

Paging (Wireless Networks)

at belajar , paging , telecom

Paging is a method of delivering a message, via a public or private communications system or radio signal, to a person whose exact whereabouts are unknown. Users as a rule carry a small paging receiver that displays a numeric or alphanumeric message displayed on an electronic readout or it could be sent and received as a voice message or other data.

Commercial paging service began in 1949 with the allocation of frequencies exclusively dedicated to one-way signaling services. Subscribers used AM receivers, listened for an operator to announce their number, and then called the service to receive their messages. Selective addressing (the ability to choose one individual pager from the group) was introduced in the mid 1950's and FM was first used in an experimental paging system in 1960. Pagers with alphanumeric displays made their debut in the early 1990's. In addition to complete messages that can be sent and stored in these pagers, a number of other services such as stock market and sports score reporting have been developed.

There are 4 basic types of messaging services offered by paging systems: tone, numeric, text (alpha), and voice. Two types of paging systems can deliver these messaging services: one-way and two-way paging. One-way paging systems only allow the sending of messages from the system to the pager. Two-way paging systems allow the confirmation and response of a message from the pager to the system as well.

One-way paging is a process where paging messages (signals) are sent from a radio tower to a pager without a return verification signal. In its simplest form, a one-way paging system can serve up to several hundred thousand numeric paging customers.

Figure 1 shows a one-way paging system. In this diagram, a

high-power transmitter broadcasts a paging message to a relatively large geographic area. All pagers that operate on this system listen to all the pages sent, paying close attention for their specific address message. Paging messages are received and processed by a paging center. The paging center receives pages from the local telephone company or it may receive messages from a satellite network. After it receives these messages, they are sent after processing to the high-power paging transmitter by an encoder. The encoder converts the pagers telephone number or identification code entered by the caller to the necessary tones or digital signal to be sent by the paging transmitter.

