

HOW TO CREATE AN AWESOME CONFERENCE ROOM

AND BECOME THE OFFICE HERO





INTRODUCTION

EVERY CONFERENCE ROOM HAS ITS CHALLENGES.

Poor acoustics, not enough mic pickup, hard-to-use equipment, too many reflective surfaces...the list goes on. Thankfully, with the right approach and equipment, you can invest in a quality conferencing setup that will make you a real office hero.

In this e-book, we'll outline common problems that can occur in a conferencing space, how to understand the basic audio principles, how to overcome poor acoustics and selecting the right solution for your space. We hope this guide is a helpful tool in understanding how audio and the system chosen can have a huge impact on a meeting space. While video, screen sharing, codecs and room control systems are all aspects of a conference room, we've narrowed in on the audio for this piece. Why? Because without audio, you have no meeting!





WHAT CAN GO WRONG?

Typically, the IT department works behind the scenes to ensure equipment runs smoothly in the office. They're unsung heroes, really, because they keep things running and information flowing while rarely receiving the credit they deserve. Whether it's installing the latest patch to update software throughout the office, or maintaining a strong network with robust security, these issues are quietly fixed while employees go about their day.

However, when it comes to the conference room, this new territory that historically has been tasked to AV departments, is now falling on IT to outfit and maintain. With audio, video and screensharing as three necessary, but mostly separate pieces of the puzzle, it's often end users find themselves struggling to start a meeting without any issues. When these issues arise, everyone looks to IT for a solution and in some cases, a person to blame. While we still support this opportunity to showcase your skills and solve these issues, we'd rather help you prevent them in the first place! With some added knowledge about conference room spaces, you'll be able to implement conference equipment that suits your organization's needs, is easy for the end user and makes you look like the office hero.

BELOW, WE'VE SHARED THE MOST COMMON ISSUES THAT CAN AFFECT YOUR MEETINGS.

WRONG EQUIPMENT FOR ROOM

Before starting any new room upgrades or build outs, it's important to understand the room and the suitable equipment it needs. Just throwing any conference phone in a room and assuming it will work is setting yourself up for disaster. Unfortunately, this is a common mistake we often see. Whether it's a budget issue or lack of research, the long-term effects will end up costing you more in resources or upgrades when it ultimately does not work the way you had hoped.

The first question to ask is how many people need to be heard? Most manufacturers will have recommendations for their microphone pickup up or a series of product that scales as the room size goes up. For example, our YVC series. The YVC-200 microphone pickup covers up to 4 people. The YVC-330 covers up to 8 and the YVC-1000 covers up to 40. Use their resources or speak to a representative before choosing the solution to insure you are choosing the correct equipment!

BAD ACOUSTICS

Modern workspaces are bringing new challenges to conferencing. Glass walls, minimalistic décor and high ceilings are killers for room acoustics. These flat surfaces create barriers for sound to echo



off of. When the microphone picks up the echo and creates a repeating of words, it can be very distracting to the meeting.

PRO TIP: IF YOU HEAR YOURSELF AS AN ECHO THROUGH THE SPEAKER, IT MEANS THE PERSON ON THE OTHER END HAS THE ISSUE.

FOCUSING TOO MUCH ON VIDEO AND NOT AUDIO

Often times we find people focusing too much on video. It's an important factor in creating a realistic meeting experience but think of it like this: you can still hold a meeting if you lose video, but without audio, you're stuck. Don't go blowing your budget and forgetting about quality audio.

NOT STANDARDIZING ON A SOLUTION

If each room in your organization is completely different, it's going to cause confusion. Think of yourself

as an end-user. Keeping the room's equipment and functionality as similar as possible is going to make a consistent experience for your users, no matter what room or location they enter. This standardization also makes it easier for IT to troubleshoot when something goes wrong. This does not mean installing exactly the same equipment in every room, but sticking with one product line or vendor typically offers solutions for different size rooms while providing similar user experience and interfaces.

NOT PROPERLY TRAINING END USERS

To help mitigate questions, we recommend fully training your users on new systems. A simple email notification is not enough for most. By taking the time to properly train your users or having some how-to guides in the rooms, you'll save yourself a lot of time answering basic questions.



