

Securing Remote PC Access to UNIX/Linux Hosts with VPN or SSH

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What is VPN?

Virtual Private Network or VPN is a private connection between two machines or networks over a shared or public network.

Privacy and security over the public network is maintained through the use of a tunneling protocol.

What are the alternatives?

Leased Lines

Secure Dialup

Leased Lines

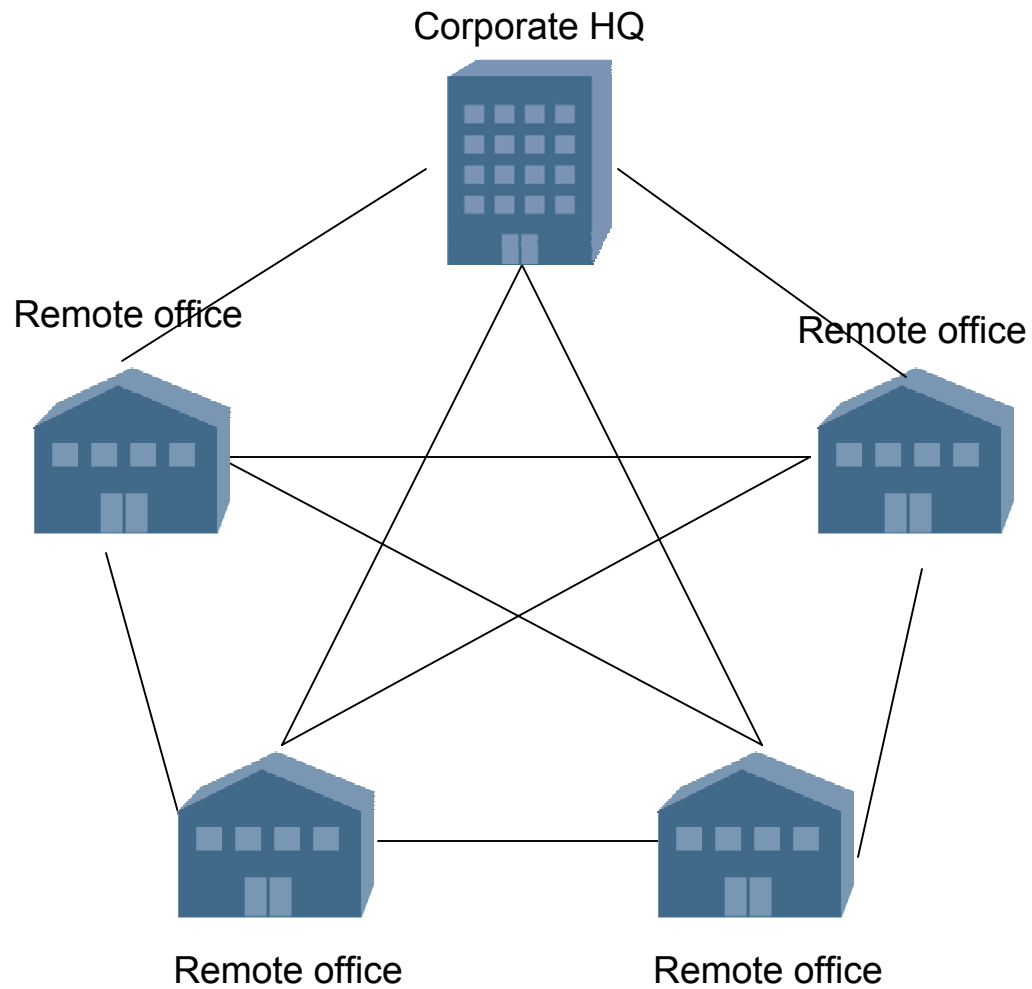
Pros:

- Security of a dedicated line
- Managed by Service Provider

Cons:

