***Introduction by Swati Sarita***

**Good morning one and all present here. We group 8 are going to present on the topic “MANET”.**

**MANET** stands for Mobile ad hoc Network also called as wireless ad hoc network or ad hoc wireless network. They consist of a set of mobile nodes connected wirelessly in a self-configured, self-healing network without having a fixed infrastructure. MANET nodes are free to move randomly as the network topology changes frequently.

**Characteristics:**

**1.Dynamic Topology:** The network has a dynamic topology because nodes constantly join, leave, and move, causing frequent changes in connections.

**2.Decentralization:** It's a decentralized network where nodes collaborate to route data without a central authority or infrastructure.

**3.Self-Organization**: MANET nodes autonomously self-organize, create connections, and route data without fixed infrastructure.

**4.Limited Resources:** It have limited resources such as battery power, processing capabilities, and memory. Efficient resource management is crucial.

**5.Challenging Environments**: Frequently employed in settings where traditional networks are unfeasible, like military operations, disaster response, and remote regions..

**History:**

**1970s:** Early research focused on packet radio networks, which laid the foundation for mobile ad hoc networking.

**1980s:** The development of routing algorithms for mobile networks gained momentum. Researchers began exploring protocols to address the challenges posed by dynamic topology and node mobility.

**1990s:** Research expanded beyond military applications to include civilian use cases. Researchers developed various routing protocols and communication algorithms.

**2000s:** The 2000s witnessed significant advancements in MANET research and practical implementations.

Today, it continue to evolve, with ongoing research aimed at improving their performance, security, and adaptability to various scenarios and remain a vital part of wireless communication solutions for dynamic and challenging environments.

**Advantages:**

**1.Flexibility:** MANETs are adaptable and versatile, making them ideal for emergencies and military ops with no pre-existing infrastructure.

**2.Scalability:** MANETs are scalable for large deployments and can adapt to dynamic topology changes, including node additions or removals.

**3.Cost-effective:** MANETs, lacking centralized infrastructure, are cost-effective compared to wired or wireless networks. They can extend existing networks without extra infrastructure.

**4.Rapid Deployment:** MANETs quickly deploy in infrastructure-lacking areas like disaster zones or rural regions.

### Disadvantages:

**1.Security:** MANETs face security risks, like attacks from malicious nodes and data interception, due to their decentralized nature lacking a central authority for security enforcement.

**2.Reliability:**  MANETs are less reliable than traditional networks due to susceptibility to interference, signal attenuation, and environmental factors impacting connection quality.

**3.Bandwidth:** MANETs, relying on wireless communication, may have limited bandwidth, causing congestion and delays when multiple nodes computing for the same channel.

**4.Routing:** Routing in MANETs can be complex with dynamic topologies, leading to inefficient routing and data transmission delays.

**5.Power Consumption:** Battery-powered MANET nodes face power consumption challenges, requiring power conservation that can limit data transmission capacity.