

THE HOME STUDIO

INFORMATION & CONFIGURATION

CLASS TOPICS

- ▶ Studio Considerations
- ▶ Cable Types
- ▶ Microphones
- ▶ Preamps
- ▶ Interfaces
- ▶ Headphones
- ▶ Software (DAWs)
- ▶ Plugins
- ▶ Accessories
- ▶ Remote Connections

STUDIO

CONSIDERATIONS

ROOMS

- ▶ Look for rooms that are unencumbered by external noises.
- ▶ Good places to start
 - ▶ Walk-in closet / Hall closet / Interior bedroom / Studio
- ▶ Stay away from (usually)
 - ▶ Kitchens / Bathrooms / Dining rooms / Hallways / Sun rooms

NOISES

- ▶ Pay attention to noise issues that raise your noise floor
 - ▶ Refrigerators / Fans / Air Purifiers / AC / Heaters
 - ▶ Traffic / Loose window fittings / Neighbors / Animals / Construction
 - ▶ Computer fans / Hard drives

ENCLOSURES / SOUND DAMPENING & REFLECTION (GOOD TO BEST)

- ▶ Microphone with reflect filter
- ▶ Microphone backed into open clothes closet
- ▶ Microphone in a box
- ▶ Microphone / Actor in a custom built blanket fort
- ▶ Microphone / Actor in a hall closet
- ▶ Microphone / Actor in walk-in closet
- ▶ Microphone / Actor in purchased voiceover booth

NOISE FLOOR

- ▶ Your studio noise floor is an ambient measurement of your studio sound at rest.
- ▶ To find this level, set your microphone input level to a healthy gain which mirrors the level you usually use for standard VO.
- ▶ Record 15 seconds of sound, making sure to not create any noise when you do so.
- ▶ Measure the result with an RMS meter.
- ▶ Studio quality noise floor levels should be at or below -60 dBfs

CABLE TYPES

CABLES AND CONNECTORS (ANALOG)

- ▶ Balanced (professional)
 - ▶ XLR / TRS
 - ▶ 3 pin cables used for length and noise cancellation
 - ▶ Positive / Negative / Ground
- ▶ Unbalanced (prosumer / consumer)
 - ▶ TS / RCA
 - ▶ 2 pin cables used in prosumer / consumer settings
 - ▶ Positive / Ground



XLR
1 Channel



TRS
1 Channel

TRS In Stereo Config
2 Channels (Left / Right)



TS
1 Channel



RCA
1 Channel

CABLES AND CONNECTORS (AUDIO – DIGITAL)

- ▶ AES

- ▶ Professional

- ▶ ADAT

- ▶ Professional / Prosumer

- ▶ TOSLINK

- ▶ Prosumer / Consumer

- ▶ SPDIF

- ▶ Prosumer / Consumer



AES
2 Channels



ADAT
8 Channels



TOSLINK
2 Channels



SPDIF
2 Channels

CABLES AND CONNECTORS (DATA)

- ▶ USB
 - ▶ 1 (12 Mbps) / 2 (480 Mbps) / 3 (5 Gbps) / 3.1 (10 Gbps)
- ▶ Thunderbolt
 - ▶ 1 (10 Gbps) / 2 (20 Gbps) / 3 (40 Gbps)
- ▶ Ethernet
 - ▶ 10 Mbps / 100 Mbps / 1000 Mbps / 10,000 Mbps
- ▶ Firewire (Deprecated)
- ▶ Bluetooth (Not used for professional audio)
- ▶ WiFi (Not used for professional audio)



USB 2



USB 3



USB 3
THUNDERBOLT 3



THUNDERBOLT 1/2

MICROPHONES

TYPES

- ▶ Condenser
 - ▶ Most used for voiceover
 - ▶ Brighter, more open, broader and more nuanced sound
- ▶ Dynamic
 - ▶ Used for live performance / loud sources / PA systems
 - ▶ Helps suppress external noise
- ▶ Digital (USB / Lightning)
 - ▶ Convenient, lower cost, easier to use (less equipment), portable

BRANDS

- ▶ Neumann
- ▶ Sennheiser
- ▶ Rode
- ▶ Shure
- ▶ Audio Technica
- ▶ AKG
- ▶ SE Electronics
- ▶ Electro-Voice
- ▶ CAD
- ▶ Heil
- ▶ Manley
- ▶ Aston Mics
- ▶ Bock Audio
- ▶ Mojave Audio

MODELS (PAGE 1)

