

Patchbays Explained

Patchbays are easier to understand when we think in signals rather than positions in the patchbay. I have made it a habit from day one to think in terms of signal flow. In my studio, I have no cables going to an output, for instance. They come from somewhere, as do the signals I want to transmit.

Of course it's the same old cables laying on the ground, but thinking this way makes it easier to stay on top of it all. I even patch my cords in this manner: First plug it into the output (the "from"-side), then patch the other end, the input, to the to-side.

The first thing to grasp is that the upper row on a patchbay is full of outputs. Always. There's only signals coming out, waiting for you to patch them into any of those inputs which occupy the lower row of this, and all other, two-row modules. So,

Top = Output, Bottom = Input

With this knowledge, you can already begin laying out your patchbay.

While you can't know in advance where you will end up patching your compressors, gates and exciters, you'll certainly have a quite clear idea where you'll probably want to be using your main reverb, your master DAT tape, your 32 track tape recorder/hdd recorder. And I'm sure you want those 48 insert points to be closed when you have nothing to patch into, or else you'd run out of patch cords before your session has even begun. For this you use normalled jacks. The concept of normaling, for obvious reasons, always deals with two jacks, one top, one bottom.

Let's take one channel's insert as an example. An insert is, in fact, two jacks. An output (named Insert Send), tapped off after the channel's mic/line preamp and (usually, depending on the desk's structure) channel EQ and an input (Insert Return), giving you means to bring back the processed signal to the desk's mute button, pre auxes and fader. Those two jacks show up on your patchbay, obeying the rule stated above, Send on top, Return right below it.

You will want those two jacks to be connected unless you patch something yourself, right? This is simply what normaling does.

Here comes another rule concerning patchbays:

Outputs split while inputs break

It's obviously not the jacks that break, it's the flow of the signal. When you patch something into an input, this patched signal takes over and this is all that input gets.

However, when you patch something from an output, the internal connection to its normalled input stays active, so you can take that patchcord coming from that output and route it elsewhere in addition to the regular connection.

So why can I split outputs but not inputs? All outputs have low impedance, that is, they can provide much (relatively, that is) power, while inputs always have high impedance, they draw little power. In fact you can drive around twelve to fifteen inputs with one output without any problems. You can't connect multiple outputs that way because, due to their low impedance, they can sort of see each other in an electrical sense. And each one will try to correct the resulting sum to fit its own requested output by feeding/draining power until the whole mess goes into saturation and overload with a beautiful bzzt-ping. Better use a mixer to combine multiple outputs.

But back on-topic: next step is to decide which connections you want normalled and which you don't. Obviously all insert sends and their insert returns want to be normalled, so you don't have to patch 48 cords to start your session. So does your tape/digital recorder. One possible order is:

Top - Bus Out 1-24

normalled to

Bottom - Tape In 1-24

Top - Tape Out 1-24

normalled to

Bottom - Channel In 1-24

You can be quite sure that you'll want your master DAT ready to go to record the stereo mix, so go ahead and have it normalled there. Nothing keeps you from normalling your Aux Sends to your reverb and other polyFX inputs. Those reverb and delay outputs might want to be normalled to spare channels or aux returns, depending of the abundance of channels (or lack thereof) you got.

Other outboard, such as, compressors and the like might want to stay un-normalled, because you can't tell what signal they end up on.

All this might leave you with some thought-provoking, mind-twisting, rubic's-cube-like concepts to deal with, but once you sorted this out, you can layout, build and, finally, use your patchbay in the manner fo which it was designed.

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