it will be installed in addition to the analog button panel but cannot be used in place of the button panel. All control interfaces will be designed according to the standards shown below. UMass Amherst will work with the vendor to ensure that the display meets the UMass Amherst Touch Panel Layout standard.

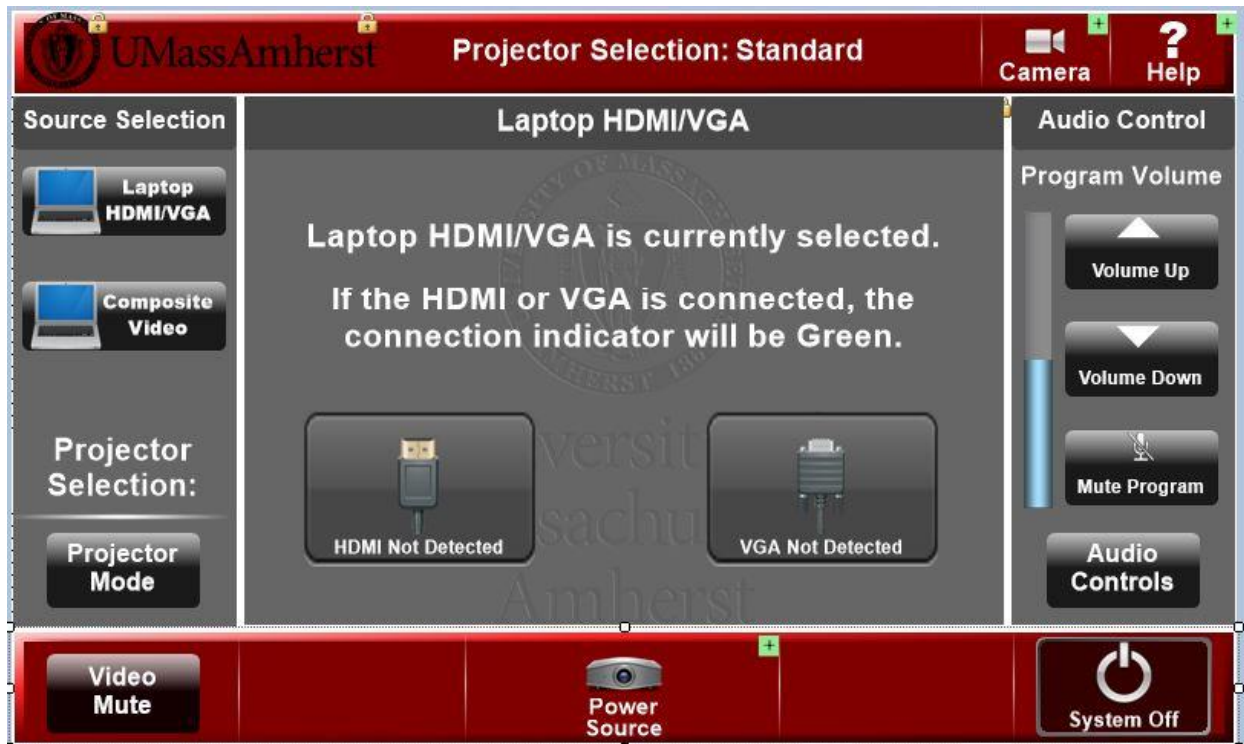
### Required Push Button Panel



## Touch Panel Example Layout - High Complexity



## Touch Panel Example Layout - Low Complexity



## 4. AV Equipment Category Technical Security Standards

All information technology resources, regardless of ownership, that process, store or transmit institutional information or research data must adhere to campus policies, including the Information Security Policy. To meet the information security control requirements in the policy, devices should implement the relevant security standards and controls based on the categorization and risk of the implementation.

The security controls for AV equipment include the following high-level categories and concepts. Additional details can be found in the Audio/Video Information Security Controls Document.

- **Access Control:** Access to the devices should be controlled to limit access to authorized users.
- **Audit and Accountability:** System events and electronic access to the system should be logged.
- **Configuration Management:** Define a standard secure configuration and make sure the devices adhere to the configuration. This includes only installing and allowing the use of authorized software.
- **Identification and Authentication:** Manage user accounts and require authentication to gain access to the system.
- **Media:** Secure local and removable media.
- **System and Communications:** System designers/installers will work with UMass IT to ensure network access to the systems should be limited to that which is necessary for the operation of the system, and remote access should use secure protocols. The operating system and applications should be supported and up to date. The systems should resist threats, such as malware.
- **Vulnerability Management:** UMass IT will routinely scan AV equipment for vulnerabilities and expects that discovered issues will be resolved within a reasonable time-frame, based on the risk.

UMass Amherst IT will work with the system designers/installers to ensure that the installed equipment meets the acceptable security standards.

## 5. Individual Location Specifications

Individual spaces should be categorized into an AV System category/sub-category to identify mandatory components. Optional components listed in the AV System categories table may be selected for installation in specific spaces by authorized UMass Amherst representatives. When optional components are selected the selected options must be documented and AV details for each space provided to UMass Amherst IT to ensure spaces are appropriately configured and equipped to support all installed components.

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Addition of Distance Learning functionality may be requested for any individual instructional space. Selected AV equipment and full room layout details for distance learning-equipped spaces must be documented and presented to and approved by authorized UMass Amherst representatives prior to AV equipment procurement and installation.

