

Connecting Remote Sites Securely using a Firewall-Based IPsec Virtual Private Network

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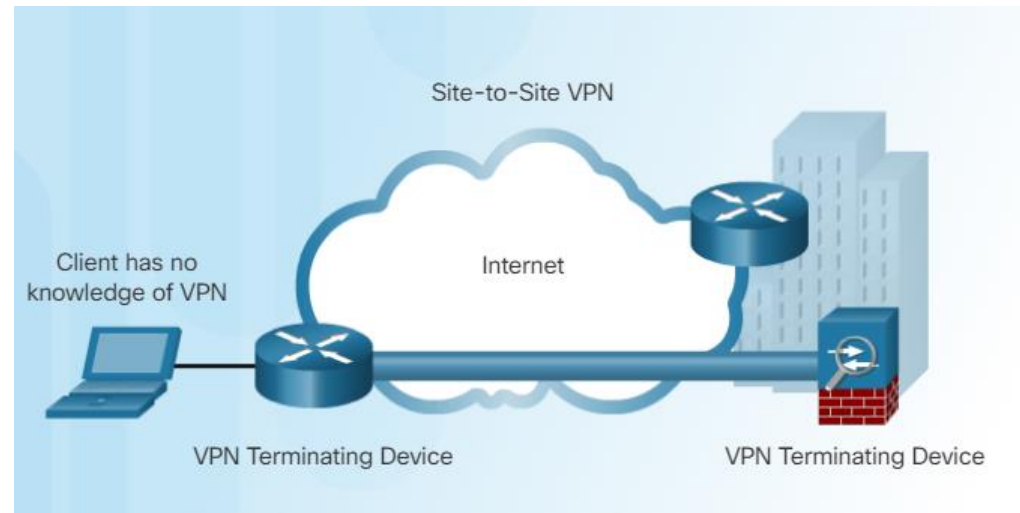
Agenda

- Introduction to network security and confidentiality
- Background information
 - IPsec Virtual Private Networks (VPN)
- Conclusion



Introduction

- Network communication frequently relies on Internet Service Provider (ISP) networks or other untrusted network connections to carry the information to its destination.
- In order to enable secure communication between two networks, which are separated by a public network (e.g., the Internet), encryption is required.
- Site-to-site virtual private networks (VPN) enable remote sites to communicate confidentially, using cryptographic techniques (encryption, hash functions).



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Problem Description

- When communications travel past the local router and onto untrusted networks, they become much more vulnerable to falling into the wrong hands.

