

Diffie-Hellman-Merkle in practice

- g is small (either 3, 5 or 7 and fixed in practice)
 - p is at least 2048 bits (and fixed in practice)
 - private keys a and b are 2048 bits as well
- ➔ So the public values A and B
and the master key k are 2048 bits
- ➔ Use k to derive an AES key using a Key Derivation Function
(usually HKDF - the HMAC-based Extract-and-Expand key derivation function)

A widely used key exchange protocol

Diffie-Hellman-Merkle is in many protocols

- SSH
 - TLS (used by HTTPS)
 - Signal (used by most messaging apps like Whatsapp)
 - and so on ...
- ✓ It is fast and requires two exchanges only
 - ✓ Solves the problem of having a key distribution server
 - ✓ Ensures Perfect Forward Secrecy
- ⦿ But how to make sure Alice is talking to Bob and vice-versa?
Diffie-Hellman-Merkle alone **does not ensure authentication**