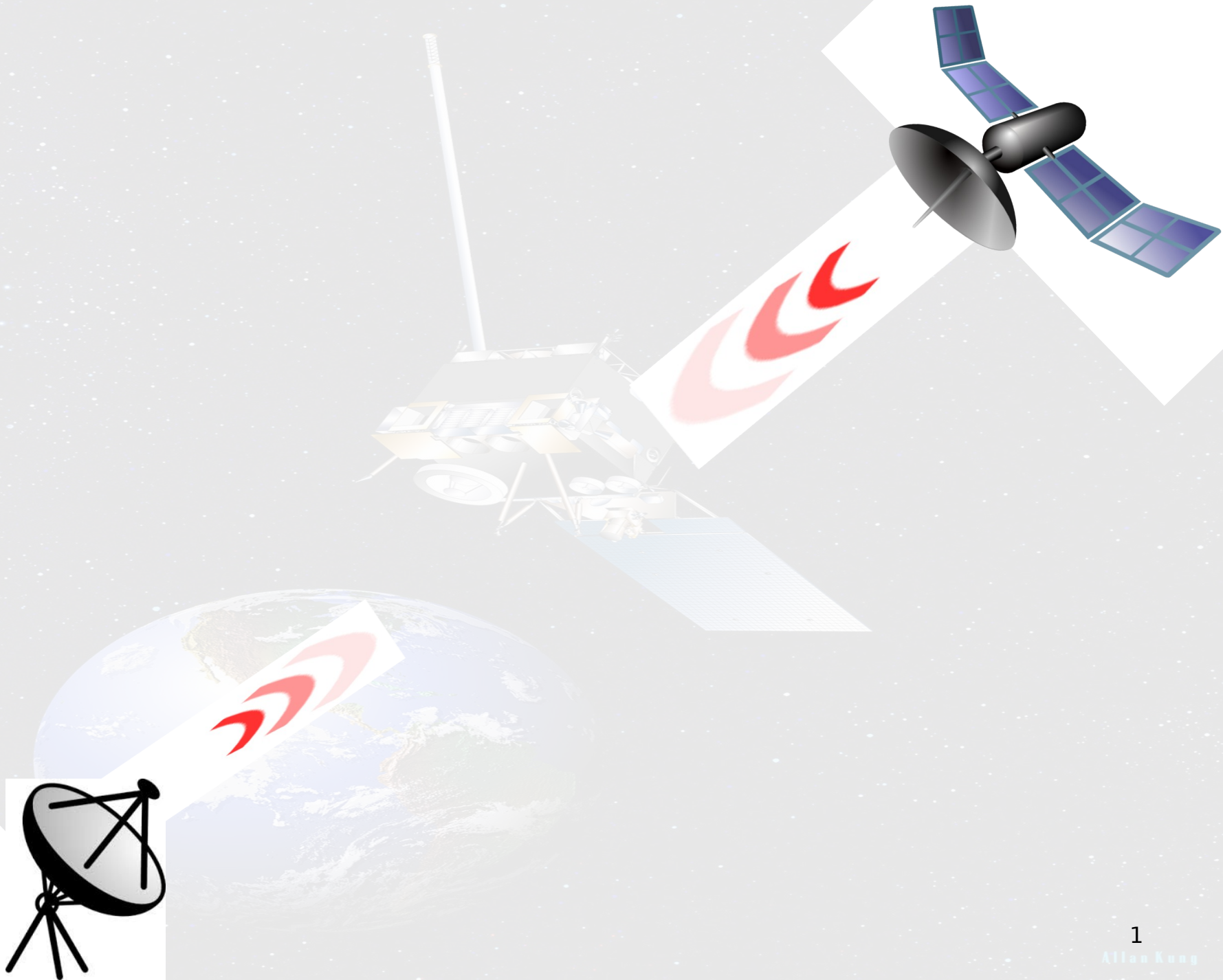
