



Designing with Automatic Camera Preset Recall (ACPR)

SOLUTIONS APPLICATION GUIDE FOR Q-SYS™

Contents

Getting Started	3
System Components	4
ACPR + Autoframing	9
Designing for Small Conference Rooms	10
Designing for Medium to Large Conference Rooms	11
Designing for Flex Spaces / Divisible Rooms	13
Designing for Lecture Spaces	14

Getting Started

How do I know if Automatic Camera Preset Recall (ACPR) or Seervision intelligent presenter tracking is right for my space?

The primary use case of ACPR is for **participant camera switching**. It ensures any participant in a hybrid meeting or audience member in a classroom or all-hands setting will be seen by the far-end when they talk. This functionality utilizes audio data from in-room microphones to trigger different user-defined camera presets based on the room's seating arrangement and usage.

The primary use case for Seervision is **full-body, fluid-motion presenter tracking**. It is ideal for dedicated presentation areas or stages where more fluid camera movement is critical to delivering the best experience. This includes hybrid lectures in higher ed applications or keynote presentations in corporate spaces.

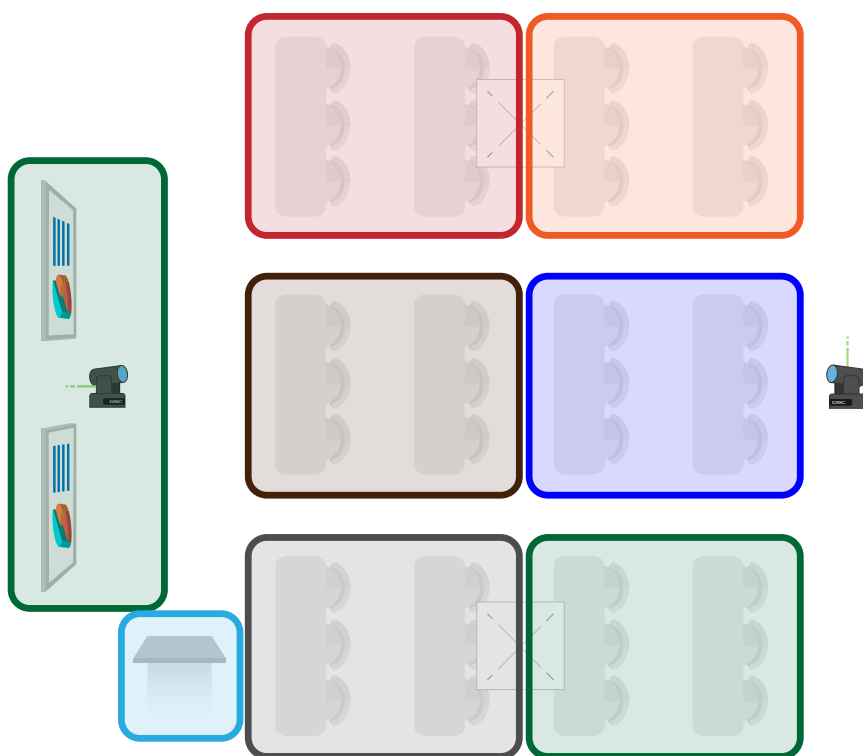
As part of the Q-SYS VisionSuite, these solutions can be used independently or combined to enable best-in-class presenter tracking along with ACPR to handle the audience participation camera switching.

Automatic Camera Preset Recall

- Fixed, pre-determined camera shot presets
- Recall of preset is based on audio data provided by in-room microphone to determine talker's location in the room
- Allows multiple instances to co-exist within a location to support different room layouts or divisions
- Great for locating the active talker in the room and using presets to ensure far-end always sees who is talking

Intelligent Presenter Tracking

- AI-driven presenter tracking
- Continuously adjusts the camera's Pan, Tilt and Zoom for seamless presenter tracking within a defined area
- Utilizes adaptive-full body tracking to provide elevated tracking capabilities over basic facial detection systems
- Great for spaces with dedicated presentation areas where fluid camera movement is critical to delivering the best experience



Each box represents a fixed, pre-determined camera position within this ACPR-enabled space.

System Components: Software

- The ACPR plugin is available for download in [Q-SYS Designer Software](#):
- Open Asset Manager within Q-SYS Designer and search for “Camera”.
- Click “Install”.
- Read the release notes for new capabilities and features.
- Installing the ACPR plugin includes several sample designs. These sample designs demonstrate using the ACPR plugin with Q-SYS Certified Intelligent microphones as well as discrete microphones. These sample designs are a great starting point for Q-SYS programmers.
- Whenever a new version of the ACPR Plugin is released, you will be notified within Q-SYS Designer Software.



Hot tip

A [Q-SYS Scripting Engine License](#) will be required to use any Q-SYS plugin, including the ACPR plugin.

