**9. What problem does 802.1X solve in a network?**

* 802.1X is a network access control protocol that provides authentication for devices trying to connect to a network, whether it's wired or wireless.
* It is part of the IEEE 802.1 standard and is used to manage access to network ports on switches, routers, and access points.
* The protocol ensures that devices cannot connect to a network unless they have been properly authenticated.
* It requires devices to authenticate using credentials (e.g., username and password) before gaining access to the network.
* Without 802.1X, any device with the correct network information can access the network. 802.1X ensures that only authenticated devices, which are verified through an authentication server (RADIUS), can connect.
* It protects the network by encrypting the communication between the client and the network once authentication is successful.
* Based on authentication results, it can assign devices to specific VLANs, ensuring better management and segmentation of network traffic.
* It eliminates the risk of unauthorized users or rogue devices connecting to the network, which could compromise data or network integrity.