

7. How does the 4-way handshake ensure mutual authentication between the client and the access point?

Both client and AP prove they have the same PMK without sending it.

If either side fails to derive the right PTK, connection fails.

Protects against "man-in-the-middle" attacks.

8. What will happen if we put a wrong passphrase during a 4Way handshake?

The client won't generate the correct PMK.

Handshake fails (Authentication fails).

Client will repeatedly retry connection or timeout.

Logs like "4-way handshake failed: Wrong PSK" appear in debug logs.

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

802.1X provides port-based network access control.

It authenticates devices/users before allowing them onto the network.

Solves the problem of unauthorized devices accessing the network.

10. How does 802.1X enhance security over wireless networks?

It requires individual authentication for each user/device.

It supports dynamic encryption keys

It uses EAP (Extensible Authentication Protocol) over a secure channel.

It makes hacking much harder than simple WPA-PSK Wi-Fi.