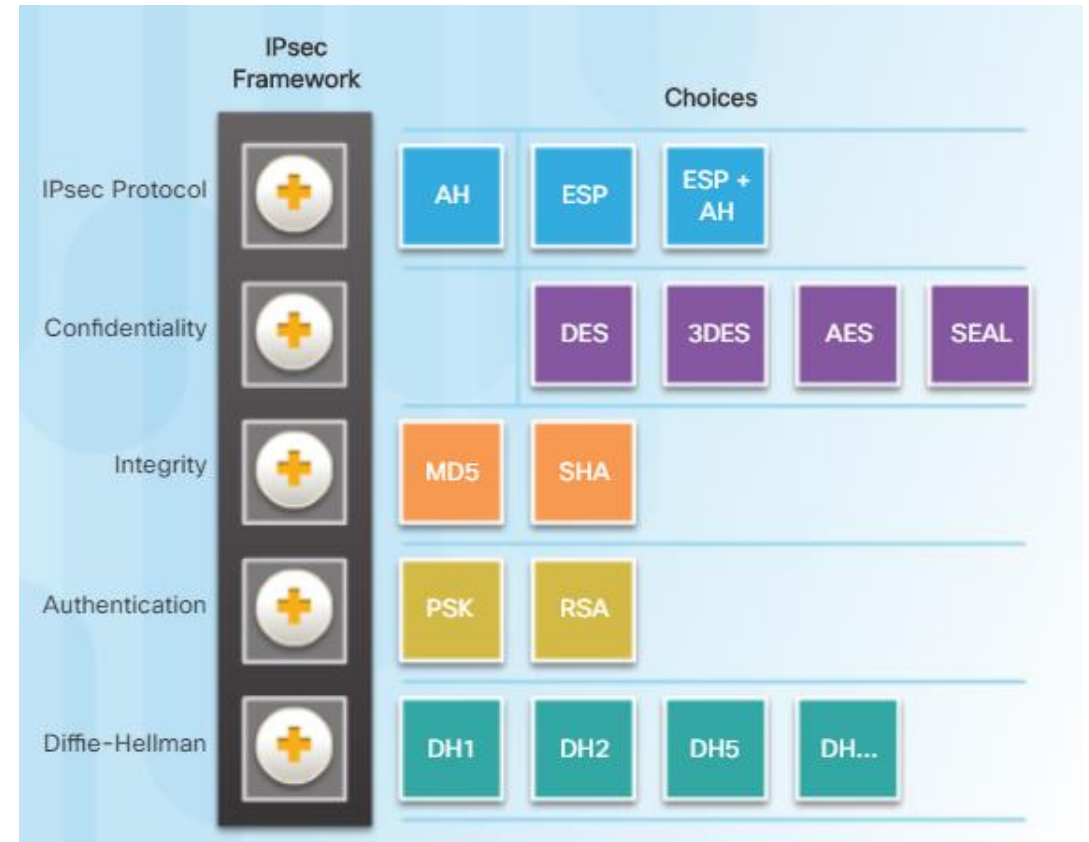


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Background Information

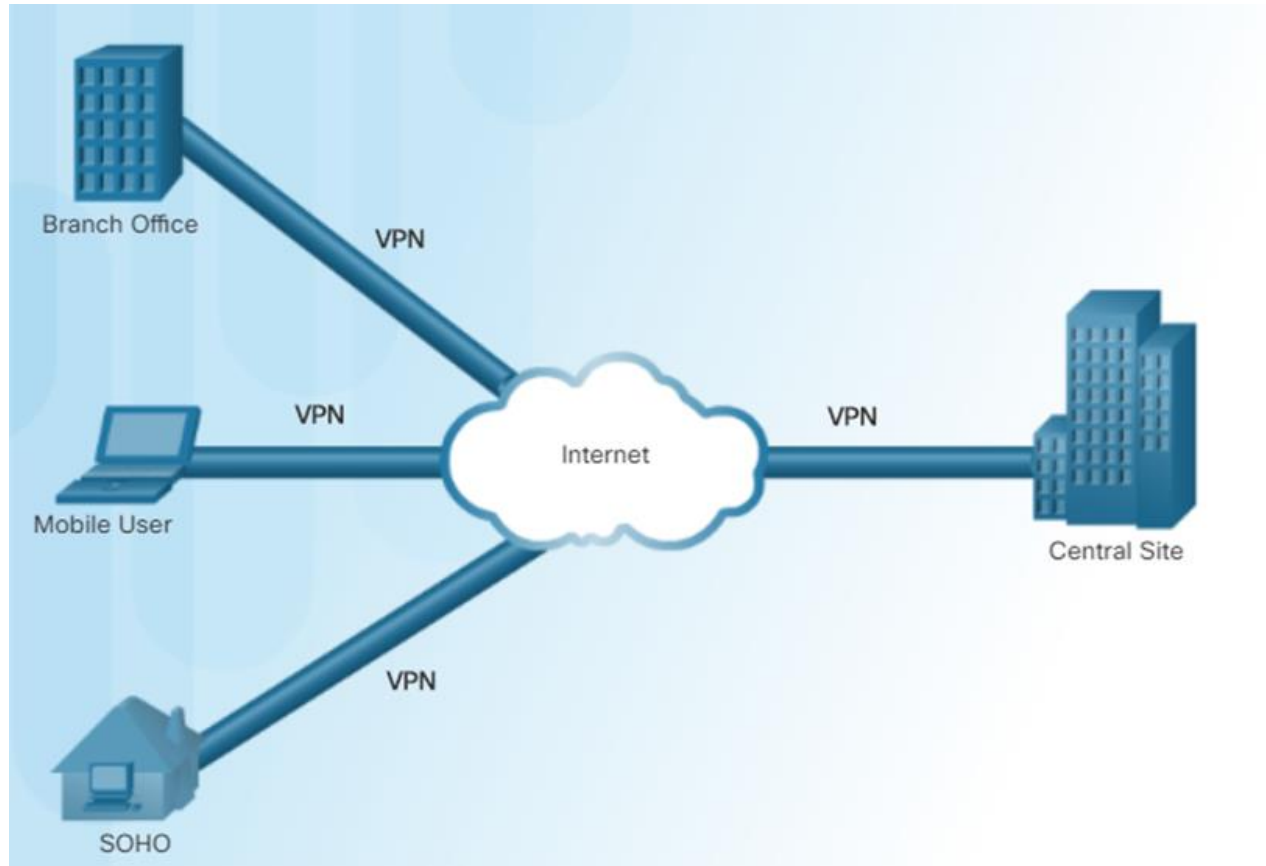
- IP security (IPsec) is a standard framework composed of five building blocks
 - Protocol: encapsulation protocol carrying the data
 - Confidentiality: encryption algorithm used for privacy
 - Integrity: hash function used for integrity control
 - Authentication: mechanism used to ensure the identity of the two end points of the VPN
 - Diffie-Hellman: algorithm used to create the keys used to encrypt the data
- IPsec only works with unicast transmissions



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Proposed Solution and Implementation

