Application Note

NV9000 Control System Virtual Re-Entry

Introduction

The concept of looping a router output to a router input has been used for quite some time in broadcast system architecture. The benefit of this design is that it allows simple access to a router output (connected as an input) from any other outputs on the router. System installations normally use physical router inputs and outputs that are connected with cable that consume valuable router real estate.

The NV9000 includes a powerful software feature that eliminates the need for physically cabled re-entries on the physical router. This feature is called *virtual re-entry*. Another name for the feature is *virtual cross-points*.

Virtual re-entry allows "virtual loops" to be created using virtual re-entry software that can be configured in the NV9000 without the need for additional physical router capacity or cost. The virtual re-entry software can be configured with the same capacity as its associated physical router; essentially "doubling" the size of the router.

The following diagrams illustrate some of the common uses of virtual re-entry:

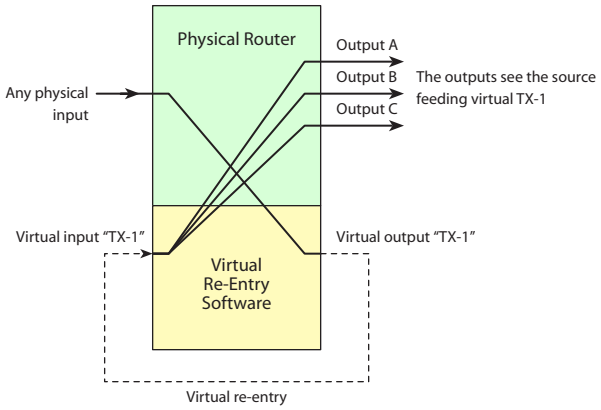

Figure 1.

A popular application of virtual re-entry is used when there is a need for a single router input to appear on multiple router outputs at the same time (*i.e.*, very useful for dubbing applications).

In this case, any physical input to the physical can be routed to the virtual 'TX-1' output of the virtual re-entry Router which is "looped" using software to the virtual 'TX-1' input in the virtual re-entry software. As a result, the original input is physically routed to any physical output that selected virtual 'TX-1' as a source. The resulting physical route is shown in Figure 3, next page.

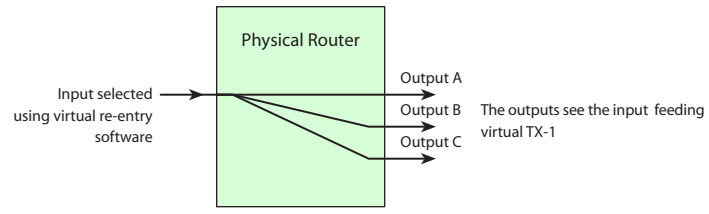

Figure 2.

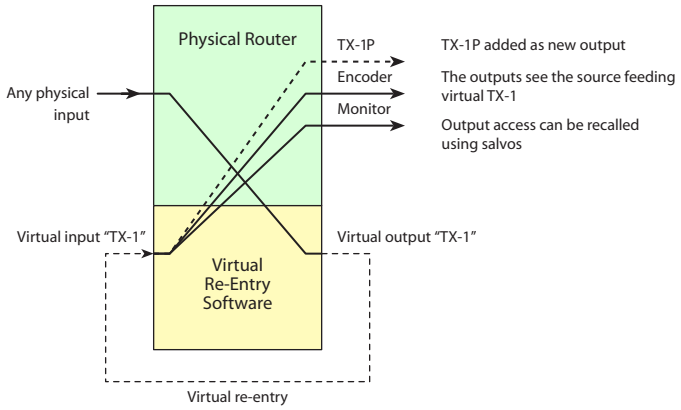

Figure 3.

Virtual re-entry can be used to support secure output management. In this case, access to a virtual input is controlled depending on delivery requirements for a given event. Operators still see the same source name regardless of the actual source being fed to the virtual input eliminating the possibility of take errors related to the actual physical inputs of the router.

Another example of this application is transparent routing of redundant back-haul feeds. In the case where a satellite feed from an event fails, the fiber back-haul for the same event can be switched by engineering to existing physical outputs without requiring operator intervention.

Different virtual re-entry configurations can be recalled using salvos from the NV9000 control system.