▶ Neumann

▶ TLM 102

▶ TLM 103

▶ KMR 81

▶ U 87

▶ Sennheiser

▶ 416

▶ 8060

▶ Rode

▶ NT1

▶ NT1a

▶ NTK

▶ NTG-3

▶ Shure

▶ SM7b

▶ KSM 44

▶ KSM 42

▶ PG42

MODELS (PAGE 2)

▶ Audio Technica

▶ **AT 4047/SV**

▶ AT 4033a

▶ AT 4040

▶ AT 2035

▶ AT 2020

▶ AKG

▶ **C414**

▶ C314

▶ P420

▶ sE Electronics

▶ Gemini 2

▶ 4400a

▶ 2200a

▶ x1

▶ Electro-Voice

▶ **RE-20**

PREAMPS

WHAT IS A PREAMP

- ▶ A Preamplifier (preamp), is a device that provides inputs for microphones and instruments and which provides amplification and volume control for those items
- ▶ Good preamps provide better signal amplification and power management
- ▶ Good preamps provide finer control of volume at all levels (linear)
- ▶ Preamps can contain extra features like EQ, Compression and Expansion
- ▶ Preamps are inline between the microphone and audio interface

BRANDS

- ▶ Focusrite

- ▶ ISA One

- ▶ Solid State Logic

- ▶ Alpha Pre

- ▶ Avalon

- ▶ 737 (Channel Strip)

- ▶ V5

- ▶ Grace

- ▶ m101

- ▶ Universal Audio

- ▶ 710

- ▶ LA-610 (Channel Strip)

- ▶ API

- ▶ The Channel Strip

- ▶ Lunchbox Modules

- ▶ DBX

- ▶ 286

INTERFACES

WHAT IS AN INTERFACE

- ▶ An audio interface, sometimes called a sound card, is a device that provides connections for microphones and musical instruments which then can be recorded into a computer.
- ▶ The essence of an audio interface is analog -> digital -> analog conversion.
- ▶ More money spent usually equates to more features / connections
- ▶ Advantages are real-time monitoring and physical control over recording parameters.
- ▶ Most interfaces include microphone preamps (input volume control)

THINGS TO LOOK FOR

- ▶ Microphone input
- ▶ Direct monitor option (realtime monitoring)
- ▶ Connection to system matches your system
- ▶ Brand recognition, price
- ▶ Ease of use, lack of extra i/o mixer between interface and software

BRANDS

- ▶ Focusrite

- ▶ Scarlett Solo

- ▶ Scarlett 2i2

- ▶ Universal Audio

- ▶ Apollo

- ▶ Arrow

- ▶ Apogee

- ▶ One

- ▶ Duet

- ▶ Audient

- ▶ ID4

- ▶ RME

- ▶ Babyface Pro

- ▶ Presonus

- ▶ Audiobox

- ▶ MOTU

- ▶ M2

HEADPHONES

WHAT TO LOOK FOR

- ▶ Professional audio-professional specific brands / models
- ▶ Circum-aural (around ear)
- ▶ Closed back
- ▶ Cost
- ▶ Trusted brand

BRANDS

- ▶ Sony

- ▶ MDR 7506

- ▶ Sennheiser

- ▶ HD280

- ▶ Audio Technica

- ▶ M20 / M30

- ▶ Beyerdynamic

- ▶ DT770

- ▶ AKG

- ▶ K701

- ▶ K272HD

- ▶ Shure

- ▶ SRH440

SOFTWARE

DIGITAL AUDIO WORKSTATION (DAW)

DAW

- ▶ **Single-Track Editor**

- ▶ One track, easy to use, no mixing capabilities, collapse left when editing

- ▶ **Multi-Track Editor**

- ▶ Multiple tracks, used for mixing and multi-tracking, can move regions independently, session documents are created/needed when using system, can usually work with video

BRANDS

- ▶ **Pro Tools (MT - Mac / PC)**
- ▶ Twisted Wave (ST - Mac)
- ▶ Audacity (MT - Mac / PC)
- ▶ Logic (MT - Mac)
- ▶ Audition (MT - Mac / PC)
- ▶ Reaper (MT - Mac / PC)
- ▶ Sound Forge (ST - Mac / PC)
- ▶ Cubase (MT - PC)
- ▶ FL Studio (MT - Mac / PC)
- ▶ Live (MT - Mac / PC)
- ▶ Sound Studio (ST - Mac)

WHAT TO LOOK FOR

- ▶ Industry use
- ▶ Knowledge base
- ▶ Plugin availability
- ▶ Cost
- ▶ Ease of use