Q-SYS™

Automatic camera preset recall

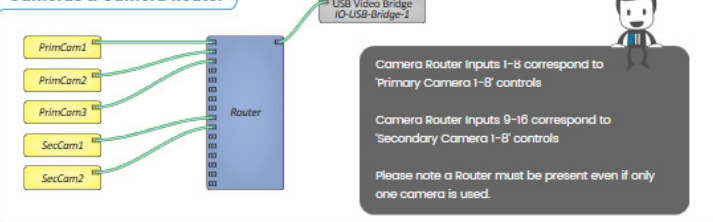
Design Optimized for
Light Mode

Disclaimer: QSC provides this example design file for education purposes to serve as a starting point in your design. QSC is neither obligated nor responsible for providing support for engineering, deploying or troubleshooting these designs.

Step 1: Camera Setup

- Add additional cameras to your inventory if necessary, and drag them into the Schematic.
- Name your components (making those names relatively short, and identifying whether they are primary or secondary).
- Connect your cameras to your Router.

Cameras & Camera Router



Step 2: Choose your Microphone Type

Discrete Microphone Integration

Discrete Microphone Setup is for individual fixed microphones or one that use lobes/zones.

Identify your Gating Auto Mixer:



This combo box above can be found on the 'Channels' tab of the plugin.

Set the 'Type' property to 'Discrete Mics' and the plugin will use a Relative Threshold Gating Automatic Mic Mixer (Mixer 1 below) and watch for when a channel is 'Open'.

Sennheiser TCC2 Integration

Sennheiser TCC2 Integration Setup addresses horizontal and vertical angle values of the detected active talkers.

Identify the proper TCC2 Microphone in your design:



This combo box above can be found on the 'Microphone' tab of the plugin.

For microphones that use horizontal and vertical angles, set the 'Type' property to 'Sennheiser TCC2', and drag a Sennheiser TCC2 plugin into the Schematic.

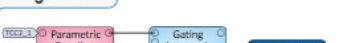
Once the TCC2 plugin is named, the Automatic Camera Preset Recall will populate the available microphones in a combo box on the 'Microphone' tabs) (Single TCC2 below).

Step 3: Connect inputs to plugins

Discrete Microphone



Single TCC2



Multiple TCC2's



System Components: Hardware

Q-SYS Core Processors

All current-generation [Q-SYS Core Processors](#) are compatible with Automatic Camera Preset Recall.

- Built on the same IT-standard architecture
- Uses the same integrated [Q-SYS OS](#) to combine a native audio, video and control engine



NC Series Network Conference Cameras

The [Q-SYS NC-110](#) is a fixed-lens ePTZ camera that features a 110° horizontal field-of-view for smaller and wider rooms, while the [Q-SYS NC-12x80](#) and the [Q-SYS NC-20x60](#) both offer motorized pan, tilt and zoom (PTZ) functionality to enable a broader range of room layouts, sizes and purposes.

- Available in three variants, all [Q-SYS NC Series Network Conference Cameras](#) are compatible with the ACPR plugin.



Hot tip

Auto-framing is a feature of the NC Series Network Conference Cameras. Video analytics within the cameras are used to tightly frame the faces found within the camera's actual field of view. With the Q-SYS NC-110 the entire field of view is analyzed, whereas with the NC-12x80 and the NC-20x60 the current mechanical field of view is analyzed.

NS Series Network Switch

[Q-SYS NS Series](#) are pre-configured NETGEAR network switches for the Q-SYS Platform. These switches remove the setup hassle and create a plug-in-play network solution. If you choose to use other modern switches, make sure they meet the requirements for Q-SYS. For more information, visit qsys.com/networking.




System Components: Hardware

Microphone Options:

Q-SYS NM-T1 Tabletop Beamforming Microphone

- The [Q-SYS NM-T1 tabletop microphone](#) features advanced beamforming technology that ensures optimal clarity and separation for all surrounding talkers.
- Providing up to four software-configurable zones with up to 360° coverage, each microphone zone can be used for ACPR triggering.

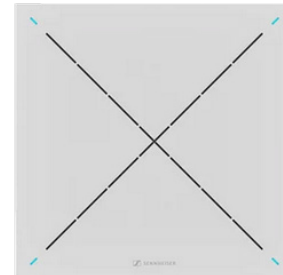


 **Hot tip** The Q-SYS ACPR plugin can support up to sixteen Q-SYS NM-T1 microphones.

Microphone Options:

Sennheiser TeamConnect Ceiling 2 Ceiling Microphone

The TeamConnect Ceiling 2 Beamforming Ceiling microphone automatically detects the active speaker in the room with 28 integrated microphone capsules and follows them as they speak, providing both horizontal and vertical axis information of the person speaking. This allows the ACPR plugin to discern between a seated or standing person and recall different preset camera positions accordingly.