## 6. Location Categories

Definitions of categories of physical locations are listed below and requirements in following sections.

### Traditional Classroom

Traditional classrooms are primarily instructional spaces furnished with forward-facing seating. They may be equipment category **Basic, Medium, Medium Plus, High, or High Plus.**

### Auditorium

Auditoriums are intended to support both instruction and presentation activities and typically consist of tiered forward-facing seating.

They may be equipment category **Medium Plus, High, or High Plus.**

### Flex Classroom

Flex classrooms are primarily instructional spaces that have easily reconfigurable furniture. The intent is to facilitate dynamic classroom layout changes to support evolving instructional styles.

They may be equipment category **Basic, Medium, Medium Plus, High, or High Plus.**

### Computer Classroom

A computer classroom serves primarily as an instructional space where all students have direct access to a computer during instructional activities. When classes are not scheduled in the space computers located there are available for general student use.

They will be equipment category **Very High.**

### Team-Based Learning Space

Team-based learning spaces are intended to facilitate interpersonal engagement between members of sub-groups, including simple and transparent sharing of technologically-based resources.

They will be equipment category **Very High.**

### Meeting Room

Meeting rooms are intended for local discussion and sharing of technologically-based resources. Video Conferencing capabilities can be added when desirable. **Basic, Medium, Medium Plus, High, or High Plus.**

### Dedicated Video Conferencing Suite

Video conferencing suites are spaces designed for small groups to engage with individuals at one or more remote locations. These facilities are typically used for small-group engagements across distributed geographic sites rather than formalized instructional activities.

They may be equipment category **Video Conference Suite**

### Distance Learning

Distance learning spaces are intended to support instructional activities that span multiple geographic locations. Distance learning functionality is typically added into an existing category of instructional space (e.g. auditorium, traditional or flex classroom, etc.)

They may be equipment category **Distance learning Add-On Option**

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## **Innovation Space**

Innovative Spaces are classrooms or common areas for teaching and learning where instructors and students can experiment with different furniture types and technology components. They will be equipment category **Very High**.



## **7. AV System Categories**

University of Massachusetts Amherst campus AV equipment installations fall broadly into one of two categories, each with multiple sub-categories:

### **Instructional Space AV System Categories**

The Instructional spaces are placed in one of these categories either Basic, Medium, Medium Plus, High, High Plus, or Very High.

## 8. Equipment Categories

Audio-Visual equipment can be classified into a number of different broad categories, each of which have differing requirements for accessibility, security, sound isolation, and monitoring. Current UMass Amherst categories include Media Input, Media Output, Media Control, Capture Systems, Infrastructure, and Video Conferencing. Each category is outlined in more detail below

### Media Output

Media Output consists of devices that deliver audio and/or visual material to the occupants of the local space. Examples include projectors, large flat-panel displays, and audio systems.

### Media Input

Media Input consists of interfaces or devices that allow audio and/or visual material into the local Audio-Visual system. Examples include VGA, HDMI, or composite inputs, CD/DVD players, and microphone systems.

### Media Control

Media control supports selection of which audio and/or visual Media Input is delivered to the Media Output system. Examples may include push-button or touch-screen controllers as well as network-accessible media control systems.

### Capture Systems

Capture systems provide audio/video recording of events taking place within a local space as well as what is being presented on the local Audio-Visual system.

### Infrastructure

Infrastructure systems provide the back-end functionality necessary to support the Media Input, Media Output, and Media Control systems. Examples include audio amplifiers and matrix switches.

### Video Conferencing

Video conferencing systems provide the ability to interact with remote individuals or locations. There are three tiers of video conferencing capability that may be present in given locations:

1. Basic system consisting of display and capability to interact with remote individuals or locations through computer-based applications
2. Standard system capable of stand-alone interaction with remote individuals or multiple remote locations using single, typically co-located display, camera, and microphone.
3. Full systems integrated into a given space that support highly dynamic audio input, audio reinforcement, multiple content inputs, etc.

## 9. AV System Category Table

Category	Location Category	Media Output	Media Input	Media Control	Capture System	Video Conferencing	Options
<b>Basic</b>	Traditional or Flex Classroom, Meeting room	Digital Display/projection	HDMI, VGA	-	-	-	Portable equipment <b>Distance Learning Add-On</b>
<b>Medium</b>	Traditional or Flex Classroom, Meeting Room	Digital Display/projection, speakers	HDMI, VGA	AV Control Panel/Switching	-	-	<b>Distance Learning Add-On</b>
<b>Medium Plus</b>	Traditional or Flex Classroom, Auditorium, Meeting Room	Digital Display	HDMI, VGA	AV Control Panel/Switching	-	-	Camera, Blu-Ray player RF MIC and Speakers, Wireless Projection, <b>Distance Learning Add-On</b>
<b>High</b>	Traditional or Flex Classroom, Auditorium, Meeting Room	Digital Display(s), Speakers	HDMI, VGA, Blu-Ray Player	AV control via button panel or 10' touch panel minimum, Digital switch or Matrix switch	Presenter facing Camera, microphone input, AV Output Feed(s)	-	Wireless content sharing, Document Camera, wireless mic, Blu-Ray player, audience facing camera, <b>Distance Learning Add-On</b>
<b>High Plus</b>	Traditional or Flex Classroom, Auditorium, Meeting Room	Digital Display(s), Speakers	HDMI, VGA, Wireless mic, Blu-Ray player.	AV control via button panel or 10' touch panel minimum, Digital switch or Matrix switch	Presenter facing Camera and audience facing Cameras, microphone input, AV output feed(s)	Stand-alone Codec, Confidence Monitor	Wireless content sharing, Document Camera, Integrated Microphone System, Multiple Camera Capture System, <b>Distance Learning Add-On</b>
<b>Very High</b>	Team-Based Learning Spaces, Computer Classrooms, Innovation Space, Meeting Room	Custom	Custom	Custom	Custom	Custom	Custom

