N Smith 2015

Video URE Book 3
Video Control Hardware

When building a video system we will always have to make different pieces of equipment talk to each other, and as much as we try to make all our content resolution match up, sometimes we need bits of kit that will make our devices talk to each other, or give us the ability to do interesting things.

It is important to think about the best way to keep your system simple while flexible. This is why is it common to have some of these pieces of kit even if they are not 100% necessary for the original specification. It better to be able to hit one little button to change to a different signal type than have to phone a hire company at 2am looking for a scaler.

Scalers

A video scaler is a device we use to bounce our video between different formats and resolution. This is useful if we want to use modern media servers to output onto a older screen, or capture an older or cheaper camera into our system. A scaler is usually a 1U rack unit and looks like this:

As you can see, Our scaler takes in DVI, VGA and a whole load of other formats and can bounce them around into any other format for output.

This is very good if you were to run a corporate events with individual speakers using their own laptops. You could be sure that no matter what the resolution of the presenters laptop is, your server is getting the correct signal it needs. Scalers can compensate for Aspect Ratio, Resolution, Signal Type and many other differences that would normal mean you can't interface with the system. It is for this reason you will almost always find a scaler in any serious video system, no matter how big or small.

One to be aware of when looking at the back of this unit is that the BNC outputs can output multiple formats. There is both an SDI output and an analog Composite output, both of which come out on a BNC connection. Make sure you know which is which when you try and cable up.

DA's

DA stands for distribution amplifier, and is a device for duplicating our signal across multiple outputs. Most people would call this a "splitter" but it is different to a splitter in that it doesn't just electrically split each signal, but actually amplifies it so each output comes out at full strength. The back of a DVI DA looks like this:

It's a very simple piece of kit but can make signal distribution far easy. Also, if we are hot swapping output devices, they act as a handy EDID (Extended Display Identification Data) meaning you don't crash your servers if your riggers unplug your projectors.

Fibre DVI/RJ45 Links

Sometimes we require to send video over great distances. This can be an issue as the maximum length for a DVI cable carrying DVI signal (the industry standard) can only reach 50m before there is notable signal degradation. Equally, CAT5e/6 1000 MBits ethernet can only run a maximum of 75m before packets start to be lost.

So for this reason we want to bounce our signal to something which can travel further but still maintain the speed. This is where optical fibre comes into play. Optical fibre has a standard connector, but we can attach various adaptor at either end to send what we need. A DVI fibre link could look like this:

Each line of DVI takes two lines of fibre. However, standard longer fibre cable drums are quad core and can hence carry 2 DVI signals per small thin cable, allowing for easy of fit up and cable distribution.

If you intend to use fibre, make sure it is clearly marked and everyone knows to take care with it, it is glass after all. Any fibre running on the floor should be put under a cable ramp and people should be very careful when pulling the drums out or in.