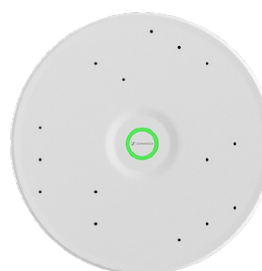
 **Hot tip** The Q-SYS ACPR plugin can support up to ten TCC2 microphones.




Microphone Options:

Sennheiser TeamConnect Ceiling Medium

The Sennheiser TeamConnect Ceiling Medium is designed for medium-sized meeting or lecture spaces. It features 15 integrated microphone capsules with adaptive beamforming technology to capture the active talker whether they are sitting, standing or walking around a space.



 **Hot tip** The Q-SYS ACPR plugin can support up to ten TCC-M microphones.



System Components: Hardware

Microphone Options:

Audio-Technica ATND1061DAN Beamforming Microphone Array

The ATND1061 Beamforming Ceiling Array Microphone has six individual output channels, which, collectively, can be configured with up to 32 user-defined microphone pickup zones that can provide positional, active zone or audio level information with the Q-SYS ACPR plugin



Hot tip

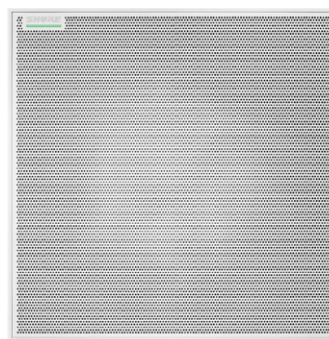
The Q-SYS ACPR plugin can support up to ten ATND 1061 microphones.



Microphone Options:

Shure MXA 920 Ceiling Array Microphone

The Shure MXA 920 covers up to a 30 ft x 30 ft seating area with no setup at all. With up to eight adjustable coverage areas, it offers advanced talker localization, reporting the exact position back to Q-SYS to recall the most appropriate camera presets.



Hot tip

The Q-SYS ACPR plugin can support up to ten MXA 920 microphones.



Microphone Options:

Discrete Fixed-Location Microphones

Route every microphone channel into the plugin that you want to utilize. One channel represents one camera zone.



Hot tip

The Q-SYS ACPR plugin can support up to 90 discrete fixed-location microphones.

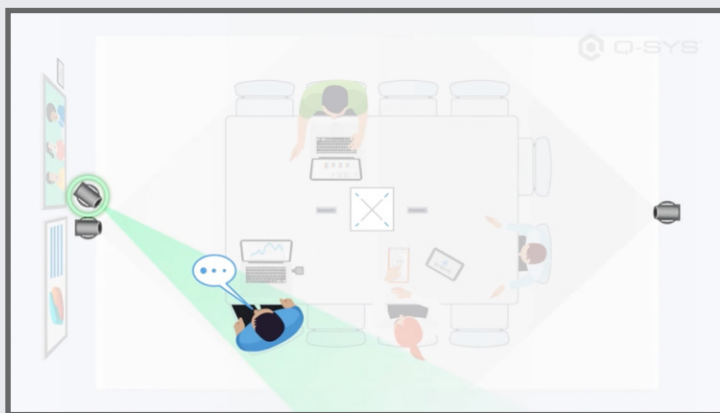
System Components: Secondary Camera Support

Adding secondary Q-SYS camera support to the room design can help hide or minimize unwanted camera movement from being seen by far-end participants of a video call, broadcast or recording.

The secondary Q-SYS camera acts as a backup to the primary camera and will take over whenever the primary camera's image is already active. This way, the backup camera moves to the new position before the router switches to it, hiding any camera movement in the image. The secondary camera is always associated with a primary camera.

 **Hot tip** Any Q-SYS NC Series Camera can act as a secondary camera, but it is always best to use the same model.

Primary Camera Engaged with First Talker



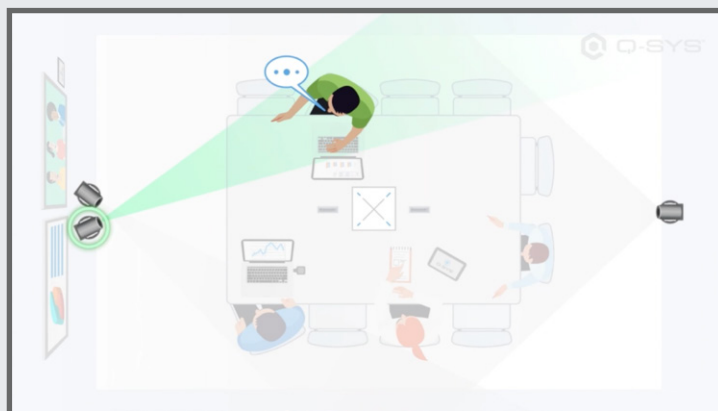
Second Talker Begins



Secondary Camera Rotates to Face Second Talker



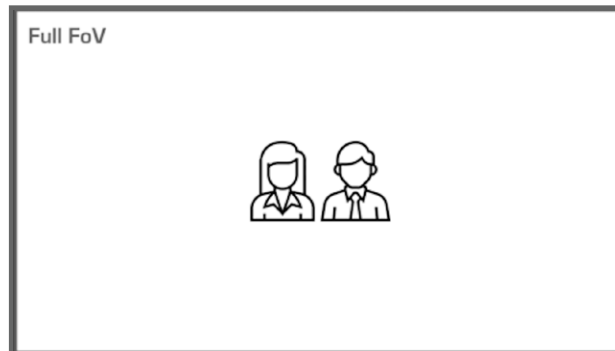
Primary Camera Transitions to Secondary Camera