### 10. Distance Learning Add-On Option

AV System Category	Location Category	Media Output	Media Input	Media Control	Capture System	Video Conferencing	Options
<b>Multi-Modal Add-On</b>	Add-on to any Instructional Space	Minimum (2) Digital Displays for students, third confidence monitor for instructor, Speakers	RF In Class microphone system, student-accessible microphone system	Touch Panel media control	Multiple Cameras, microphone inputs, AV output feed(s)	Codec	Microphone system

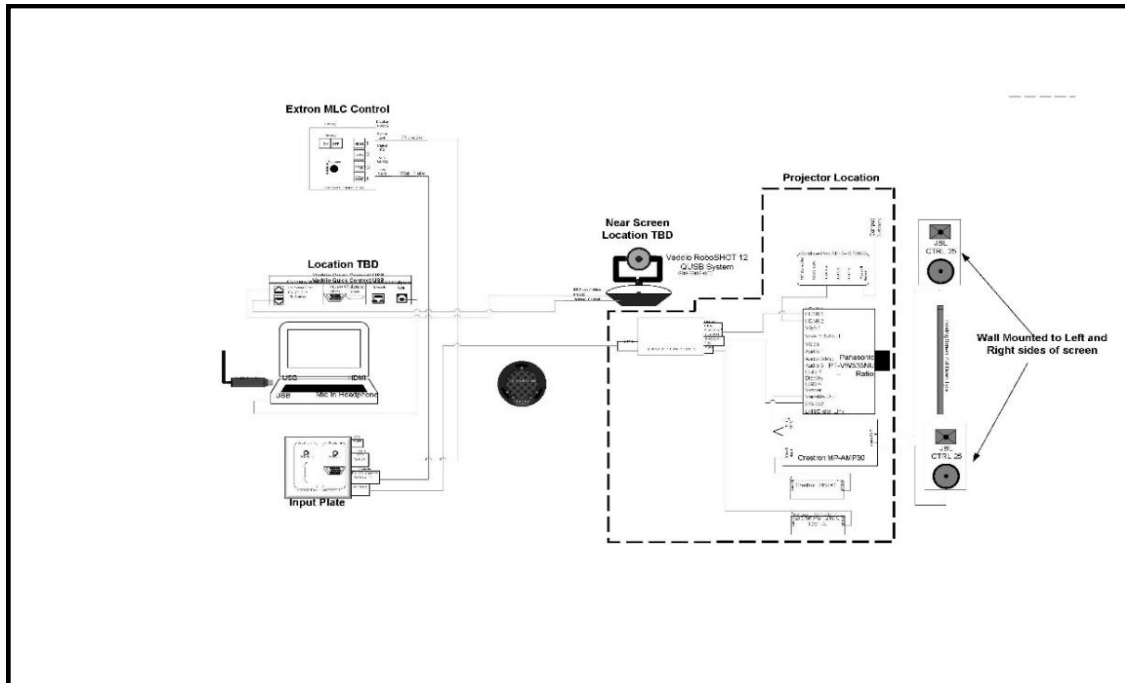
### 11. Dedicated Function Space AV System Category Table

AV System Category	Location Category	Media Output	Media Input	Media Control	Capture System	Video Conferencing	Options
<b>Meeting Room</b>	Conference Room, Board Room	Digital Display	HDMI, VGA	Extron or Crestron	Echo 360		Wireless Projection Capability, Video Conferencing Codec, Speaker System, Integrated Microphone System, Multiple HDMI Input Locations, AV Matrix Switching
<b>Video Conference Suite</b>	Dedicated Video Conferencing Suite	Digital Display	HDMI, VGA	Extron or Crestron	Echo 360	Stand-alone Codec	Multiple Displays, Speaker System, Integrated Microphone System, Multiple HDMI Input Locations, AV Matrix Switching

