

# VSAT (Very Small Aperture Terminal)

VSAT (Very Small Aperture Terminal) is a technology that is used for effective communication in remote areas using Satellites and components located on ground. This article briefly covers the details on the uses of VSAT and how the signals are transmitted.

## History of VSAT

The concept of geostationary orbit was first proposed by Russian theorist Konstantin Tsiolkovsky. He had written articles on space travel at the start of the 20th century. Flash forward to 1945, Arthur C. Clarke published an article called "Extra-Terrestrial Relays: Can Rocket Stations Give World-wide Radio Coverage?" In this article elaborated on the important characteristics for geostationary orbit and the power needed for communication. discussed the necessary orbital characteristics for a geostationary orbit and the frequencies and power needed for communication.

Development of active satellite communication was carried out in the 1960s by NASA. The first of these was the Syncom 1-3 satellites of which Syncom 3 transmitted live coverage of the 1964 Tokyo Olympics to viewers around the world.

The first commercial VSATs were C band (6 GHz) receive-only systems by Equatorial Communications using spread spectrum technology. More than 30,000 60 cm antenna systems were sold in the early 1980s.

## VSAT - 2 Main Components

A VSAT has 2 main components, which are given below

1. A transceiver placed outdoors in direct line of sight to the satellite, and
2. Interfacing of the transceiver and the users communication device will be done through a device placed indoors.

## VSAT - How the Signals are Sent and Received

1. A satellite transponder will receive or send signals to the transceiver located on earth.
2. There will be a hub station located on earth which will send or receive signals from satellites.
3. Satellite will help in connecting all the users via the hub station.
4. Hence for any communication to work, the signal will go from one user to the hub, which will be transmitted to the satellite, which will in turn be transmitted to the intended user.

## **VSAT - Functions and its Uses**

1. VSAT is a technology that represents another option for Internet connectivity in extremely remote areas and distant field locations because there are very limited choices for telecommunications and Internet connectivity.
2. It is used for communication at seas, and in distant locations such as on oil rigs and utility services.
3. VSAT terminals are used by Armed forces located in remote mountainous regions or by the Navy while operating in seas.
4. Can be used for disaster relief operations, as well as industrial applications, or even for communication while carrying out scientific studies in remote locations like Antarctica or in Oceans.

## **VSAT - Transmission of Data**

VSAT is used to transmit narrow band or broadband data. Examples of narrow band data transmitted through VSAT are listed below.

1. point-of-sale transactions using credit cards,
2. Polling or Radio Frequency Identification (RFID) data, or
3. SCADA

Examples of broadband data transmitted through VSAT are listed below.

1. Provision of satellite Internet access to remote locations,
2. Voice over Internet Protocol (VoIP)
3. Video