UNDERSTANDING THE BASICS

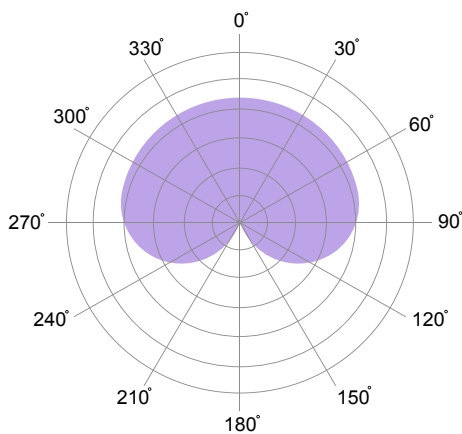
There are a variety of microphone types, and not every type will be optimal for your room. Choosing an appropriate conference room microphone for your space is just as important as the quality of the mic.

In this section, we've outlined the basics of conference microphones, including the different pick-up patterns and mic designs. Once you learn the primary microphone categories, you'll have a much better idea of which mic makes sense for your conference room.

MICROPHONE PICKUP PATTERNS

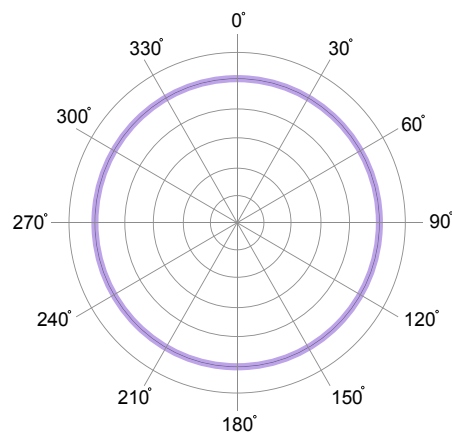
Every conference microphone has its own pick-up pattern, which determines the overall direction from where sound is captured. Choosing a mic pick-up pattern really depends on your room and the usage case.

AT A BASIC LEVEL, THERE ARE TWO MAIN PICK-UP PATTERN TYPES:



DIRECTIONAL MICROPHONES

These mics have a pick-up pattern that mainly captures sound from the front, while rejecting sound from the rear. This is a great choice when amplifying a single speaker's voice, or when you're working in a room with poor acoustics and want to reduce echoes. A popular version of the directional mic, known as **cardioid**, has a heart-shaped pattern that works well for close-up audio capture.



OMNIDIRECTIONAL MICROPHONES

Ideal for a small space where everyone needs to be heard, omnidirectional mics are designed to capture sound from every direction. However, this also means they can be more sensitive to background noise, which can be problematic if there's a loud fan or cooling system nearby. If an omni mic is the best fit for your space, be sure to test the system's noise cancellation quality. This feature will help eliminate background noise for the far end.

MICROPHONE TYPES

THESE ARE THE FOUR MAIN CONFERENCE MICROPHONE DESIGNS, WHICH ARE TAILORED FOR SPECIFIC SCENARIOS:

TABLETOP MICROPHONES

Perfect for a small conference area with multiple participants, a tabletop mic rests on a table and picks up nearby sound. These mics can be directional (i.e. capturing sound in one direction) or omnidirectional (capturing sound in every direction). The former style can be shared with two people, while the latter style is ideal for capturing an entire conversation in a smaller room.



GOOSENECK MICROPHONES

These mics are generally used on a tabletop and podium. Designed with an adjustable, skinny microphone neck, they capture close-up audio and block out background noise. We recommend these mics for auditoriums and boardrooms, where each speaker's voice needs to be heard in full detail and each speaker get their own microphone.



WEARABLE MICROPHONES

Pinned onto a speaker's lapel or worn as a headset, wearable microphones free up a person's hands so they can write or gesture. These mics are convenient for teachers, performers, and conference presenters.



HANDHELD MICROPHONES

Handheld microphones capture a speaker's voice in close-up fashion using a directional mic pattern. They're ideal for lectures, interviews, and presentations where you need a portable solution. If you're speaking in a setting where you need the freedom to move around, we highly recommend a wireless handheld or wearable mic.