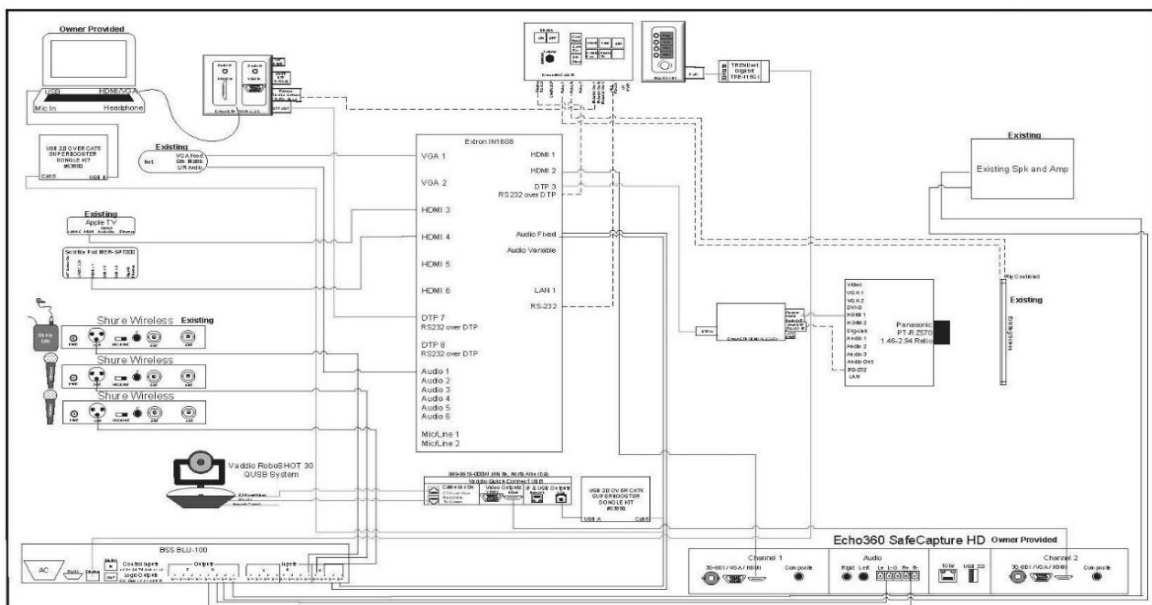
## 12. Equipment Layout by Location Category

Reference diagrams for each location category showing placement of equipment.