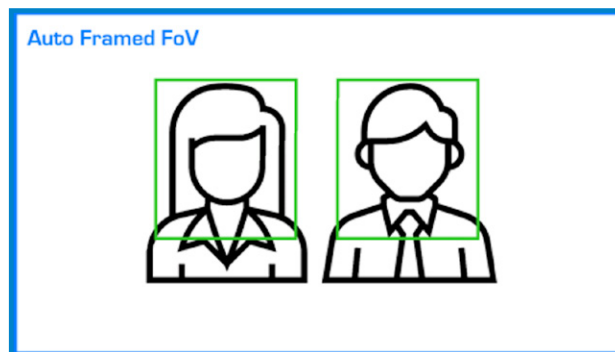
What is Auto-Framing?

When Auto-Framing is enabled, the [NC Series Network Conference Cameras](#) will resize the framed area to capture all of the faces detected in the camera field of view. As new people come into the field of view, Auto-Framing will resize to include the new person(s). Auto-framing will also resize when a detected face moves within the field of view outside of the “deadband” region. Additionally, Auto-Framing can be used with ACPR to better focus on individuals within a preset area.

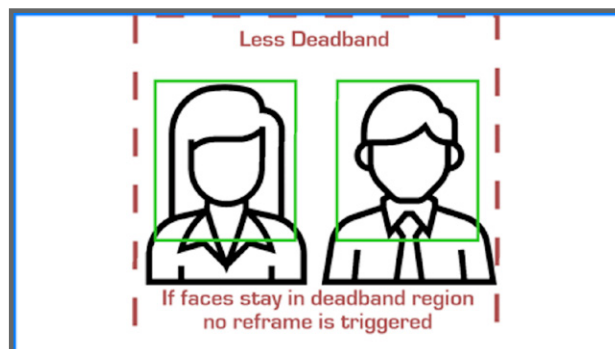
The full field of view can result in large “deadband” regions.



The Auto-Framed field of view resizes the framed area to more tightly capture the faces



If faces leave the deadband area then a reframe is triggered.



Designing for Small Conference Rooms

Required Equipment:

- Q-SYS Core Processor
- NC Series Network Conference Camera
- Any supported microphone

In this example a Q-SYS Core Nano, NC-110 camera and NM-T1 tabletop microphone are being leveraged. The Q-SYS NM-T1 provides up to four software-configurable zones for up to 360°. Each zone can be used for ACPR triggering.



Hot tip

Smaller conference rooms may lack the necessary space to realize the full benefits of ACPR. For these spaces, Auto-Framing without ACPR may be a better option (please see page eight for more information on Auto-Framing).