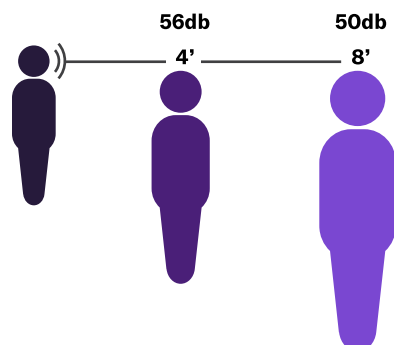
UNDERSTANDING
THE IMPORTANCE
OF DISTANCE TO
(AND BETWEEN)
MICROPHONES

HOW MIC SOUND TRAVELS.

When measuring how sound travels and reverberates, the inverse square law can be useful for optimizing a conference room. Essentially, this law states that when an object such as a microphone is moved farther away from a sound source, the sound level goes down in inverse proportion to the distance squared. Meanwhile, the opposite is true when you move closer to a sound source.

For example, if a microphone is 1 foot away from your mouth, and you move it to 2 feet away, the sound will go down by 6 dB. If you move it to 4 feet away, the sound will drop -12 dB from the original level. It's crucial to place conferencing microphones at an optimal distance from speakers so that the sound is clear and intelligible. If a mic is too far away, you'll start to pick up more room reverb than the original sound source, and the person's voice will sound muddy and obscured (i.e. the "fishbowl effect").

If there aren't any serious budget or space constraints, the best possible setup is to have a dedicated microphone for every person in the conference. That way, each voice can be captured clearly and directly.





OVERCOMING POOR ROOM ACOUSTICS

**THERE ARE A FEW PRACTICAL SOLUTIONS TO REDUCE ROOM ECHO THAT
DON'T REQUIRE COSTLY INVESTMENTS IN CUTTING-EDGE TECHNOLOGY.**

HERE'S WHAT WE SUGGEST:

HANG SOFT MATERIALS ON PARALLEL WALLS:

You can decorate your conference room and reduce reverb at the same time. Hanging soft canvas or cloth artwork (such as textiles) can minimize wall reflections, especially when the art pieces are placed on opposite walls. Avoid oil paintings if possible, though, because the dry oil is hard enough to reflect sound.



ADD A RUG TO A HARD FLOOR:

Some conference spaces are designed with a cool, minimal aesthetic, but a concrete or hardwood floor can add unwanted audio reflections to a room. Adding a large rug around the conference area will dampen the unwanted reverb while also making the room feel more cozy and inviting.



HANG ECHO REDUCTION PANELS:

There are a wide variety of acoustic panels on the market that can dampen wall reflections and reduce sound leakage into adjacent rooms. You can also assemble your own panels with a package of acoustic insulation and some thick fabric. You can find a ton of free DIY tutorials on YouTube that can teach you how to create your own acoustic panels and save some money.



PLACE A BOOKCASE OR DENSE OBJECTS IN THE ROOM:

When moving into a new home, you've probably noticed how boomy it sounds in the empty space before you fill it with furniture and boxes. That's because objects dampen and diffuse sound in a room. When you talk in an empty space, your voice bounces off the walls with almost no interference, so the reverb is noticeably louder. By adding a bookcase, more furniture, and a few decorative objects to your conference space, you'll soften the reverb to a pleasant level.





SOLUTIONS FOR VARIOUS SITUATIONS

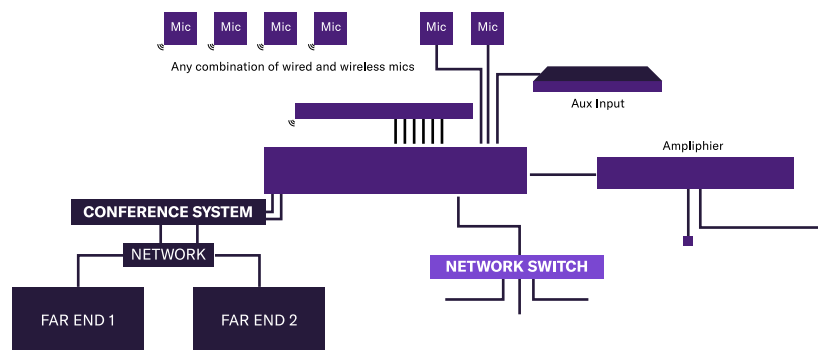
Now that you have an understanding of how different microphones work within a conferencing space, we'll outline the key differences between tabletop, all-in-one, and integrated conferencing solutions, so that you can invest in the right system for your space. Before diving into the merits of tabletop and integrated systems, we recommend taking some time to consider your company's needs. What's your budget? How large is the conference room where you plan on setting up this system? What's the maximum number of people you foresee using the system simultaneously? The answers to these questions will help you decide which conferencing system is best.

