Tie Line Matrices (theory)

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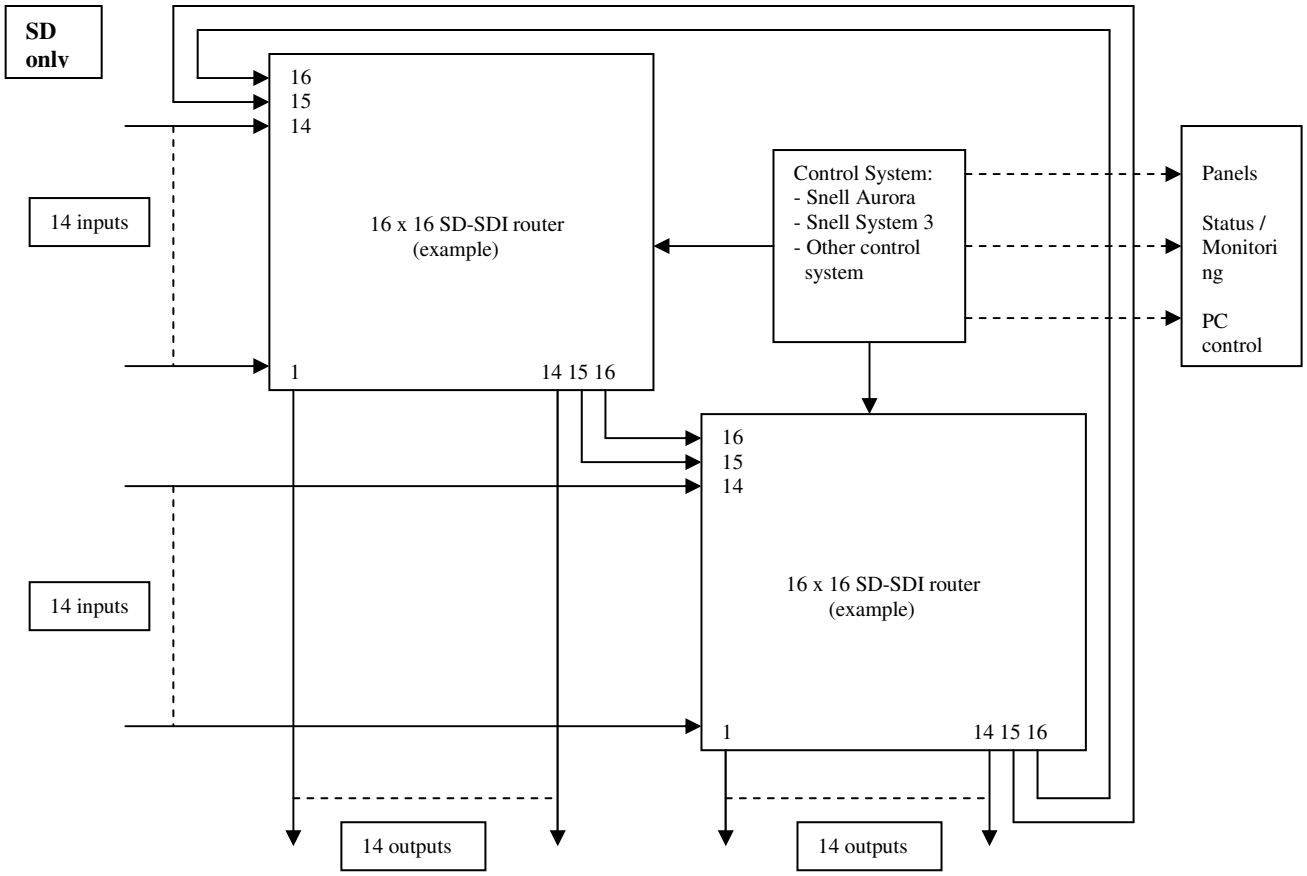

Above: The two individual routers form a combined matrix with 14 + 14 inputs = 28 and 14 + 14 outputs = 28. The combined router can be viewed as a 28 x 28 router. A 28 x 28 router will normally have 784 crosspoints. The shown two routers have totally (16 x 16) + (16 x 16) = 512 crosspoints whereby a cost saving has been achieved. The limiting factor due to total flexibility of the Tie Line matrix is the number of tie lines connecting the two routers (here 2) and that will be the "cost" in operation as traffic in between the router sections is limited The shown 2 tie lines could have been a higher number – maybe 5-7 in practice.
Below: Combined SD & HD signals within a Tie Line matrix.