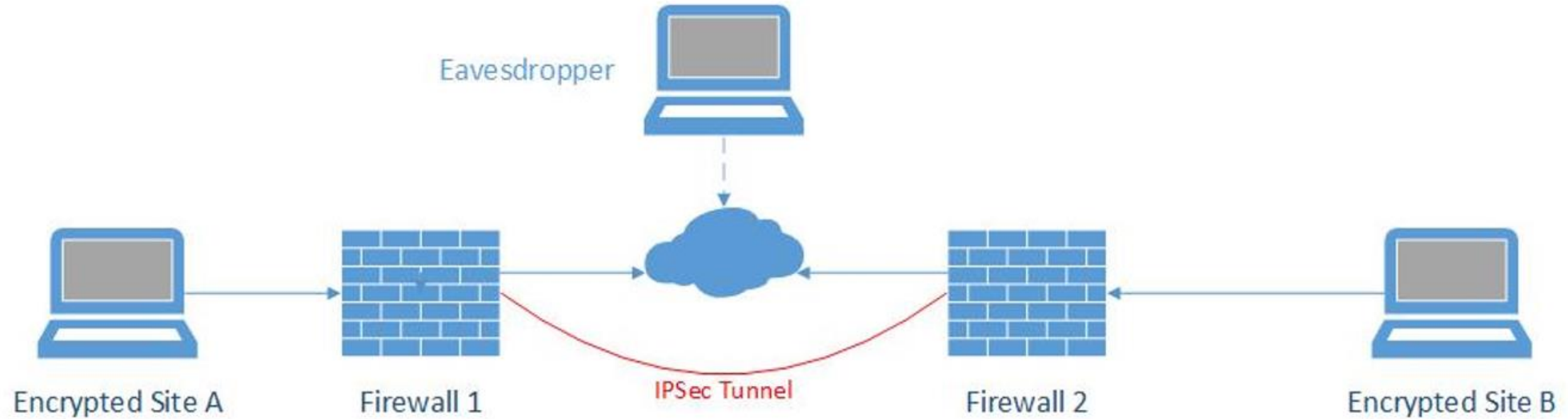


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- A VPN is necessary to accomplish the task of transmitting data securely. The IPsec protocol, encapsulation security payload (ESP), is the means of securing the contents of transmitted packets to prevent them from being changed or compromised.



Establish VPN



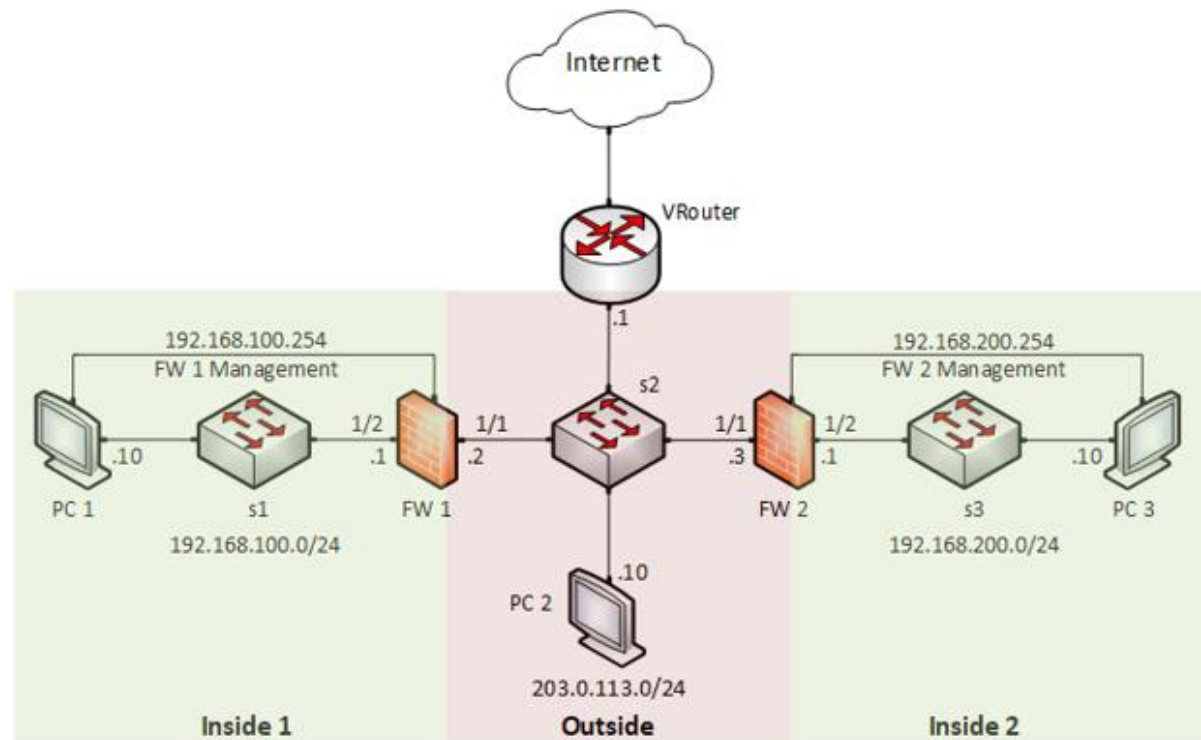
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- The VPN enables information to be securely transmitted across the Internet. The communicating hosts can be assured their data is private, intact, and sent from a verified and trustworthy source.



Conclusion

- Through the implementation of a VPN, a high level of security and privacy can be achieved. The likelihood of information being intercepted, tampered with, or compromised by malicious outside actors is greatly reduced.



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