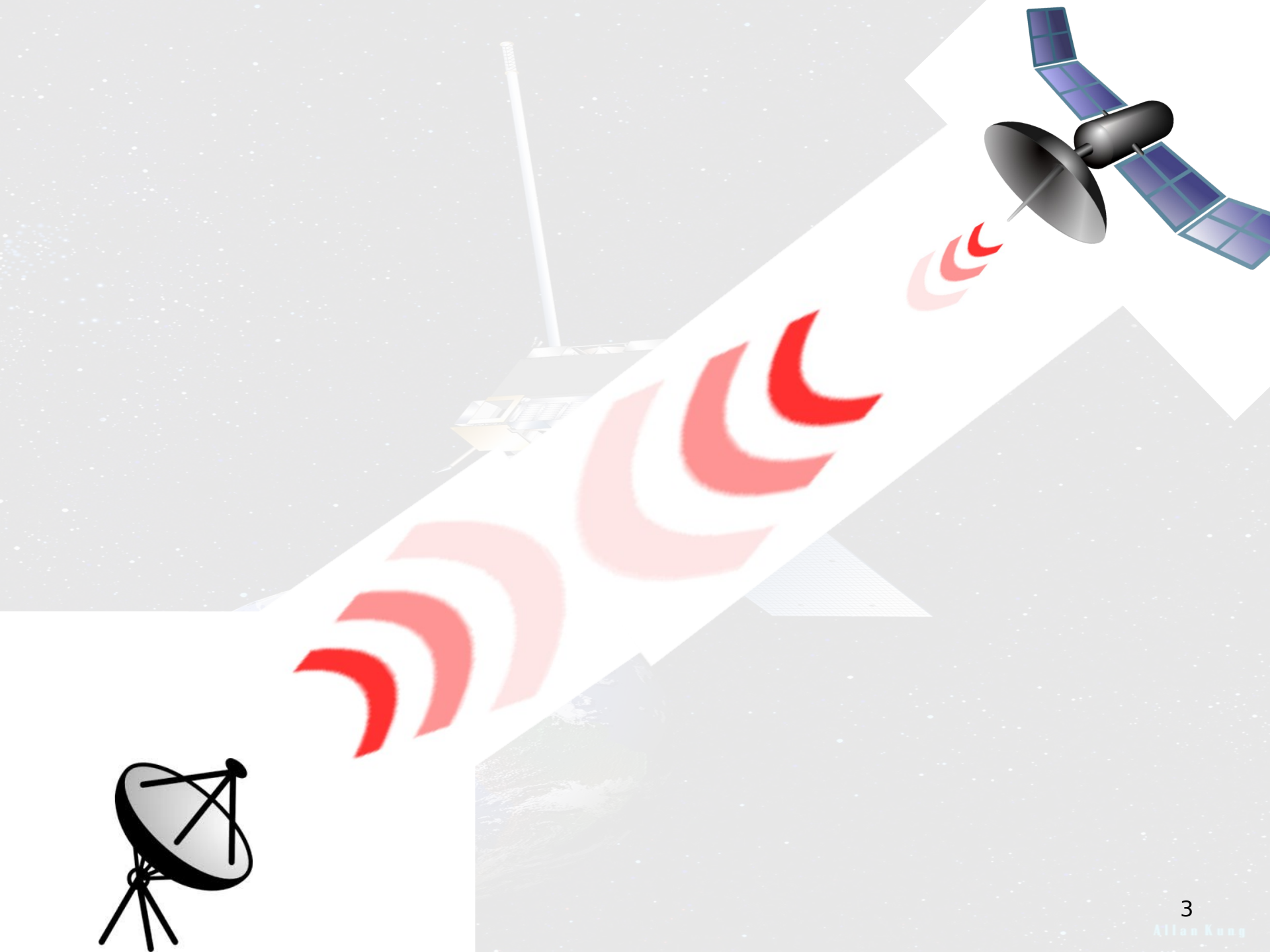