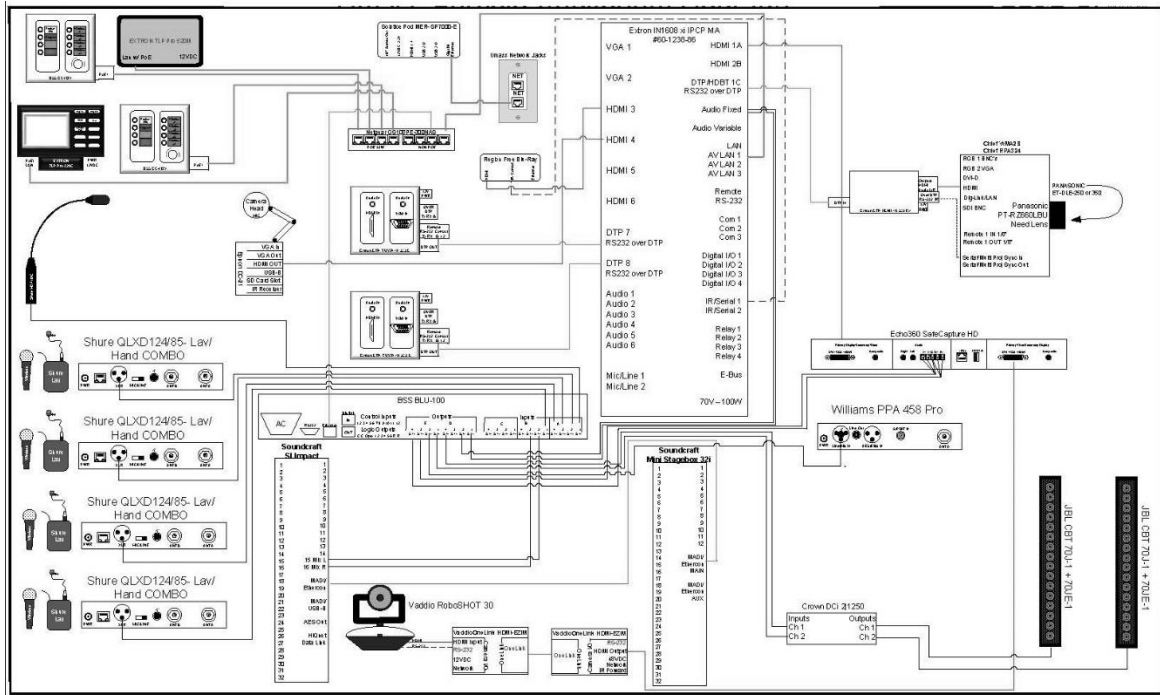
### Basic Instructional Space



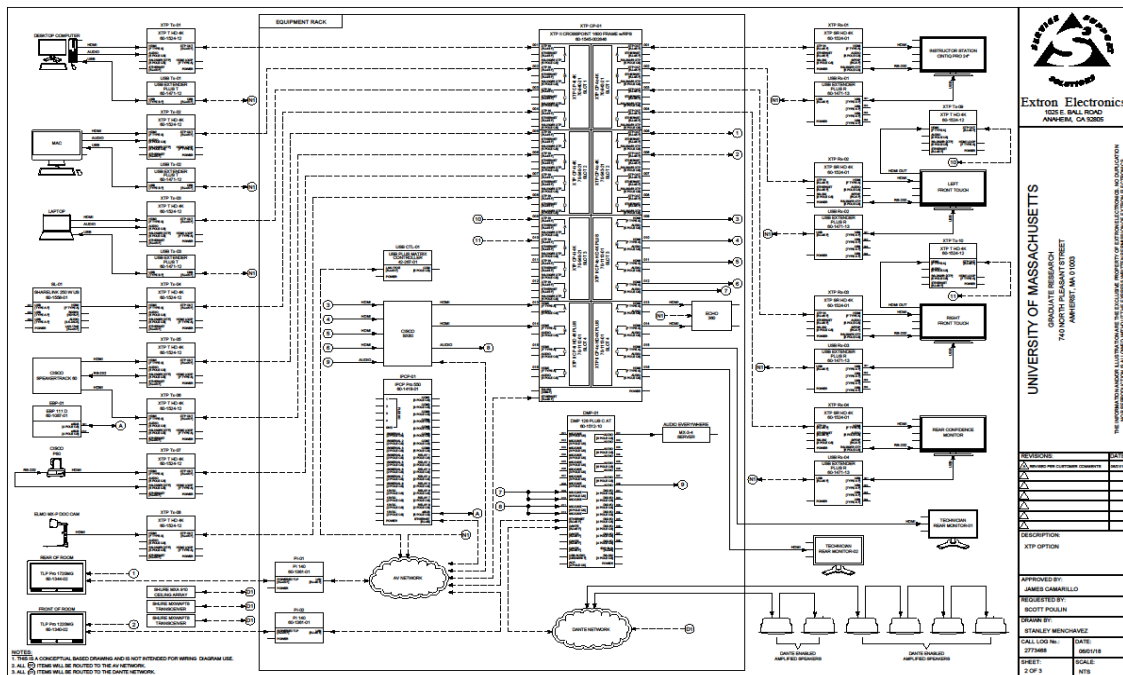
### High Instructional Space



## High Plus Instructional Space



## Very High Instructional Space



## 13. AV Equipment Design Practices

### Network Connectivity

UMass IT is charged with operating a complex campus network that supports multiple functions and systems. AV equipment, like many other systems and devices, is increasingly reliant on reliable and consistent network connectivity for operation and management. The introduction of non-standard network switches into the campus network presents a risk of network degradation or outage for all network users and thus must be handled in a consistent manner to reduce the potential for network performance degradation or outages.

UMass IT has developed a cabling specification that supports the current generation of audio-visual controllers. In order to “future proof” the infrastructure UMass IT requires installation of oversized pathway between AV racks and the local network closet. This will support low-cost installation of additional cable should wiring requirements for the next generation of AV controllers and equipment require multiple direct connections to UMass IT network equipment. Also, note that due to the complexity of the UMass network environment and the multitude of systems connecting to it, at this time UMass IT cannot provide supportable and sustainable Power-over-Ethernet services for network-connected equipment. Therefore, all AV system designs must incorporate local 120v power outlets near any AV system element that requires power. Bill of material must include all necessary AV equipment power supplies and transformers for operation on 120v power.

#### Summary:

- AV system Ethernet network cabling must be laid out as shown below to support the most common AV system architectures.
- AV system elements electrical power must be provided through local transformers and not thru UMass Amherst POE injectors or switches.
- AV contractors may provide POE injectors or POE switches attached to the controller but may not place this equipment in UMass IT network closets.

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## General Wired Network

All IT data and AV locations shall be in a double gang box with a single gang reducer plate for the faceplate. These boxes shall have at a minimum a 1" conduit to the nearest accessible ceiling. Follow TIA-569-B standards for sizing of the conduit ensuring a maximal 60% fill ratio allowing for future expansion. IT data cabling shall always be a blue jacketed Cat 6 (or better) cable and IT wireless cabling shall always be a green jacketed Cat 6A (or better) cable.

An extra, unused, 3" conduit from the AV closet to the nearest accessible ceiling with existing low voltage cable tray or J-hooks shall be installed to accommodate future needs from the IT closet.

See the UMass Design & Construction Management's Design Guidelines website for the current IT specification document, which details acceptable products and manufacturers, installation practices, and required test results of all IT layer 1 infrastructure.

<https://www.umass.edu/dcm/design-guidelines/>

## Wireless Network

To facilitate current use and future expansion, UMass IT has developed standards for the wireless network design in all classroom and auditorium spaces. Specific details for all renovations and new construction will be addressed on a case by case basis as the design for a 200 seat auditorium is different than a 50 seat classroom and very different from an 800 person capacity Ballroom, all of which are present on campus. However, the standards detailed below will provide general guidelines to assist in planning before these specifics are developed.

The wireless AP goal for all UMass IT spaces is to accommodate all identified usage for the space with the assumption that there will be approximately 3 devices per seat. Most devices will be on the 5GHz Frequency, which can be addressed with different antennas and AP models.

