

Avoiding System Interdependence
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“Mission critical signals, be them command/control or streaming, should be contained in separate universes to minimize the propagation of failures. The goal is to achieve interoperability without creating interdependence”.

Compartmentalization is frowned upon these days. It's all about the mesh, the one-mind vision of the A/V system being homogenized, smart, completely aware of each other. There is a beauty to this vision that as of late has taken shape across many sectors of our vast industry. From world-wide sporting events to the local night-club and the home recording studio, signals are intermingling like never before.

This intermingling has risen from the Information Technology industry and their use of a common data format. Simply, Ethernet, in some form or fashion, is everywhere. It carries command/control, TV Network feeds, video signals, telephony, audio, RF and intercom. Every technology specialty uses Ethernet in some form to transport their signals. Since the signals are the same format, the ability to place them all on a shared hardware platform exist, but at what cost?

The attractiveness of single-point-management is countered by the risk of single-point-failure. The best systems work to accommodate tight integration of systems without the risk of interdependence.

Interdependence is simply the case of otherwise disparate systems sharing any physical piece of hardware or cabling. It is often thought that since all can be converted to a common data format, such as Ethernet, be it audio, DMX, IPTV, command/control or e-mail, that the signals should run on the same network equipment to minimize cost, rack space and cabling. The downside is that often these systems are specialties that are best dealt with by parallel management workflows.

The corporate IT department is updating the customer service database this weekend and it happens to be the same server which contains the licensing files for the non-linear editing system used by corporate communications. During the transition weekend, the edit session scheduled with the marketing department had to be cancelled.

To overcome an equipment failure, the Hotel's AV engineer added a new AoIP appliance to the ballroom sound system...it was set to an IP address already on the e-mail network which disrupted the hotel's newly installed guest messaging system.

Separation of responsibility is also a personnel consideration. Corporate IT professionals are under strict orders to maintain security to the highest degree possible. Cybercrime is a real concern and a real detriment to us all. It must be taken seriously and the IT professional that stands in the way of an audio technician adding an AoIP device to the corporate network is doing their job and it should be respected. It is for this very reason that corporate IT and networks used in support of what is in essence the IoT in the A/V world, must remain separate. The old motto of “the show must go on” is as real as it has ever been, yet the security firewall is in place to eliminate ad-hoc additions to the network. Each network has its unique purpose. Just because the two industries use the same hardware does not mean they should ever intermingle.

Beyond the network manifestation of interdependence, audio signals common to both the on-air audio system and signals of similar form but related to intercom tend to become interdependent. Since the intercom and the audio board are at times simply network routers, the idea of using the transport of one to facilitate the transport of the other is very attractive. But again, if the intercom needs to be altered while the audio operator is saving a memory preset, does the intercom engineer know what preset version is active at any time? It has happened that the audio console gets a firmware upgrade which has disabled a route the intercom engineer relied on...but was not informed about the firmware upgrade that took place over the weekend. I know of one case where a helpful engineer allowed the pyrotechnic control signal to pass through the intercom network to save running additional cable...no thanks...that is interdependence to a fault.

The audio industry has a long history of pulling from existing technology bases. In the early days, we borrowed from the telephone industry, like the Decibel, balanced lines, wet/dry circuits, etc. Today, we have adopted information technology and computer network hardware to transport, process and store our audio signals. With a firm understanding of network technology, a system designer's ideas can be elevated above the generic, "catalog-based design", to one that best supports a customer's unique workflow, logistical and budgetary requirements.