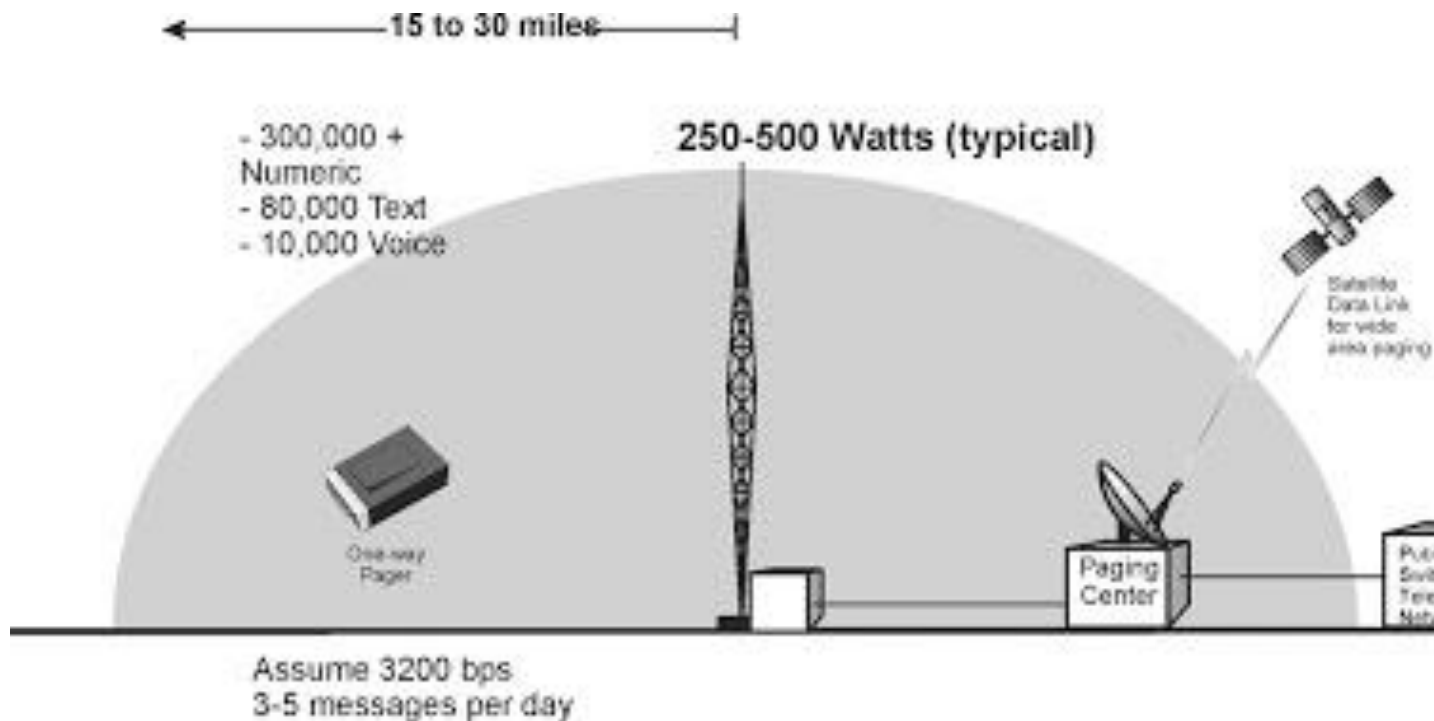


Figure 1: One-Way Paging System

Two-way paging systems allow the paging device to acknowledge and sometimes respond to messages sent by a nearby paging tower. The two-way pager's low-power transmitter necessitates many receiving antennas being located close together to receive the low-power signal.

Figure 2 shows a high-power transmitter (200-500 Watts) which

broadcasts a paging message to a relatively large geographic area and several receiving antennas. The reason for having multiple receiving antennas is that the transmit power level of pagers are much lower than the transmit power level of the paging radio tower. The receiving antennas are very sensitive, capable of receiving the signal from pagers transmitting only 1 watt.

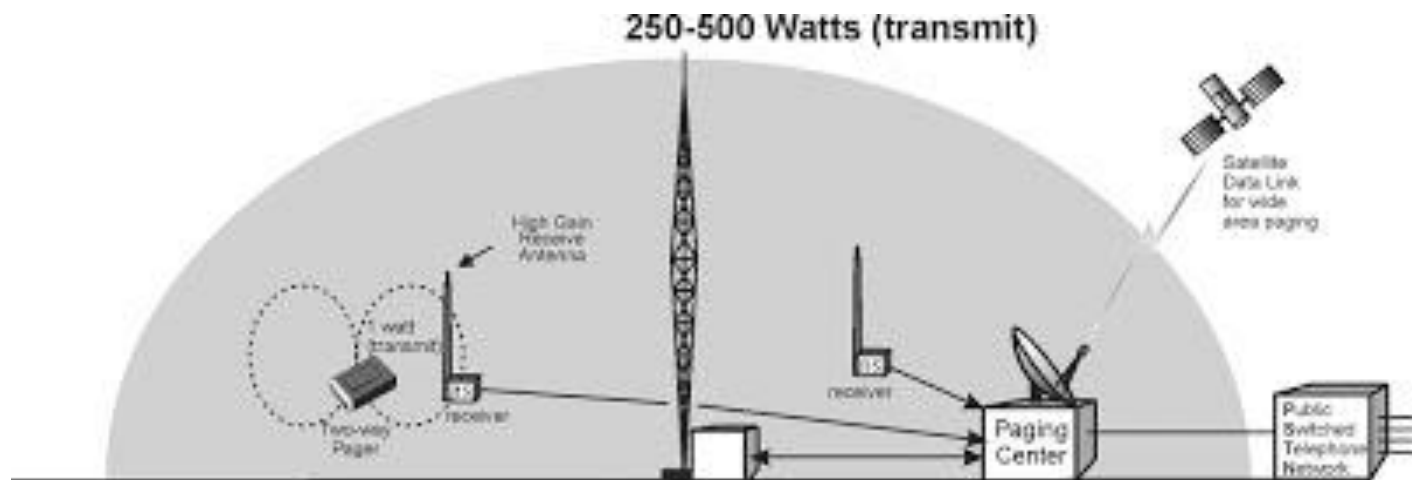


Figure 2: Two-Way Paging System

The number of required receivers for a two-way paging system is dependent on the available transmittal power from the paging and how fast the information is to be transferred. The higher the data transmission rate results in a higher number of required receivers.

The main advantage of two-way paging systems is their ability to require pagers to register their location within the paging system. This allows the paging system to direct pages for a specific pager only to the area near where the pager last registered. This frees up the paging capacity of channels in other geographic areas so paging messages can be sent to other pagers. This is a type of frequency reuse based on geographically separated