



FAQ

Can Digital Radios be Linked?

We are often asked the question: “can we link digital radios?” The answer is a qualified yes. This FAQ will try to explain why the ability to link digital radios is not as straightforward as one may think.

Linking Digital Radios vs Analogue Radios

In an Omnitronics dispatch architecture, digital radios are connected to the dispatch system and the IP network through a gateway such as the [DRG100](#). Similarly, analog radios are connected through the [IPR100/400 gateways](#). Linking radios is usually done through a [DX-Altus radio dispatch console](#) through the server module. In general, audio can be linked across digital radios in much the same way as linking across analog radios. In fact, even digital and analogue radios can be linked together. However, while it’s relatively easy to link the audio between two radios, it’s a lot more difficult to link data and metadata. This includes information such as the radio caller ID, individual/group call destination ID’s, GPS, status and text messages. The problem is further exacerbated when trying to link radios with incompatible protocols.

Simplified Linking

Normally, a gateway will set the appropriate call mode on a radio, just before transmission. This happens automatically when a dispatch operator makes a Group Call, an Individual Call or an All Call (as an example). Because linking is a feature that is independent of the dispatcher, the gateway may not be set up to make a call when it receives audio from a linked radio for re-transmission. Therefore, we can use the fact that each radio has a default call type to simplify linking. This is usually a Group Call or an All Call but can be anything else supported by the radio. Gateways are programmed with a default call type and default ID’s to facilitate linking.

Linking Digital Radios through Default Configurations

Using default call configurations, digital radios can be linked together. When two digital radios are linked, and they have compatible addressing plans, then it is possible and practical to pass the radio caller ID from the receiving radio on to the re-transmitting radio. However, not all radios support this. On some radios, the ID that is transmitted is the ID of the donor radio, not the ID from the linked incoming call. In this case, the re-transmitting digital radio will generate a default call but will use some default value for the group ID or individual ID. If this is not practical then some kind of mapping may be used. There are two ways to do this: perform the mapping on the DX-Altus server, or perform the mapping at the gateway itself. The latter is the preferred approach because it is quicker, system independent and easier to manage. To achieve this, the gateways must be pre-configured with a look-up table that takes into account the addressing plan on the target network and doesn’t conflict with existing addresses.





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Linking Trunked Channels

Trunked channels may also be linked. However, the main problem when doing this is that there is no guarantee that a call will succeed. There may not be an available channel when the call is made, and the user on the radio terminal that generated the call won't know that the call has failed.

Conclusion

While it's possible to bridge digital radios, not all of the information can be linked and re-transmitted. Careful consideration must be given to how the radios are configured (especially in terms of its default call) and how the necessary ID's will be passed across or mapped. Omnitronics continues to develop methods for linking digital radios, both Conventional and Trunked. Expect some exciting releases in coming months.

Finally, when linking analog radios to digital radios, information such as Selcall and DTMF will be lost. However, this shouldn't present a problem in practical applications.