VSAT



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Agenda

- Introduction
- What is a VSAT?
- Components of VSAT
- Uplink & Downlink
- Satellites used in the VSAT system
- Advantages and Disadvantages
- VSAT Network Topologies
- Example for using VSAT in KSA
- Summary
- References

Introduction

- The old earth stations and antennas were large sizes.
- The Satellite was suffering from weak transmission and the impact of higher noise on the ground stations.
- So the receiving stations must be large size and complex installation.
- These satellites have developed and become a high transmitter.
- So the ground stations changed to small size Stations with less expensive and less complex and called VSAT.



What is a VSAT?

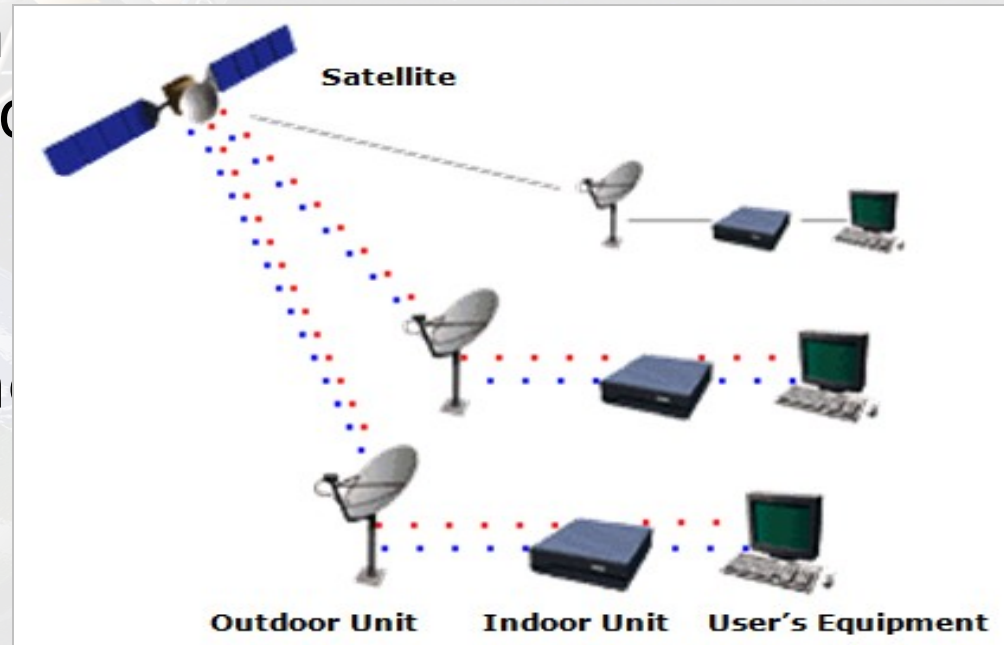
- A **very small aperture terminal (VSAT)** is a small telecommunication earth station that receives and transmits data, video or voice via satellite.
 - The **"very small"** component of the VSAT
- across the globe
antenna



Components of VSAT

It has two basic components:

- **Ground Segment** (earth segment), which is divided into:
 - Outdoor Unit (ODU), which contains the antenna.
 - Indoor Unit (IDU), which is located between the VSAT and User Equipment (PCs, TVs, Telephones).
- **Space Segment** namely the satellite.