Figure represents a default system set up configured for destination tracking (outputs A,B, and C fed by 'TX-1').

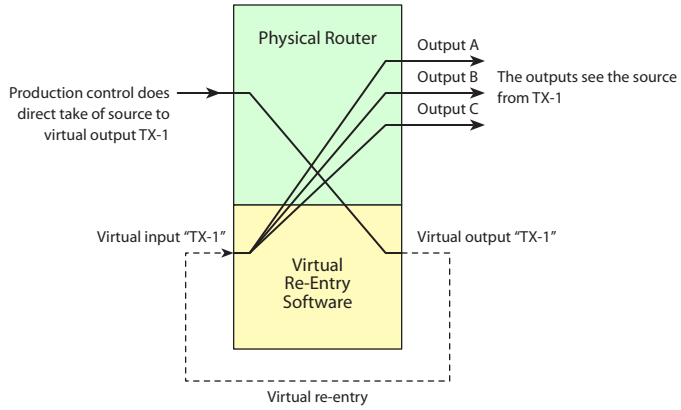

Figure 4.

Figure 5 shows the system set up for private source delivery. In this case a private source is routed directly to Output A (normally fed by ‘TX-1’) during a special broadcast event. During the event, BARS is fed to the other tracking destinations from TX-1.

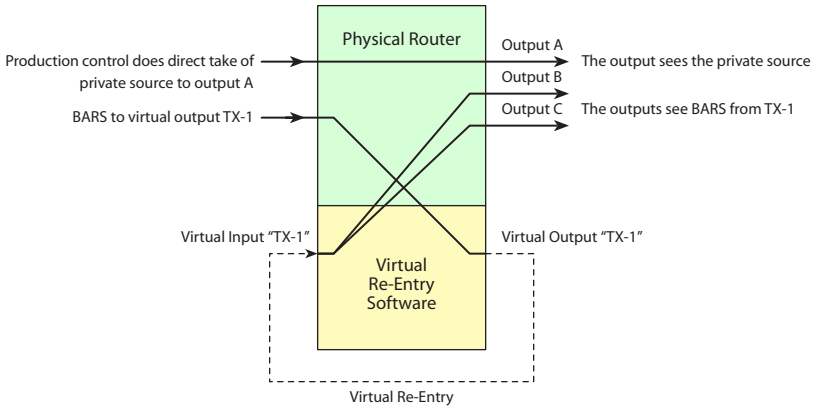

Figure 5.

Virtual Re-Entry Used for Multi-Purpose Release

Virtual re-entries can be useful when doing multi-program release from the router. Complex multiple take setups are simplified allowing single take source assignments to virtually configured output paths that use the same naming conventions that are independent of source feed changes.

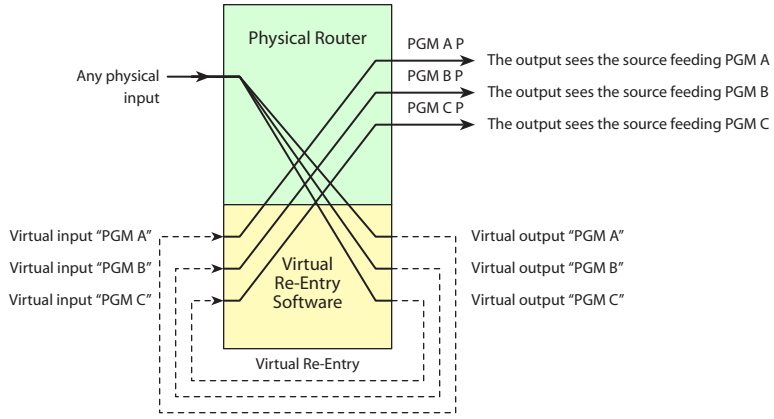

Figure 6.

In addition, virtual re-entry software can be used to re-enter programs into each other (*i.e.*, A into B or C, A into B into C, C into A or B etc.). All of this can be done without installing or moving any cables.

Conclusion

The examples that have been described represent just a few of several applications for the NV9000 virtual re-entry software feature. Just as with functions such as path finding and tie line management, virtual re-entry software development is quite extensive resulting in a very useful feature in the NV9000 control system.