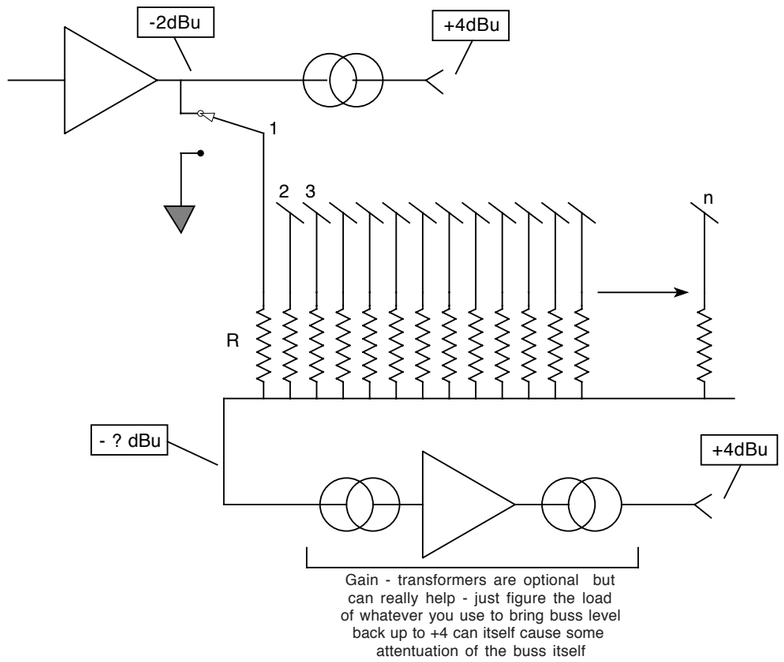


Gain - transformers are optional but can really help - just figure the load of whatever you use to bring buss level back up to +4 can itself cause some attentuation of the buss itself

set n = 10
set R = 10000

$$\frac{R}{n} \qquad \frac{\frac{R}{n-1}}{R+\frac{R}{n-1}} \qquad \frac{10000}{10} = 1000 \text{ ohm buss impedance}$$

$$\frac{\frac{10000}{10-1}}{10000+\frac{10000}{10-1}} = 0.1 \text{ voltage attenuation}$$

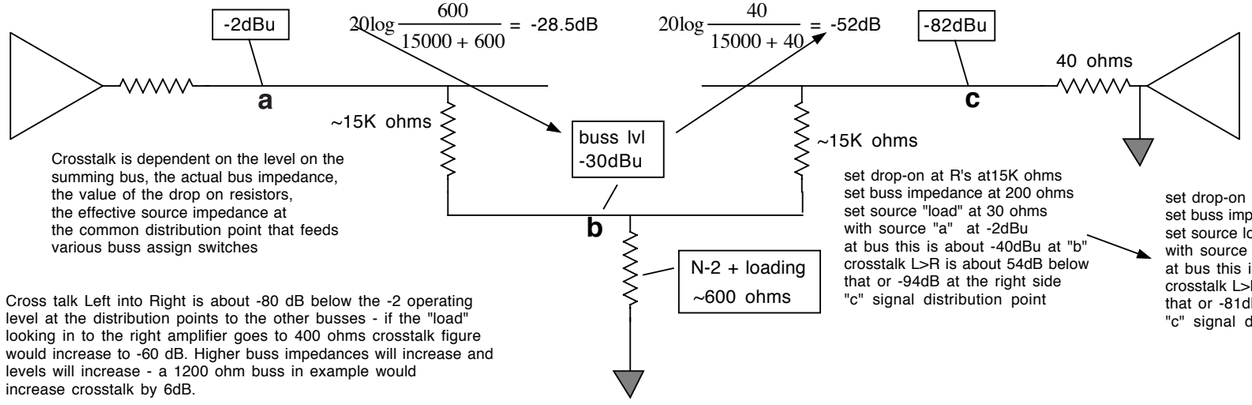
note that value of R (if all the same) does not effect voltage attentuation - it does define buss impedance and buss impedance against the source impedances into the drop on resistors will effect crosstalk and noise performance

$$20\left(\log\frac{\frac{10000}{10-1}}{10000+\frac{10000}{10-1}}\right)0.775 = -15.5 \text{ dBu buss level}$$

1) pick a buss impedance - I'll pick 600 ohms
2) how many drop on points (28)
3) value of R will be 600 times 28 or 16.8K
4) do the math

$$20\left(\log\frac{\frac{16800}{28-1}}{16800+\frac{16800}{28-1}}\right)0.775 = -22.5 \text{ dBu buss level}$$

5) set make up gain amp input impedance at 600 ohms
6) buss level will drop 6dBu to -28.5 dBu
7) you want to get up to +4dBu so total gain needed = +34.5 dB



Crosstalk is dependent on the level on the summing bus, the actual bus impedance, the value of the drop on resistors, the effective source impedance at the common distribution point that feeds various buss assign switches

Cross talk Left into Right is about -80 dB below the -2 operating level at the distribution points to the other busses - if the "load" looking in to the right amplifier goes to 400 ohms crosstalk figure would increase to -60 dB. Higher buss impedances will increase and levels will increase - a 1200 ohm buss in example would increase crosstalk by 6dB.

set drop-on at R's at15K ohms
set buss impedance at 200 ohms
set source "load" at 30 ohms
with source "a" at -2dBu
at bus this is about -40dBu at "b"
crosstalk L>R is about 54dB below
that or -94dB at the right side
"c" signal distribution point

set drop-on R's at 30K ohms
set buss impedance at 200 ohms
set source load at 500 ohms
with source "a" at -2dBu
at bus this is about -45dBu at "b"
crosstalk L>R is about 36dB below
that or -81dB at the right side
"c" signal distribution point