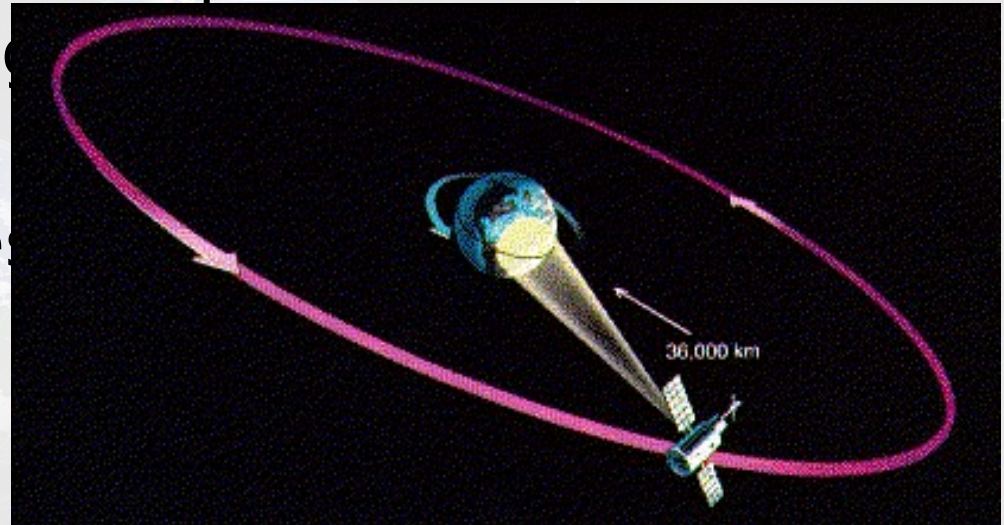
Uplink & Downlink

VSAT uses different frequencies:

- **Ku-band frequency:** is usually used in North America and Europe by using small VSAT antenna with uplink frequency about 18 GHz and downlink around 12 GHz.
- **C-band frequency:** is usually used in Asia, Africa and South America and operating with much larger antenna, with uplink frequency around 6 GHz as for downlink frequency around 4 GHz.
- The new **Ka-band frequency:** is typically in the downlink frequencies up to 22 GHz and uplink frequencies up to 31 GHz.

satellites that are used in the VSAT system?

- VSAT system used geostationary earth orbit (GEO) satellites that revolve around the equator at the same rotational speed as the earth.
- Appearing as though they are not moving at all, GEOs are always in the same place above the earth. They also cover a large area.
- Direction from earth: 36,000 km (22,282 miles)
- Speed: 11,300 Km/h.





VSAT

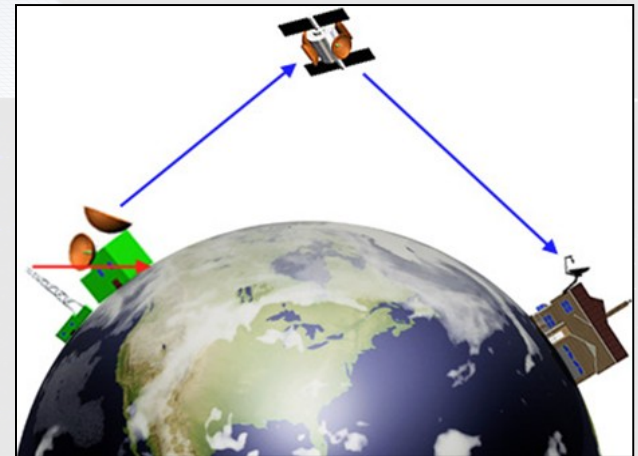
Advantages:

- High flexibility to increase the size of the network in the future.
- Able to integrate large number of the networks.
- Cover distant geographical locations.
- Ability to handle Voice, Video and Data.

VSAT

Disadvantages:

- Requires clear line of sight between dish and satellite.
- Outages in some cases, because of the weather. These outages normally last for a few minutes.





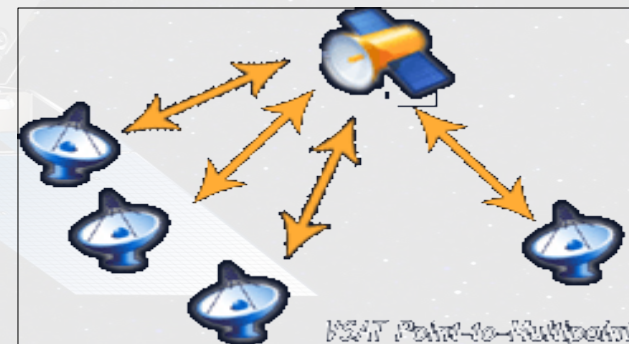
Group work

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VSAT Network Topologies

- The connection between Terminal and Terminal called (Point to Point).
- The connection between Hub and Terminals called (Point to Multipoint)



- The most important types of link are:
 - Star Topology.
 - Mesh Topology.