LET'S HELP YOU DECIDE WHICH IS BEST.

ALL-IN-ONE

All-in-one conferencing solutions have become a lot more popular in recent years, because the technology has finally caught up with the hype. These devices combine microphones, speakers, and a camera in one unit to facilitate more ad-hoc meetings in huddle rooms and small conference spaces. They are a great solution at a decent price point. Most all-in-one solutions are wall mounted to allow the camera to get a full view of the room.

Most of these solutions also provide management tools for IT. Mass upgrades and remote troubleshooting are just a few features that can make all-in-one solutions a great solution for organizations with multiple huddle spaces.



TABLETOP

When we say “tabletop”, we’re talking about a typical USB-based device, like a speakerphone. Usually a tabletop solution combines it’s audio solution with a camera device in the room. The communication application either runs on a dedicated computer in the room, or users bring their own laptop and

connect the tabletop audio device and camera to the laptop. These are typically found in small to medium-sized conference spaces.

Tabletop devices are simple to connect and set up, so you can quickly transform a basic meeting room into a useful conference space. They lend well to the growing popularity of huddle-rooms for impromptu chats with

processing) unit, and a system that amplifies and connects everything. They may also include an audio mixer and a control panel for quick adjustments.

Conference room installed systems allow you to host in-person meetings with dedicated microphones for each participant, so that everyone’s voice is heard. These systems are great for large conference rooms, boardrooms, courthouses or auditoriums where capturing commentary is extremely important.

For these higher investment rooms, we recommend working with an AV integrator or utilizing solutions that come pre-programmed, like the YAI-1 Conference Ensemble. These pre-configured solutions can be beneficial for easy set up.

remote contacts. Tabletop systems are more plug-and-play than integrated solutions, and generally more affordable as well.

INSTALLED/INTEGRATED

Typically, the highest quality conference room systems include a set of wireless microphones, speakers, a DSP (digital signal





WORKSPACE SOLUTIONS

Every workspace has unique needs. From offices to boardrooms, it's important to keep the environment and use-case top of mind when choosing a conferencing solution. At Yamaha UC, we've developed solutions for a variety of workspaces. Whether you're searching for a tabletop, integrated, or all-in-one solution, we understand the needs of every conferencing scenario.

HERE ARE OUR TOP RECOMMENDATIONS FOR EACH WORK SETTING:

OFFICE ROOM

Every office requires a distinct approach. We suggest really diving deep into the employee's needs to find the ideal solution. Do they just want something to have calls at their desk? Do they want to be able to walk around the room? Be on camera? This space will require the most research to outfit properly.

SPEAKERPHONES:

YVC-200 (up to 4 people)
YVC-330 (up to 6 people)
FLX UC 500 / 1000 (up to 12 people)

AUDIO + VIDEO:

CS-700 (up to 8 people)
Collaboration Kit (up to 20 people)

SPEAKER ONLY:

ESB-1080 (up to 20 people)

PORTABLE WORKSPACE/ ON-THE-GO

If your sales team is working on the road, your remote team needs to stay connected, or you need a speakerphone to travel between workspaces, a portable Bluetooth/USB speakerphone is your best bet.

SPEAKERPHONES:

YVC-200 (up to 4 people)
YVC-330 (up to 6 people)

HUDDLE ROOM OR SMALL CONFERENCE ROOM

Plug and play. Make these rooms as easy as you can for the end user. If a camera is needed, we recommend an all-in-one device like the CS-700 that combines your mics, speakers and camera into one unit. The easier, the better in these small spaces.

