

IDAS™ Systems: **White Paper**



IDAS™ Systems

An Overview of IDAS™ Single Site Trunking



A white paper prepared by Icom America Inc.
Manufacturers of high-performance,
award-winning radios for over 55 years.

IDAS™ Systems

An Overview of IDAS™ Single Site Trunking

Highlights:

- An economical and highly efficient system, suitable situations with many groups require communication in a concentrated area
- Traffic Managed Through a Home Channel
- Secondary and Cover Channels for Backup Support

IDAS™ Single Site Trunking is a method of providing frequency efficient communication in a specific coverage area when using two or more talkgroups. With our IDAS™ Single Site Trunking solution, you can have up to 30 repeaters (talkpaths) at a given communication site, supporting 2,000 individual ID codes and 2000 group codes per home channel. A system can also have multiple home channels to extend individual and group counts higher per system.

Advantage of Trunking Over Conventional

Trunking system in general exist to provide higher channel usage efficiencies than a “conventional” radio system is typically capable of. For example, a typical conventional system can only handle one “talkpath” at a time. This means that if multiple talkgroups have been assigned to a conventional system (regardless of how segmented), that only one group at a time can utilize the system. All other groups must wait for traffic to clear before the system can be used.

With trunking, however, the system contains multiple repeaters representing multiple talkpaths. Therefore when one group utilizes the system, the system remains available for further traffic until its channel resources are exhausted.

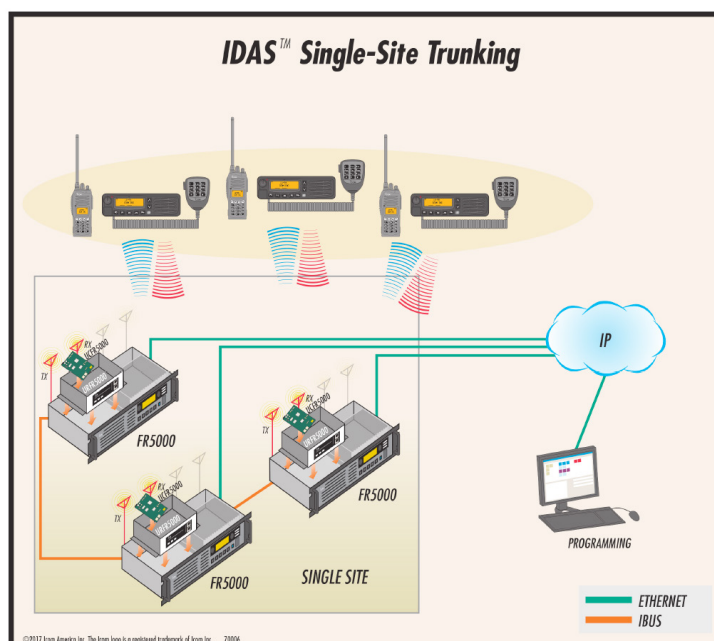
IDAS™ Single Site Trunking

With our IDAS™ Single Site Trunking solution talkpath traffic is managed through a home channel scheme. The radios will constantly listen to the “home channel.” If a radio from their group becomes active on the system then all the radios in that group go to whatever ‘trunk off’ (non-home) channel the system has assigned the group to.

So in this manner, the home channel becomes the “traffic cop” for the system, constantly assigning radios of different groups to different repeaters depending on what repeater is available for use at that moment.

If you have a five channel Single Site Trunking system, then the IDAS™ Single Site Trunking system would be capable of handling five talkpaths. If you only had five talkgroups, then the system would never “busy out” as it would always have a talkpath open when a group wished to use it (though it may be using a different physical repeater on each call).

If you have more than five talkgroups, however, then you start to run into the chance that your call may be blocked. But because of the efficiencies of trunking this doesn't happen that often and you can often run 10 or even 20 talkgroups on a five channel system depending on how busy the talkgroups are.



Home Channel Details

The home channel sends out control information to the listening radio with embedded “goto” information encoded into IDAS™ NXDN voice or idle message frames. Radios listening to the home channel will not unmute if the traffic on that channel is not meant for them and will only unmute on the specific channel with traffic destined for them.

Since the “home channel” is central to the correct operation of the system, any failure in the home channel will cause the system to cease functioning. Because of this, IDAS™ Single Site Trunking has the ability to do have a secondary home channel. All of this makes sure that there is robust redundancy built-in to the system to cover most likely points of failure.

If the subscribing radios fail to hear the correct message from the home channel for a period of time, they can be programmed to automatically switch to a pre-specified secondary home channel. Even after this switch is made, the radios will check back periodically to see if their primary home channel is active and revert back to it if it is.

Channel Basics

• **Home Channel:** With our IDAS™ Single Site Trunking solution talkpath traffic is managed through a home channel scheme. The radios will constantly listen to the “home channel.” If a radio from their group becomes active on the system then all the radios in that group go to whatever ‘trunk off’ (non-home) channel the system has assigned the group to.

• **Secondary Channel:** If the subscribing radios fail to hear the correct message from the home channel for a period of time, they can automatically switch to a pre-specified secondary home channel. Even after this switch is made, the radios will check back periodically to see if their primary home channel is active.

• **Cover Channel:** There is also a “cover channel” feature available where the secondary control channel will stop the subscribing radio from looking back to its home channel should the secondary control channel sense a bus failure of the primary home channel.

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In this regard, a duplicate IDAS™ Single Site Trunking System could be set up and activated at the same site or even a different site (as licensing allows) should the primary system fail for site as well as home channel redundancy.

Home Channel vs. Control Channel

IDAS™ Single Site Trunking uses the concept of a “Home Channel” as it allows for talkpaths on every repeater in the system. Other trunking designs use the concept of a “Control Channel” which performs in a similar fashion to a Home Channel. The benefit of control channel trunking is that it provides a few more features than a “Home Channel” design is capable of. But those features trade off the ability to carry voice traffic on the control channel.

So it would take six repeaters on a trunking system that uses a Control Channel to carry the same amount of voice traffic as five repeaters on a trunking system designed using a Home Channel. IDAS™ Single Site Trunking (which uses “Home Channels”) often times has the edge when frequencies pairs for repeaters are hard to find.

Another feature of the our Single Channel Trunk system is the ability to have subscribers perform priority calls, where radios can be “pulled away” from the traffic they are monitoring to a specific talkgroup with higher priority. This allows for easier passage of priority or emergency traffic to a larger set of users. Consoles can connect through support radios, though not directly to the system over IP at this time.

Conclusion

Our Single Site Trunking is a robust, economical and highly efficient communication system, suitable situations with many groups require communication in a concentrated area.

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