PLUGINS

PROCESSING TYPES

- ▶ Equalization (EQ)
 - ▶ Ability to shape frequency content
 - ▶ Think bass and treble
- ▶ Compression
 - ▶ Ability to control dynamics
 - ▶ Think variation in volume / loud & quiet
- ▶ De-essers
 - ▶ Ability to control sibilance
 - ▶ Used to soften 's' sounds, harsh sounds in that frequency range
- ▶ Limiting
 - ▶ Ability to limit / control peaks in recording
 - ▶ Used in mastering
- ▶ Noise Reduction
 - ▶ Used to reduce noise and lower noise floor of recordings

EQ

▶ Free

- ▶ TDR Nova

▶ Paid

- ▶ Waves Q10 -or - Waves Renaissance EQ

- ▶ iZotope Neutron EQ

- ▶ Fab Filter Pro Q

COMPRESSION

▶ Free

- ▶ TDR Feedback Compressor

▶ Paid

- ▶ Waves Renaissance Compressor - or - Waves Renaissance Vox
- ▶ Waves CLA-2a
- ▶ UA LA-2A or 1176
- ▶ Fab Filter Pro C2

DE-ESSERS

- ▶ Free

- ▶ Built in

- ▶ Paid

- ▶ Waves Sibilance -or- Waves De-Esser

- ▶ Oeksound Soothe

- ▶ Fab Filter Pro-DS

- ▶ Eiosis E2Deesser

LIMITERS

▶ Free

- ▶ Loudmax

▶ Paid

- ▶ Waves L1 / L2

- ▶ Nugen ISL 2

- ▶ Fab Filter Pro L

- ▶ Sonnox Oxford Limiter

NOISE REDUCTION

▶ Free

- ▶ Audacity built in

▶ Paid

- ▶ Akon Noise Suite
- ▶ Accusonus ERA Noise
- ▶ Waves WNS -or- Waves NS1
- ▶ iZotope RX (Elements / Standard / Advanced)

ACCESSORIES

THINGS TO CONSIDER

- ▶ Mic stand
- ▶ Pop filter
- ▶ Sound absorption
- ▶ Lighting
- ▶ Power distribution / condition
- ▶ Data backup
- ▶ Reading device

MICROPHONE STANDS

- ▶ Tripod stand
- ▶ Boom stand
- ▶ Drum stand
- ▶ Desk stand
- ▶ Broadcast Arm



Desk



Drum



Broadcast

SOUND ABSORPTION

- ▶ Sound absorption and sound diffusion are different from sound isolation.
- ▶ Sound isolation is only possible with structures built with sound in mind. These include sound booths, recording studios and acoustically designed spaces.
- ▶ Sound absorption is the most often used method in home studios. Absorption is used to dampen the acoustic energy emitted from your voice. Absorption does not quiet a room from outside sound sources.
- ▶ Absorption is best when made with sound dampening material, think Owens Corning 703 and Rockwool (Roxul). Heavy blankets can also be used.
- ▶ Foam, acoustic or not, is not a great absorber of most frequencies. Foam should be used for high frequency control only.

SOUND DIFFUSION

- ▶ Sound diffusion is used to scatter sound waves into irregular shaped trajectories.
- ▶ Diffusion is usually accomplished with harder surfaces, often angled at degrees that contort the rooms shape (not 0, 45, 90, 180, 360).
- ▶ Modal frequencies, or the buildup of sound energy in a room with parallel walls or at the dimensional size of the sound wave, causes an increase in volume (usually bass)
- ▶ Sound diffusion should be secondary to absorption in a home studio

SOUND PANELS

- ▶ Usually made of Owens Corning 703
- ▶ Best when 2+ inches in depth
- ▶ Often come in 2ft X 4ft sizes
- ▶ The smaller the space, the more you need coverage
- ▶ <https://lasoundpanels.com/>
- ▶ <https://atsacoustics.com>
- ▶ <https://gikacoustics.com>

BLANKETS

- ▶ Thick blankets can help a home studio
- ▶ Blankets should be larger and thicker than standard sheets you'd find around the house
- ▶ <https://vocalboothtogo.com>
- ▶ <https://acousticalsolutions.com>

LIGHTING

- ▶ Lighting should be assistive when needed, creative when desired
- ▶ Lighting should be free of dimmer whine
- ▶ LED is a great choice
- ▶ Smart bulbs (Hue, Lix) can change colors and also dim
- ▶ Power considerations when in a closet (battery? longer cord?)

