

# SECURITY THREATS IN WIRELESS ROUTING PROTOCOLS

Wireless routing protocols are essential for enabling communication in decentralized networks, particularly in environments like ad hoc and mobile networks. However, these protocols also present a number of vulnerabilities that can be exploited by malicious actors, undermining the reliability and security of the network.



## Common Security Threats

The following are five notable security threats in wireless routing protocols:

1. Black Hole Attack
2. Wormhole Attack
3. Sybil Attack
4. Routing Table Overflow
5. Man-in-the-Middle (MitM) Attack

## Black Hole Attack

In a black hole attack, a malicious node falsely advertises itself as having the shortest or most efficient path to the destination node. Once it becomes part of the route, it drops all the received packets instead of forwarding them, effectively creating a "black hole" in the network. This disrupts communication and can severely degrade network performance (Rani & Punia, 2021).

## Sybil Attack

The Sybil attack occurs when a single node presents multiple identities to other nodes in the network. This can mislead routing protocols into believing that the network is more connected than it actually is. It can be used to gain disproportionate influence, disrupt routing paths, and make the network susceptible to further attacks (Douceur, 2002).

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## Conclusion

While wireless routing protocols enable flexible and scalable network connectivity, their decentralized nature introduces a variety of security challenges. Attacks such as black hole and Sybil not only compromise data integrity but also threaten overall network availability. Understanding these vulnerabilities is key to designing more secure routing mechanisms and safeguarding wireless communications.

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## References

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