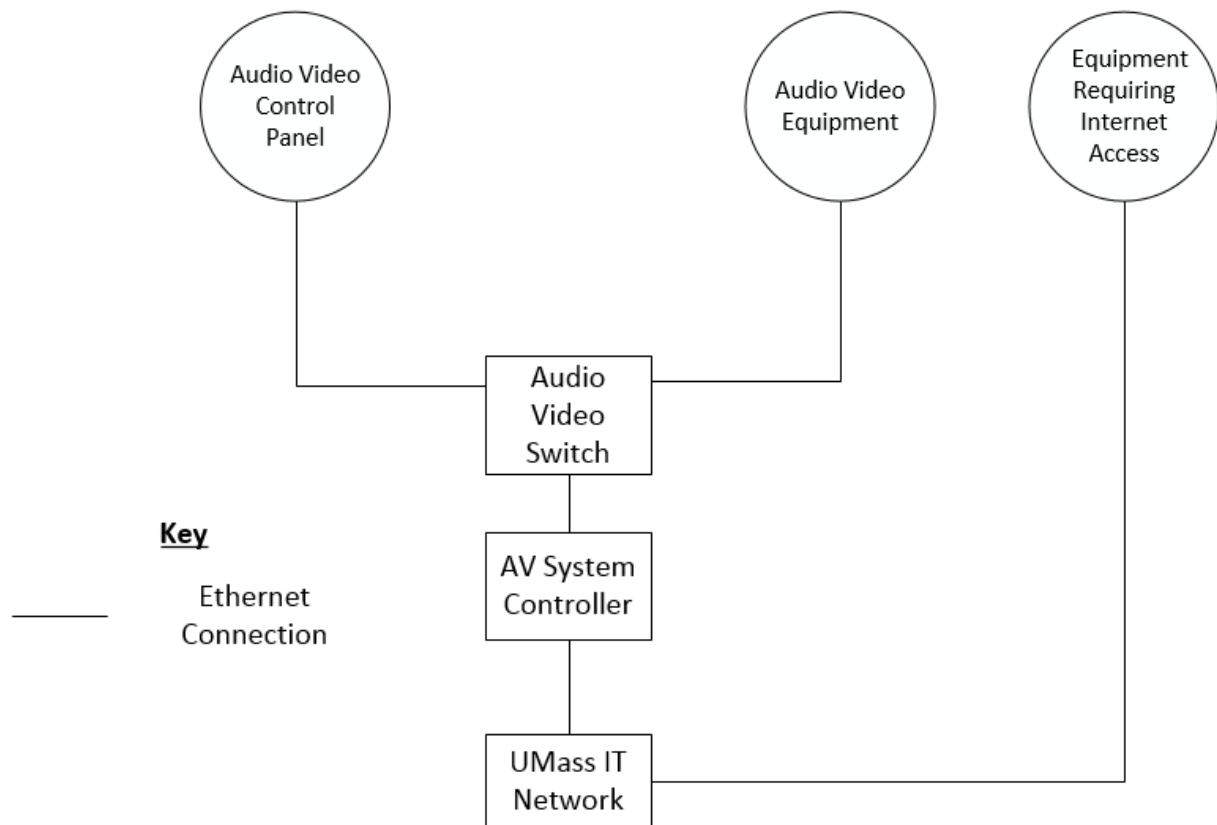
UMass IT will not specify AP model numbers at time of the AP design. Wireless technology changes at such a rapid pace, what may be the current standard solution when a building is being designed may be considered antiquated by the time the purchases are made. UMass IT will provide the specific AP model at time of installation and the contractor will be charged for the correct AP mount, model, and potential antennas.

Whenever possible ceiling-mounted APs with a downward orientation on a double gang box and a single gang reducer plate are preferred. Two Cat6a (or better) cables must be run to each location specified on the design. The cables must be terminated and tested as good with at least 12 inches of slack coming out of the single gang box before UMass IT can accept ownership of the space. The preferred process is for UMass IT to develop all AP designs. If an outside agency develops an AP design, it must be approved by UMass IT **prior to construction** to verify that it conforms to our standards.



## 14. Audio Video Network Deployment

The Audio Video equipment Including the AV system Controller should connect to a non-UMass Amherst IT switch. The Controller is required to have a separate Ethernet port to attach to the UMass Amherst Network. There will not be any connections from the AV equipment or a Non-UMass switch into the UMass Amherst Network. The only connection to the UMass Amherst network will be thru the AV system controller. UMass Amherst IT switches do not provide POE and if needed it should be provided by a POE device or the Audio Video switch.



To accommodate future wiring needs from the AV closet to the IT closet all designs must include: “3” or greater conduit from the AV closet to the nearest accessible ceiling with existing low voltage cable tray or J-hooks. If firestop within the conduit is necessary only a product that remains malleable can be used; acceptable products are firestop foam plugs and firestop putty, for example part number Hilti CP 618 or equivalent”

## 15. AV Network Cable Standards

The following is a list of preferred colors for cables used to connect different devices. This color scheme is useful when assisting staff with connectivity issues where a cable color can identify a connection type.

### Cable Type

For all AV Ethernet cabling Cat-6 cable is required. Shielded or unshielded cabling will be determined by the project specification.

### Jack and Cable Color

#### Shielded Cat-6

Jack color ----- (Yellow)

Shielded Cat-6 cable color ----- (Yellow)  
(Or approved UMass substitute cable color)

Riser cable part number	Plenum cable part number
<a href="#">UN884020104/10</a>	<a href="#">UN874030404/10</a>

#### Unshielded Cat-6

Jack color ----- (Purple)

Unshielded Cat-6 cable color ----- (Purple)  
(Or approved UMass substitute cable color)

Riser cable part number	Plenum cable part number
<a href="#">UN884015614/10</a>	<a href="#">UN874025914/10</a>

## 16. AV Network Addressing Technical Standard

AV equipment is becoming increasingly reliant on networking. Dedicated 802.1q VLANs are required for management functions, Dante audio, and (AVB) Audio Video Bridging. All ports, with the exception of those needed to uplink switches (should multiple switches be needed for a design), should be access/untagged ports. These networks should exist in the minimum number of switches possible.