CABLE TYPE



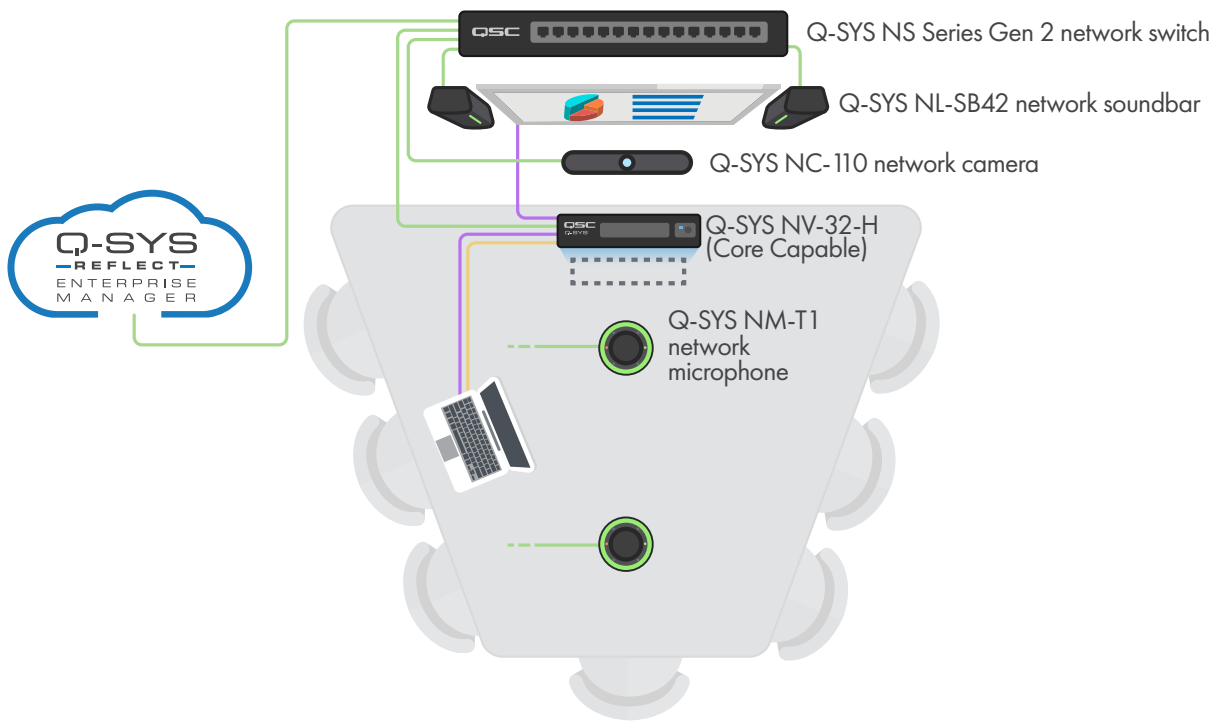
Standard Ethernet



USB



HDMI

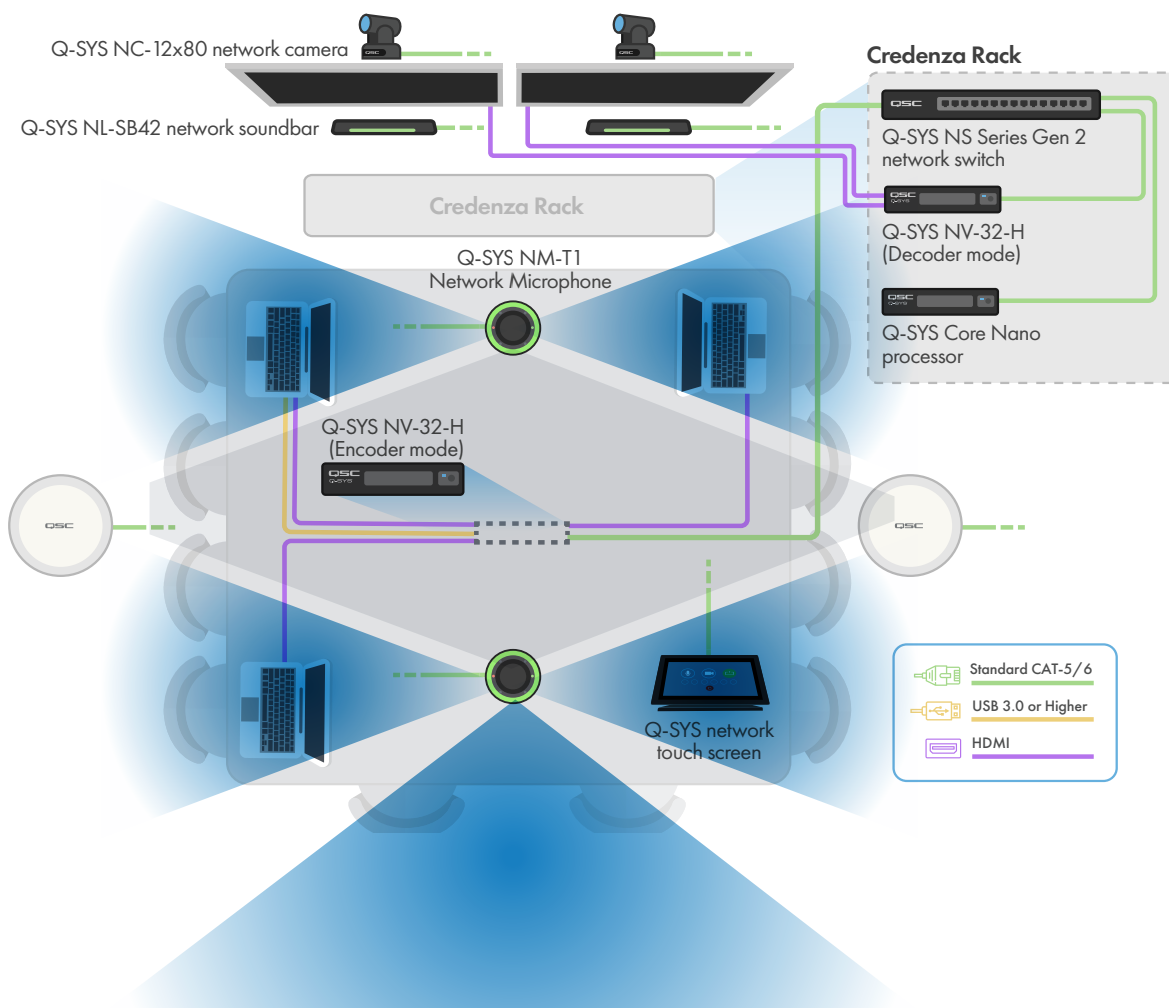


Designing for Medium to Large Conference Rooms: Tabletop Microphones

Though rooms may require additional displays or loudspeakers as they increase in size and seating capacity, ACPR will always begin with the same process:

In this space a Q-SYS Core Nano, two NC Series PTZ cameras, two Q-SYS NM-T1 tabletop microphones and a NS Series network switch have been added. The Unified Communication meeting will be managed by a user laptop connected to the Q-SYS Platform via USB.

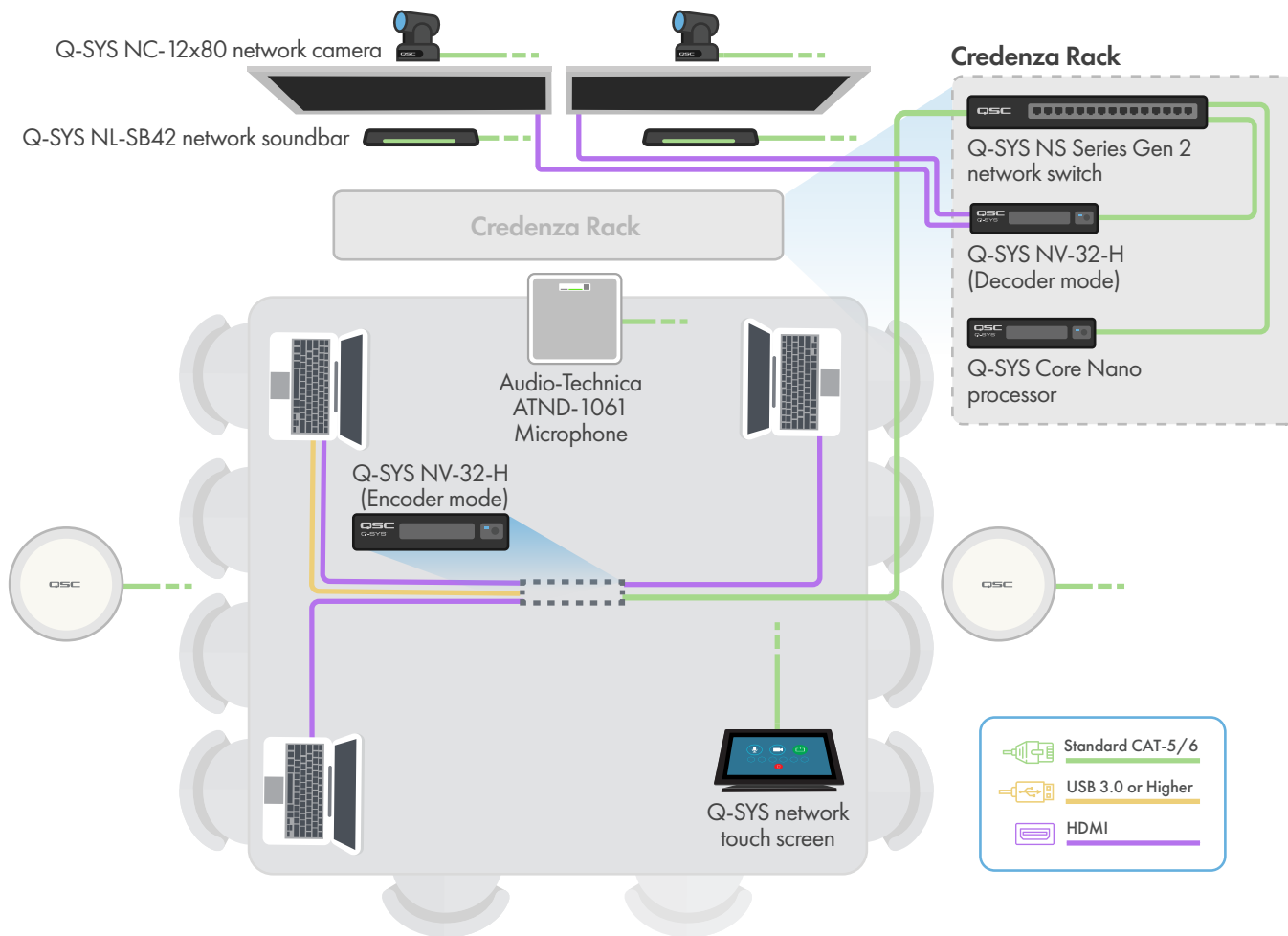
The NC Series cameras can either both act as “Primary” cameras, or one of the cameras can be designated as a “Secondary” camera (see page four for more information on Secondary Camera Support). The Secondary camera will take over whenever the Primary camera’s image is already active.