POWER MANAGEMENT

▶ STAR SYSTEM

- ▶ In a star configuration, all sound equipment power is sourced from a single source. This helps with power phase and hum. This method also concentrates power into an easy to backup / condition point of concern

▶ Backup

- ▶ Power distribution units accompanied with batteries for power failure tolerance. Power lasts usually 30 min which gives you enough time to shut down devices.

▶ Conditioning

- ▶ Units that regulate the power from your wall, then, distribute a cleaner more consistent signal to all units downstream.

▶ Surge Protection

- ▶ Units (strips) with fuses meant to trip (break the signal) when surges in power happen. These units can save your gear from component breakdown. Surge protection should always be used in home studios.

DATA BACKUP

- ▶ Backups methods can be manual or automatic.
- ▶ Manual
 - ▶ You backup all necessary data when you remember / feel like it. Backup is usually to portable hard drive.
- ▶ Automatic
 - ▶ Backup is managed by a system (or app) that regularly backs up selected (or all) folders and drives.
 - ▶ Mac - Time Machine
 - ▶ PC - Windows Backup
- ▶ Cloud
 - ▶ Backup to the internet using several methods. Automatic or manual. Cost can be a factor for storage.

HARD DRIVES

- ▶ Brands to trust
 - ▶ Western Digital / Hitachi / Toshiba
- ▶ Rotational vs. SSD
 - ▶ Rotational drives are larger, cheaper, slower (slightly) and require more power
 - ▶ SSD drives are faster, smaller (usually) and require less power
- ▶ Connections should match your computer. Speed shouldn't be your only concern for backups, size often is more important.

READING DEVICES

- ▶ Choose a digital reading device
- ▶ Choose a model that fits your lifestyle and vision ability
- ▶ PDF / Word docs won't auto-format to fit screen. Documents will present smaller on smaller devices.
- ▶ Cost should be a factor, though you'll usually keep these devices for quite some time.
- ▶ App marketplace
- ▶ Stylus usability?

REMOTE CONNECTIONS

AUDIO RECORDING REMOTELY

- ▶ Several options exist for remote recording of high quality audio
- ▶ Choice is usually dependent on the studio contracting your services
- ▶ Quality is usually dependent on your internet connection
 - ▶ WiFi is ok, ethernet connections hard patched to your router is often best
- ▶ Cost can be a factor
- ▶ Desire in this methodology is to record talent remotely without needing files to be sent after the session. In practice, it's always best to record yourself and offer to send when the session is completed (WAV format)

REMOTE RECORDING

PROFESSIONAL SOLUTIONS

ISDN

- ▶ Bi-directional high-quality communication method used between studios / talent for remote audio needs
- ▶ Uses dedicated telephone lines (2 in each location) which require compatible hardware on both ends. Users dial 2 numbers to connect.
- ▶ Infrastructure / dependency / hardware already built out
- ▶ Older protocol
- ▶ Still in use
- ▶ Cost is increasing for installation and unit cost as technology is phasing out

SOURCE CONNECT

- ▶ Bi-directional high-quality communication method used between studios / talent for remote audio needs
- ▶ Uses software installed on both machines to send and receive audio.
- ▶ Standalone software or in pro version, operability (i/o) with leading DAWs
- ▶ Similar to Skype in ceremony / usage
- ▶ Software is sold as perpetual license or as rental (monthly)
- ▶ Quality is great, signal is dependent on internet connection
- ▶ Recording is done with your own DAW or on client side, with pro version, into a DAW of choice

REMOTE RECORDING

UP AND COMING SOLUTIONS

IPDTL

- ▶ Bi-directional good-quality communication method used between studios / talent for remote audio needs
- ▶ Browser (Chrome) based solution (no dedicated software needed)
- ▶ Per month / incident cost
- ▶ Multiple users can attend, review and provide direction
- ▶ Recording is done in browser
- ▶ Script can be presented in browser
- ▶ Quality is good, signal is dependent on internet connection

SOURCE CONNECT NOW

- ▶ Bi-directional good-quality communication method used between studios / talent for remote audio needs
- ▶ Browser (Chrome) based solution (no dedicated software needed)
- ▶ Free
- ▶ Multiple users can attend, review and provide direction
- ▶ Recording is done in browser (subject to browser reset)
- ▶ Chat system in browser window
- ▶ Quality is good, signal is dependent on internet connection
- ▶ Unique talkback solution

SESSION LINK PRO

- ▶ Bi-directional good-quality communication method used between studios / talent for remote audio needs
- ▶ Browser (Chrome) based solution (no dedicated software needed)
- ▶ Per month cost
- ▶ Multiple users can attend, review and provide direction
- ▶ Recording is done in browser
- ▶ Quality is good, signal is dependent on internet connection