The following RFC 1918 networks will be used for the addressing on the “Non-UMass Switch” network: Reference section 14 network diagram.

- 192.168.128.0/23 (802.1q VLAN # 10) – Management Functions
  - 192.168.128.1 – reserved for NAT gateway (NAT gateways discouraged)
  - 192.168.128.2 - system controller
  - 192.168.128.3 - .10 – dedicated for computers temporarily connected for configuration and –maintenance
  - 192.168.128.11 - .59 – Touch panels and user interfaces
  - 192.168.128.60 - .120 – Speakers and Microphones
    - Where applicable, web-management interfaces shall be on odd addresses and Audio/Dante interfaces on even addresses. Example: A Shure MXA 910 would have its Dante IP address set to 192.168.128.40 and its web/management interface set to 192.168.128.41. If a device does not have a web/management interface, the associated IP address should be unused. The lowest available addresses in any defined range should be used first.
  - 192.168.128.121- 192.168.129.250 – special projects
- 192.168.130.0/24 (802.1q VLAN # 11) – AVB
- 192.168.131.0/24 (802.1q VLAN # 12) – Reserved for future use

The last three RJ-45 network ports on network switches used in the AV system shall be reserved and configured for VLANs 10-13, respectively. These ports are for configuration/management and should not be used for fixed equipment.

## 17. AV Equipment Category Technical Standards

UMass IT routinely updates the equipment specifications listed below to maintain currency with market offerings. Any projects being executed on a timeline of months between AV system design and installation should use the currently specified equipment.

Longer-time-horizon projects where system design and system installation are separated by a year or more become more complex. In particular, new building AV systems are designed years in advance of system deployments. All initial longer-horizon AV system designs should establish building infrastructure requirements (network cabling, electrical outlets, rack locations, etc.) and should use the then-current AV equipment technical specifications to generate an overall AV equipment budgetary estimate. As the project prepares to procure AV equipment closer to the time of the AV system installation, the specific AV equipment makes and models to be purchased must be selected from the now-current AV equipment technical specifications. Note that due to the nature of technology development and pricing it is expected that equipment costing will remain relatively consistent with the original budgeting as the equipment evolves over time. If choosing to use any equipment not recommended by UMass Amherst IT, that equipment must be reviewed and approved by UMass IT prior to equipment purchase. This is to ensure that it can be integrated into the UMass IT network without compromising the quality of service for the purchased equipment, associated devices or the UMass IT network.

Detailed specifications for selecting make and model for each category of AV equipment are presented in tables below.

## 18. Room Monitoring and AV Resource Management

Extron Global Viewer Enterprise/Crestron Fusion is an SQL server-based platform that simplifies AV system resource management with intuitive control for hundreds of common AV tasks. Whether you're working with 5 or 5000 rooms, GVE/Fusion provide a powerful, flexible way to manage, monitor, and control nearly any device over a standard network. Support teams will appreciate the agility and flexibility GVE provides to access usage data, create reports, and control the system from any computer on the network. The Help Desk view offers a look at the entire enterprise in a single window and access to detailed room data and control with just a click of a mouse.

Extron Global Viewer Enterprise

<https://www.extron.com/tecnology/landing/gve/>

Crestron Fusion

<https://www.crestron.com/Products/Featured-Solutions/Crestron-Fusion>

## 19. Video Equipment

### Displays

Panel Dimension	Manufacturer	Model
46"	Samsung	ME46C
55"	Samsung	Current Model
66"	Samsung	ED-65D
75"	Samsung	BE75T-H
86"	LG	LG 86UM3E-B
98"	LG	LG 98UM3E-B
65" Touch 4K	Promethean	AP6-65A-4K, AP6-65W-4K
75" Touch 4K	Promethean	AP6-75A-4K, AP6-75W-4K
86" Touch 4K	Promethean	AP6-86A-4K, AP6-86W-4K
Wall Mounting Hardware	Chief	PNRUB 42' - 71"
Height Adjustable Mount	Balance Box	400,650 series

### Projectors

Projected Image Size	Manufacturer	Model
1080	Panasonic	RZ-570U (5,700 lumen output)
1080	Panasonic	RZ-670 (6,700 lumen output)
4K long throw	Christie	4K7HD-HS (Optional lens)
1080	Sony	VPL-FHZ700L (Laser)
1080	Sony	VPL-PHZ10 (Laser)
4k	Panasonic	PT-RZ970BU (10,000 lumen output)

### Projection Screen

Manufacturer	Model
Da-Lite	Models vary

## 20. Speakers and Amplifiers

### Speakers

Manufacturer	Model
JBL, Monacor	Current Model, EDL 80DT
JBL, Monacor	Control 26CT, EDL 80DT
JBL, Monacor	Control 28, ETS 630DT
ETC	Combination of Control 26 / 28
AMK 6" (ceiling up to 12') Round	DS64-B-X
AMK 6" (ceiling up to 12') Lay In Grille	DT64-B-X
AMK 8" (ceiling up to 18') Round Ceiling	DS84-B-X
AMK 8" (ceiling up to 18') Lay In Grille	DT84-B-X

