Discovery Methods

There are two basic approaches to DLINK radio auto-discovery.

1. Non-intrusive/passive requests are broadcast to every radio currently listening on the network.
2. Intrusive/active requests are directly addressed to specific unit IDs.

There are advantages and disadvantages to both of these methods, which are described in the following charts.

Passive Query Method

Advantages	Disadvantages
• Queries are non-intrusive in the sense that they do not cause radio transmitters to key up unnecessarily.	• Query & response data packets will still add traffic to the network, so they are not completely non-intrusive (i.e., this is not an "out of band" management system).
• Query & response data streams are appended to existing payload packets, so the flow of customer data is not interrupted in order to handle any of these special requests.	• The timing for sending & receiving the query/response traffic is entirely dependent on the polling cycle or data transmission interval of the application which is using the payload port. As these poll times increase, the duration of the auto-discovery process can increase dramatically.
• A single "broadcast" message can be issued by the master, and *multiple* delayed responses will be received as every listening radio responds in the course of sending normal traffic back to the master radio.	• There will still need to be a timeout interval, after which only radios that have responded will be listed in the discovery. This timeout interval will need to be carefully coordinated with the data transmission interval of the underlying application, and it could be quite long.

Active Query Method

Advantages	Disadvantages
• Individual directly addressed queries are issued, and a *single* response is expected from each query. This simplifies the response processing logic.	• The active/intrusive query messages must be processed separately from the normal flow of customer data traffic. Therefore, customer data transmissions may be delayed while these discovery queries are handled.
• A short timeout can be used to determine "availability" for every possible unit ID that may be connected to each master radio. This timeout should be adjusted based on the known latency to the far end of the network, but it should be quite fast.	• A query must be issued for every possible unit ID (total of 65000). This will increase network traffic by the same amount whether discovering 10 or 10,000 remote radios.
• The duration of the discovery process is completely independent of the data transmission interval/poll cycle for the underlying customer application. Each time it is run, the discovery process will take the same amount of time and will be comprehensive in its discovery.	• The customer network may need to be put into Diagnostic Mode during the period of the auto-discovery process.

Comparison of the Discovery Methods

The choice of discovery method will need to be made based on the configuration of the customer network and data transmission applications. Several of these factors are listed below:

- How many radios comprise the network?
- What is the typical round-trip-time from a master station to the far end remotes?
- What is the data transmission interval or application polling cycle for the customer network?
- How tolerant is the customer network to being put into diagnostic mode during a discovery process?
- What is the current total bandwidth utilization on the network?
- Can the network continue to perform normally with the addition of auto-discovery packets?