SPEAKERPHONES:

YVC-200 (up to 4 people)
YVC-330 (up to 6 people)
FLX UC 500/1000 (up to 12 people)

AUDIO + VIDEO:

CS-700 (up to 8 people)
Collaboration Kit (up to 20 people)

SPEAKER ONLY:

ESB-1080 (up to 20 people)

MEDIUM CONFERENCE ROOM

Medium-sized conference rooms are a unique, somewhat forgotten meeting space that still requires quality audio and video. Just be cautious of the pickup range on the device you choose. A speakerphone designed for smaller rooms will not cut it. Here, you'll be better served with a powerful conferencing system and some add-on mics.

SPEAKERPHONES:

YVC-1000 (Up to 40 people)
FLX UC 500/1000/1500 (up to 20)

AUDIO + VIDEO:

Collaboration Kit

SPEAKER ONLY:

ESB-1080

CLASSROOM/ LECTURE HALL

It's crucial for the teacher to be heard in classroom environments, but most people forget about the importance of audience participation as well. For remote learning participants, class participation is extremely valuable. A system that can expand to capture all input is the way to go. We recommend a wearable microphone for the teacher (so that they have freedom to move around the room) and some tabletop mics for audience capture.

SPEAKERPHONES:

YVC-1000
HD Dual Wireless Mic System
(up to 2 speakers)

LARGE CONFERENCE ROOM OR BOARDROOM

Whether you're leading a conference call or presenting from the executive boardroom, you need professional-grade communication technology that you can rely on. With larger rooms (especially boardrooms), we recommend an integrated solution to capture every single speaker. At the very least, make sure you have a powerful microphone pick-up that is designed for these rooms.

SPEAKERPHONES:

YVC-1000 (Up to 40 people)
FLX UC 1500 (up to 20)

INTEGRATED SOLUTIONS:

YAI-1 Conference Ensemble (up to 32)
Executive Elite Wireless Mic System
(up to 88 people)

MULTIPURPOSE ROOM OR TRAINING ROOM

Flexibility is key in these spaces. With ever-changing table layouts, the ability to quickly move microphones is going to make work life much easier. A wireless microphone solution or an easy to set up speakerphone system like the YVC-1000 allows the simplicity for the end-user to design the space without help from the IT or AV team.

SPEAKERPHONES:

YVC-1000 (Up to 40 people)

INTEGRATED SOLUTIONS:

YAI-1 Conference Ensemble
(up to 32 people)
Executive Elite Wireless Mic System
(up to 88 people)

VIDEO CARTS

A variety of solutions can be used for video carts, but they should always be portable, simple, and effective. One of our personal favorites is the all-in-one CS-700. Just connect it to your video cart TV and you'll be able to host an impromptu video conference in any room.

SPEAKERPHONES:

YVC-200 (up to 4 people)
YVC-330 (up to 6 people)
FLX UC 500 / 1000 (up to 12 people)

AUDIO + VIDEO:

CS-700 (up to 8 people)

INTEGRATED SOLUTIONS:

Executive Elite Wireless Mic System
(up to 88 people)
HD Dual Wireless Mic System
(up to 2 speakers)

AUDITORIUM

When considering conference equipment for an auditorium, people tend to focus on the speakers. To ensure the best output, we recommend an integrated system. If you have a podium or a panel setup, gooseneck mics are definitely the way to go. However, some lecturers like to pace the stage while speaking, so make sure you have a wearable or handheld microphone as well.

SPEAKERPHONES:

Executive Elite Wireless Mic System
(up to 88 people)
HD Dual Wireless Mic System
(up to 2 speakers)

CONGRATULATIONS!

YOU'RE EQUIPPED TO BECOME THE OFFICE HERO!

There you have it. With so many options on the market, conferencing certainly isn't a one-size-fits-all solution. Depending on your office space and conference room sizes, you might prefer to leverage all-in-one video sound bars, conference speakerphones, an integrated microphone system, or a combination.

No matter what, your goal should always be the same. You want a conferencing system that feels like you're conversing in the same room as your remote colleagues and clients. Once you find the perfect systems for your workspaces, you'll be the office hero.

At Yamaha UC, we can help you get there. We hope you found this guide helpful and invite you to follow us on social media (@YamahaUC) for updates, webinars and new product releases. To further your conference room selection, we also have a [product finder](#)! Check it out on our website or in your app store (available on iOS and Android™).