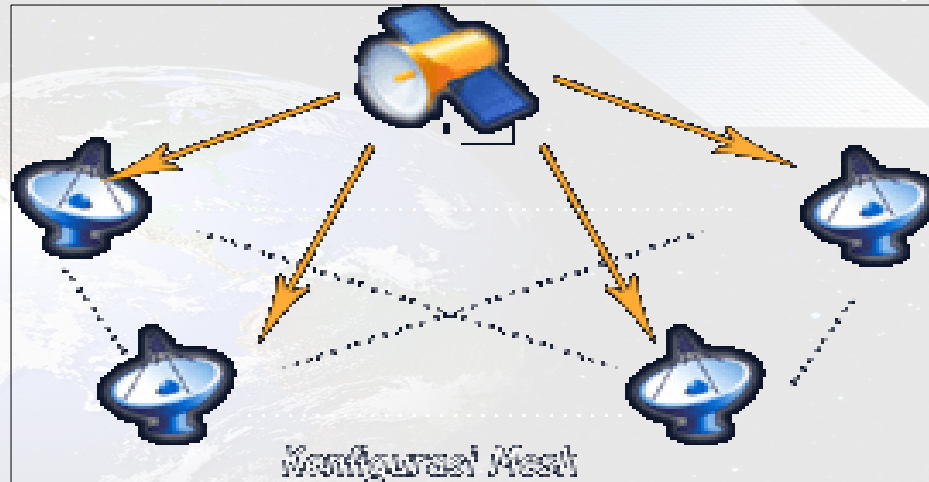
Star Topology

- VSAT terminals cannot communicate directly with each other, they have to go through the hub.
- It is commonly used for internet connection purpose.
- Smaller VSAT antenna sizes (1.8 m typically).
- The performance of the network is directly dependent on the performance of the hub.



Mesh Topology

- This network enables direct communication from one point to another.
- Its usually found in telephone and data lines.
- larger VSAT antenna sizes (3.8 m typically).
- If one of the components fails there is another line.



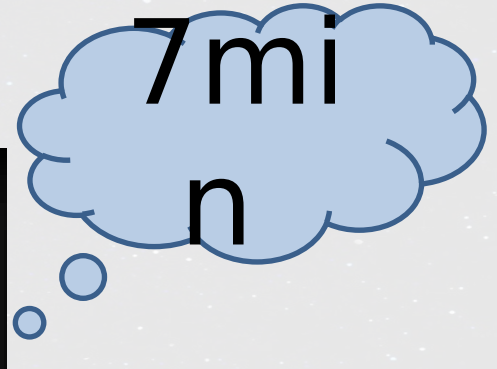
Example for using VSAT in KSA

- Saudi Post Electronic Network.
- To connect 1230 post offices.



البريد السعودي
Saudi Post

- During 2005, 37 postal sites were connected to the network in order to use some of the postal applications.



❖ Summary

- VSAT is a perfect solution in answering voice, data and video, especially in the absence of terrestrial transmission coverage.
- Utilizing VSAT offers maximum benefit, which enables company to expand very fast without affected by lack of local telecommunication network infrastructure.
- VSAT is available anywhere in the Kingdom with the ability to connect remote areas.

References

- <http://www.techopedia.com/definition/5095/very-small-aperture-terminal-vsats>
- <http://www.satkomindo.com/vsat.html>
- <http://www.networkmagazineindia.com/200206/case1.shtml>

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*Thank you
for your
attention*