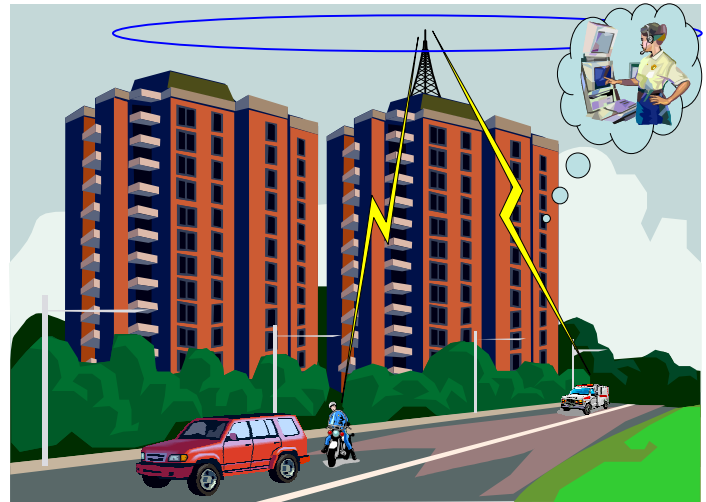


# Application Note - Base Stations



## 1) Application

A base station is a simple radio system comprised of one fixed radio site (the base station) typically connected to the dispatch center (911 for example) that provides RF communications to portables and mobiles within a jurisdictional area. A simplistic example is shown in the diagram to the right.



Daniels radios can be configured for a variety of base station applications. The simplest configuration is a basic base station in which the Daniels radio communicates with a variety of handheld or mobile radios either in analog or P25 digital mode.

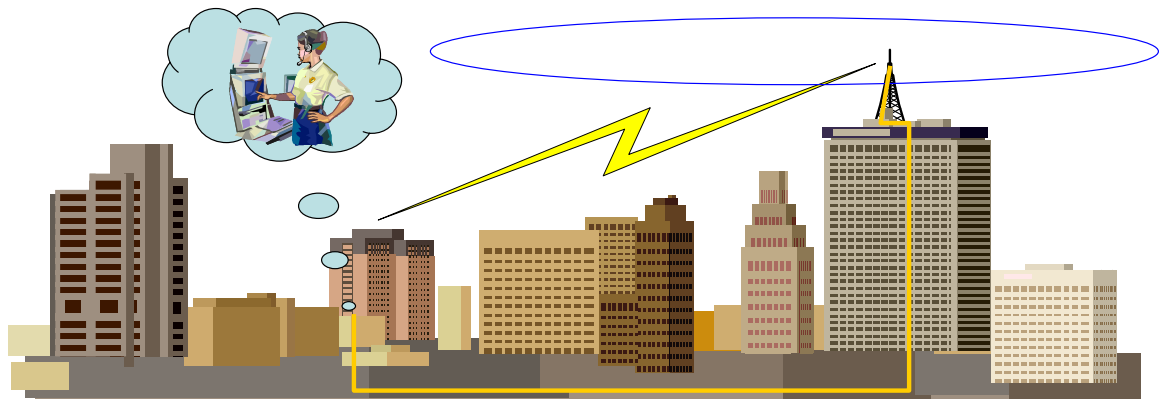
## 2) The Problem

When the dispatch office is located in an area where the radio coverage is not large enough (e.g. a valley or in an urban area) to reach all the portables and mobiles, it is desirable to remote the base station to a better transmitter site.

## 3) The Solution

Remote base stations are used when the dispatch office is located in an area where the radio coverage is not large enough (e.g. a valley or in an urban area) to reach all the portables and mobiles. To extend the coverage, the base station must be located on higher ground such as an office tower (as shown below). Remote control of the base station via a console at the dispatch office can be accomplished in two ways:

- An RF link can be used if the remote site is not accessible or is too distant for wireline connection.
- An alternative for short distances is using a tone or DC remote adapter. Tone remotes use PTT, guard, monitor and function tones to control the station.



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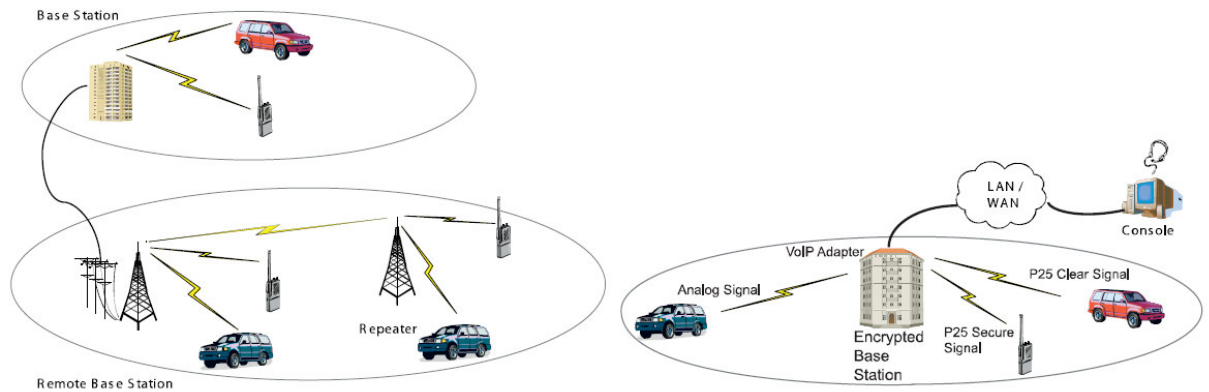
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# Base Stations

## 4) Daniels Customer

Typical Base Station customers include: Police, Fire and Ambulance agencies. In many instances they share a common 911 dispatch center that then communicates to individuals on their portables or mobiles via a Base Station. Depending on the geography some of these systems will deploy remote base stations. The diagram below illustrates several different base station architectures that Daniels radios can support. For details on IP interfaces to consoles refer to Application Note AN550.



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## 5) The Benefits

A typical base station is shown in the photo below. It is a modular radio that can be configured for a variety of different applications in a standard 19" subrack. Such systems offer robust construction, low current consumption and extreme temperature tolerance (-30° to +60° C) enabling them to be deployed in some of the world's harshest environments such as Alaska and the Sinai.

The base station can operate on more than one frequency. This can be accomplished either by remotely switching channels through tones or, by locally switching channels manually. Daniels Electronics transmitters and receivers each have a 32 channel capacity. Communications between the base and mobile / portables can be selected from the base station to go to specific users in the field. The base station is operated by tone remote and CTCSS tones are used for selecting users.

A base station can also be equipped with monitor receivers allowing the operator to monitor more than one channel at the same time in order to ensure communications are not missed by the dispatch office.



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