GLOBALCOM ACS to ACS IP Multicast Layer 3 Network Requirements

For ACS ↔ ACS audio transport in a GLOBALCOM system between VLANs, IED employs IP Multicasting. This enables one ACS to source audio that may be received by N receivers. To support this capability, there are prerequisite network equipment and configuration settings which must be in place.

Switches

Switches must support IGMP (Internet Group Management Protocol). The current standard is IGMPv3, but versions 1 and 2 are compatible. There are other settings related to IGMP that may be configured. IED has found that on some installations, enabling IGMP Snooping has a detrimental effect on the local CobraNet audio. So even though it may help IP Multicasting, it may hurt local isochronous Ethernet audio traffic, due to some impacts internal to the switches.

Multicast Router

To route multicast traffic between subnets and maintain multicast group membership lists, a multicast-capable router is required. If more than one router is necessary, the routers must communicate multicast information to each other. This is typically done using Protocol Independent Multicast (PIM). There are several types of PIM. One common type is Sparse Mode, typically referred to as PIM-SM. There is also a Dense Mode version of the protocol. As far as IED knows, either mode may be employed with a GLOBALCOM system, as recommended by the site's network engineer or switch manufacturer for the type of installation.

Multicast Groups

Multicast groups are generated using Class D network addresses (224.0.0.0 – 239.255.255.255) in combination with a port number. In a VLAN situation, 224.0.0.X addresses cannot be used. In the GLOBALCOM configuration software (System Management Console or SMC), there are defaults assigned. These may be manually over-ridden as dictated by the site's network engineer. By default, the ACS multicast group is 239.192.0.x where x is the system number. So System 1 uses 239.192.0.1, System 2 transmits on 239.192.0.2, etc. The default port numbers used IP multicasts are 5001 – 5008 for system 1, 6001 – 6008 for system 2, 7001 – 7008 for system 3, etc. Again, these can be manually over-ridden if different ranges of ports are opened up between VLANs.