Both Q-SYS NM-T1 tabletop microphones provide up to four software configurable zones, with each zone able to be used for ACPR triggering. Exclusion zones, shown in gray, can also be configured to reduce pickup of audio in undesired areas.

Designing for Medium to Large Conference Rooms: Ceiling Microphones

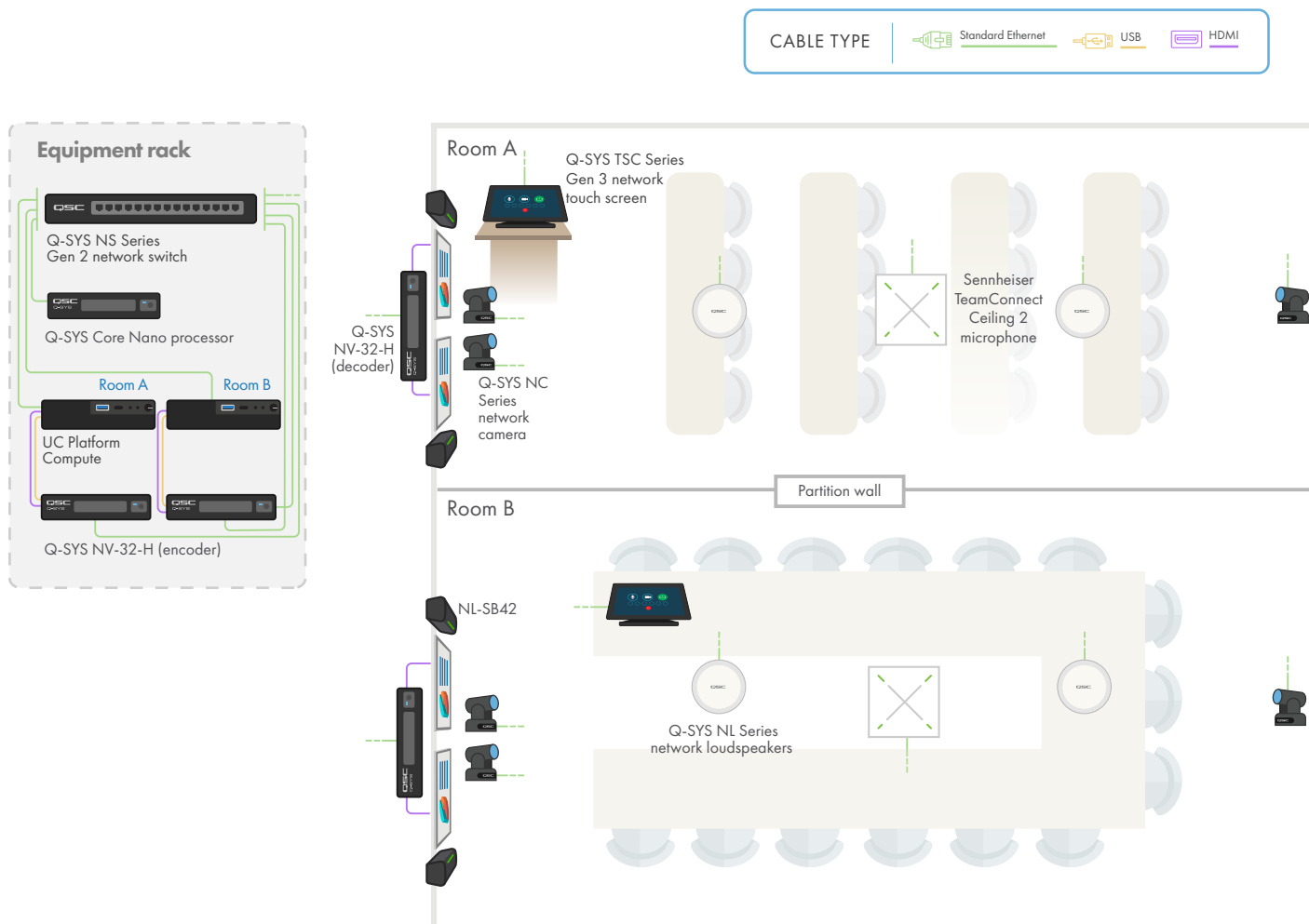
When ceiling microphones are required, the Audio-Technica ATND1061DAN Beamforming Microphone Array is Q-SYS certified technology and is compatible for use with the Automatic Camera Preset Recall plugin.




Designing for Flexible Spaces and Divisible Rooms

Flexible spaces and divisible (or combinable) rooms create unique challenges. In the example below a two-section flexible space is illustrated. Each room section can be used as an independent unified communications space. Because of this, each room will have its own cameras and will be controlled by its own unique instance of ACPR.

Multiple instances of ACPR can be deployed in the same Q-SYS Designer Software file or on a single Q-SYS Core processor.