### Audio Amplifiers

Manufacturer	Model
Extron	XPA-2003C, XPA-1002C
Crown	XTI series
Extron	IN1808 IPCP MA 70, IN1608 xi IPCP MA 70
Extron	DTP CrossPoint 84 4K IPCP MA 70, DTP CrossPoint 86 4K IPCP MA 70

## 21. Microphones and Systems

### Microphones and Systems

Microphone Type	Manufacturer	Model
Wireless Microphone Receiver	Shure	ULX D4Q
Wireless Hand-Held	Shure	5M58
Wireless Lavalier	Shure	ULXDI
Wired Microphone Amplifier	Shure	
Wired Podium-Mount	Shure or Clock Audio	C-34-E
Individual Location Selectable Microphone (e.g. flex space student seating microphone for questions)	Shure or Clock Audio	

### Dante Microphones and Systems

Device	Manufacturer	Model
Ceiling Array Microphone	Shure	MXA910
Audio Network Interface	Shure	MXWANI8
Access Point Transceiver	Shure	MXWAPT8
Hybrid Bodypack Transmitter	Shure	MXW1
Handheld Wireless Microphone Transmitter	Shure	MXW2/VP68
Gooseneck Microphone Base Transmitter	Shure	MXW8
Boundary Wireless Microphone Transmitter	Shure	MXW6/O
Networked Charging Station	Shure	MXWNCS8

## 22. Input Equipment

### User-Provided Equipment Input Support

Input Location	Manufacturer	Model
Wall-Mount Panel	Extron/Crestron	HDMI wall plate
Podium/Desk-Mount Panel	Extron/Crestron	HDMI Cubby
Wireless Display Access	Mersive	Solstice Pod (Unlimited Enterprise)

### On-Site Media Equipment Inputs

Input Location	Manufacturer	Model
Blu-Ray Player	OPPO	80P-103
Document Camera	Elmo, Wolfvision	MX-P/ PX-30, VZ-9



## 23. Media Control

### Media switching Control Panel

Panel Type	Manufacturer	Model
Wall/Podium Mount Physical Button	Extron	MLC Plus 84 D MLC Plus 200
10" to 17" inch Touch Screen	Extron TouchLink Pro Touch panels	

If a touch-panel control interface is requested, it will be installed in addition to the analog button panel but cannot be used in place of the button panel.

### Capture System

Capacity	Manufacturer	Model
Capture Appliance	ECHO PRO or POD	ES-HW-PRO 002 E
USB Web Cam	Logitech	C922
PTZ Camera	Vaddio or Panasonic	Roboshot 12 HDMI, NDI capable
Tracking Camera USB	HuddleCamHD	SimpliTrack 2
Tracking Camera Codec	Cisco	SpeakerTrack, P60

## 24. Infrastructure

### AV Network Switches

Manufacturer	Description	Model
Ubiquiti	UniFi Switch 8 ports	US-8-150W
Ubiquiti	UniFi Switch 16 ports	US-16-150W
Ubiquiti	UniFi Switch 24 ports	US-24, US-24-250W, US-24-500W
Ubiquiti	UniFi Switch 48 ports	US-48, US-48-500W, US-48-750W
Extreme Networks (only for use when AVB required)	Minimum of 24 ports	

### Media Switching Equipment

Capacity	Manufacturer	Model
Matrix Switching: 4x2 - 8x2	Extron	IN1804, IN1806, IN1808
Matrix Switching: 8x2 - 10x8	Extron	DTP CrossPoint 82/84/86/108 4K
Matrix Switching: 16x16 - 64x64	Extron	XTP II CrossPoint 1600, 3200, 6400
Matrix Control Processor	Extron	IPCP Pro 255, 555
IP Scaling Encoder - HDMI, Ethernet, and USB	Extron	NAV E 501
IP Scaling Decoder - HDMI, Ethernet, and USB	Extron	NAV SD 501
IP System Manager – Max 240 Endpoints	Extron	NAVigator

# UMassAmherst Information Technology

## Video Conferencing Systems

System Category	Manufacturer	Model
Basic	N/A – computer-based	N/A – computer-based
Standard	Vaddio, Cisco	AV Bridge, Webex Board
Full	Cisco	Webex Room Kit Pro

## Furniture

System Category	Manufacturer	Model
Lectern (large auditorium)	Uplift Desk, Spectrum Industries	Rectangular desk, Freedom XRS Elite
Lectern (standard rooms)	Uplift Desk, Spectrum Industries	Rectangular desk, Freedom One Elite
AV Equipment Credenzas	Middle Atlantic Products	C5F2

## Revision History

Number	Revisions	Date	By
1.0	Initial Document Release	11/30/2018	Audio Video Standards Committee
2.0	Edit to cable and face plate color	3/5/2020	Audio Video Standards Committee
3.0	Equipment model and touch panel updates	4/15/2020	Audio Video Standards Committee

**Committee Members:** Rick Tuthill, Executive Sponsor; Gary Landers, Chair; Scott Poulin, Jacob Cunningham, Stephen Pielock, Matthew Misiasek, Matt Harrington, Dale Starr, Paul Zichichi, Kathleen Maloney, Michael Dickson, Ted Mendoza.