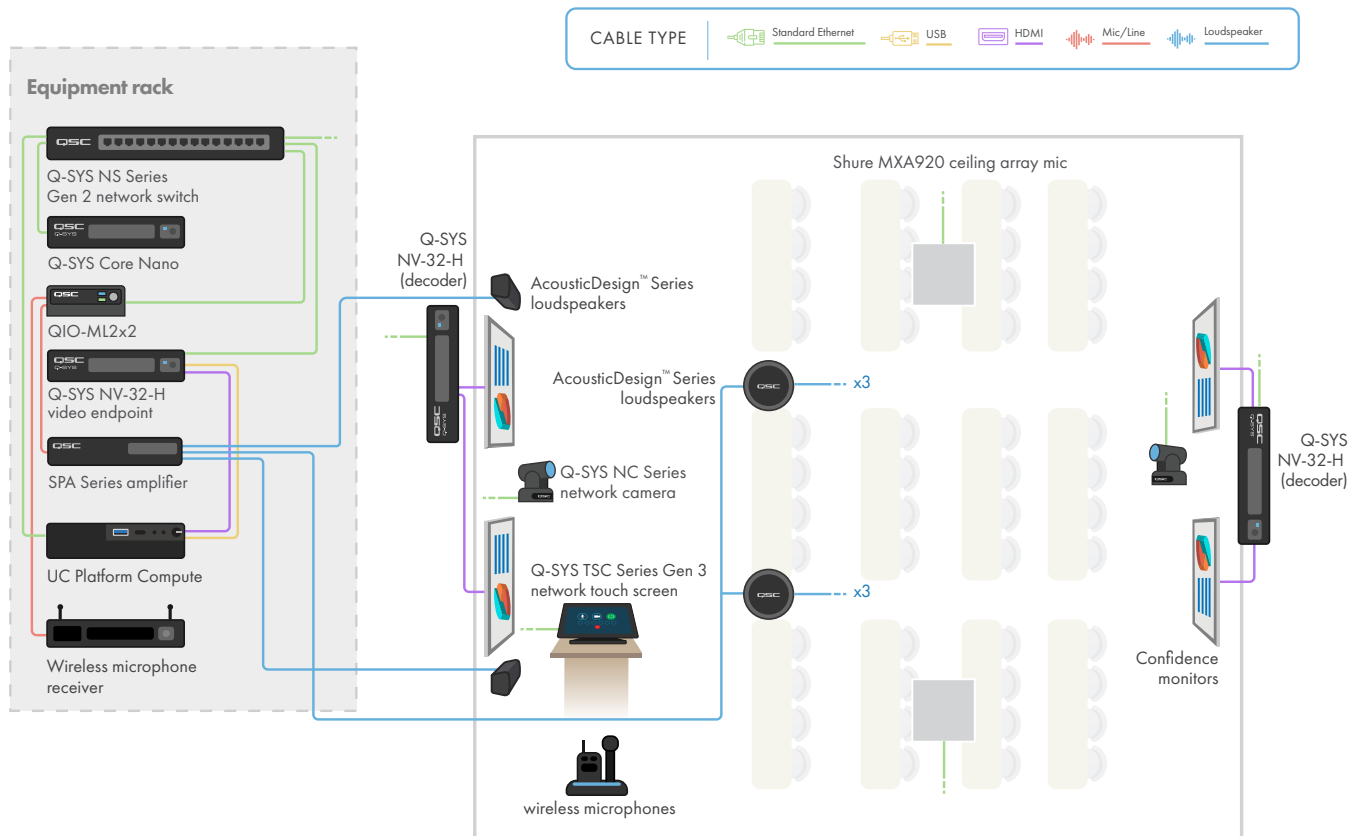
When the room sections are combined, a third instance of the ACPR plugin can be implemented to manage the new presets required for this room configuration. Within Q-SYS Designer Software plugins can be programmatically enabled and disabled.

 **Hot tip** Use a partition sensor in the ceiling to dictate which ACPR plugin instance should be enabled or disabled based on room configuration.

Designing for Lecture Spaces

Automatic Camera Preset Recall excels in a lecture space environment, allowing for unique camera presets for the active presenter as well as equity for far-end audience participants.

The addition of a fixed-location lectern microphone could further augment the zones created by the already-present Shure MXA920 Ceiling Array Microphones.



Hot tip

Lecture spaces are also excellent candidates for secondary camera support, with the potential for two NC-PTZ cameras at the front of class to seamlessly capture audience and lecturer interactions. To learn more about secondary camera support see page four.



Q-SYS is a globally recognized manufacturer of audio, video and control (AV&C) solutions for huddle rooms to stadiums—and everything in between. Our systems make it easy for your team to design and integrate flexible, scalable solutions and deliver the native IT integration and standards-based technology your customers expect.

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