- Cost
- Time to implementation
- No Home Office access
- No Mobile user access

Leased Lines



Secure Dialup

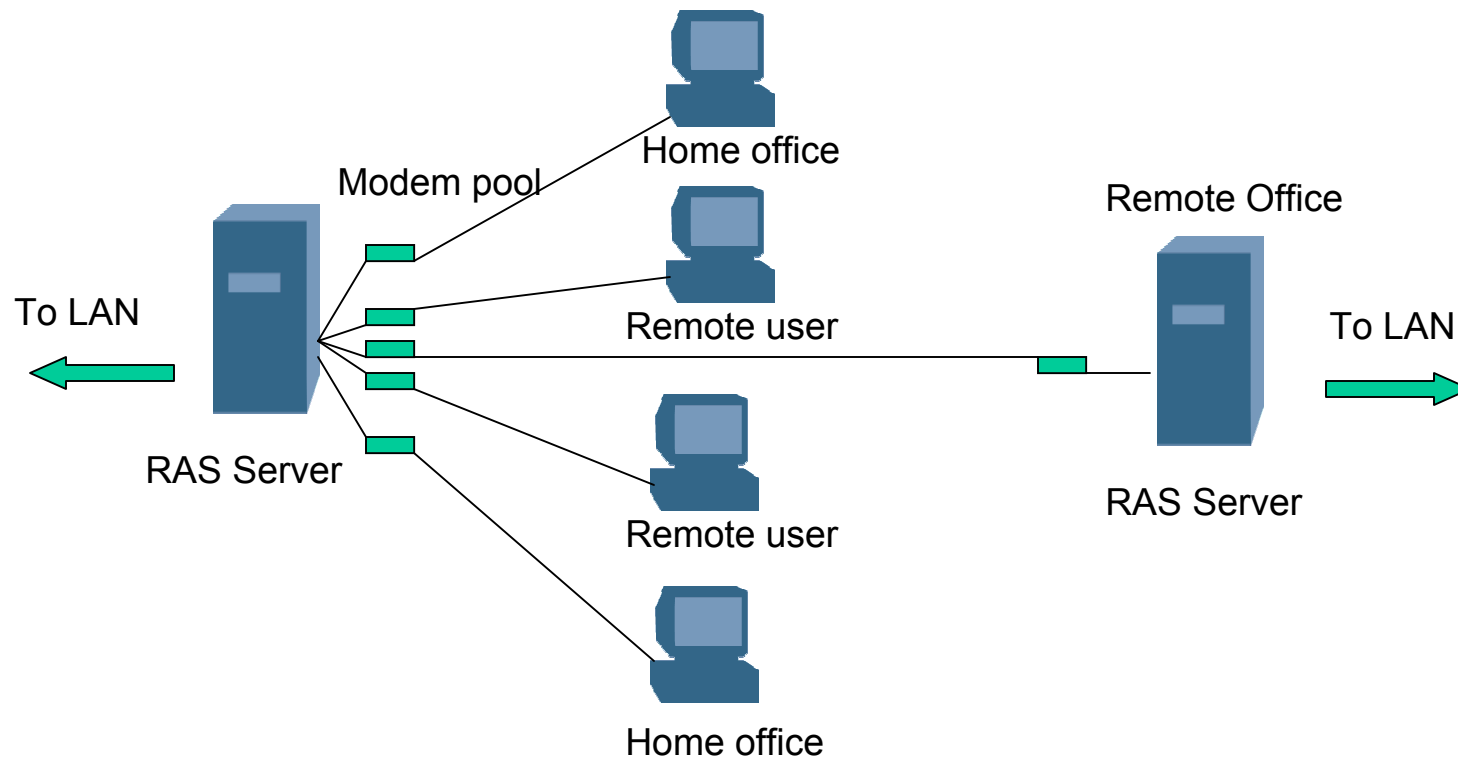
Pros:

- Less expensive than leased lines
- Access for mobile users
- Access for home office users
- Easier/quicker setup

Cons:

- Maintenance
- High long distance bills
- Not scalable

Secure Dialup



Why VPN?

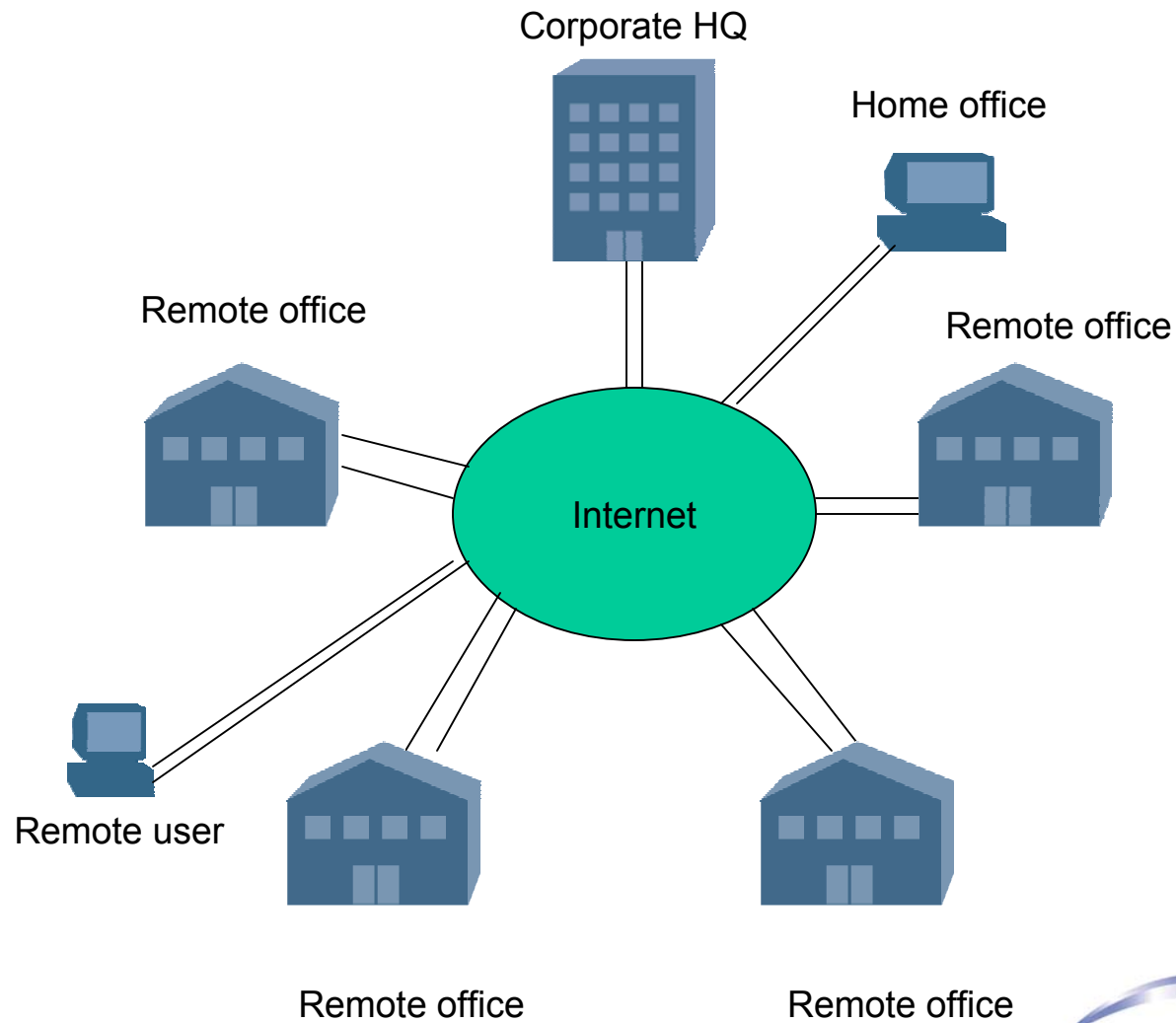
Pros:

- Cost
- Utilize the Internet's infrastructure
- Administrative costs

Cons:

- Security
- Interoperability
- Variable performance

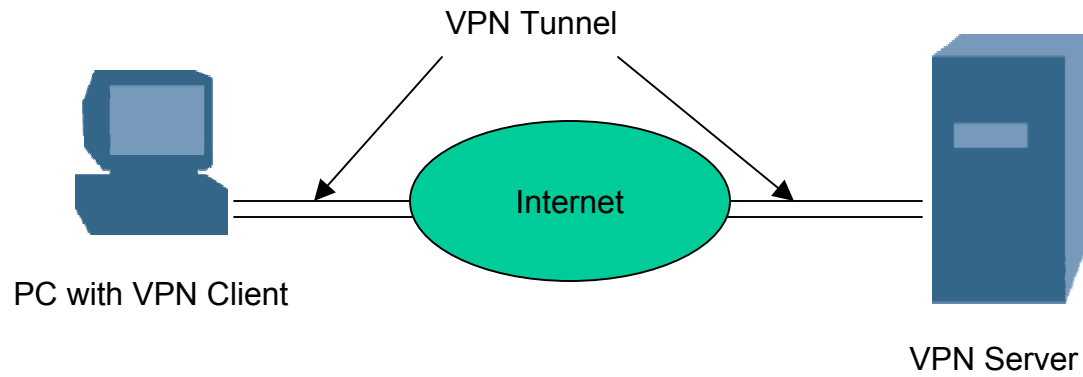
VPN



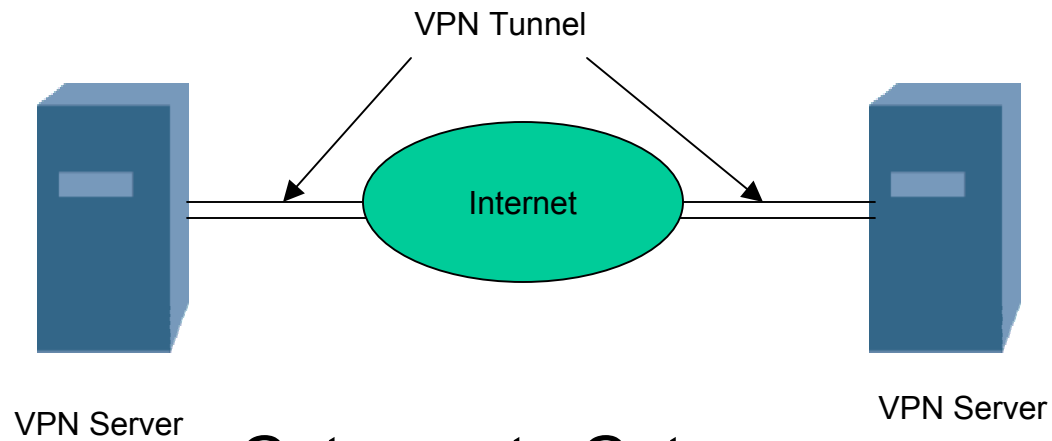
Implementation

PC to Server

Gateway to Gateway



PC to Server



Gateway to Gateway

Tunneling

Tunneling is the process of encapsulating network packets within other network packets before sending them over a network

Tunneling protocols

IPX/SPX

PPTP

L2TP

IPSec

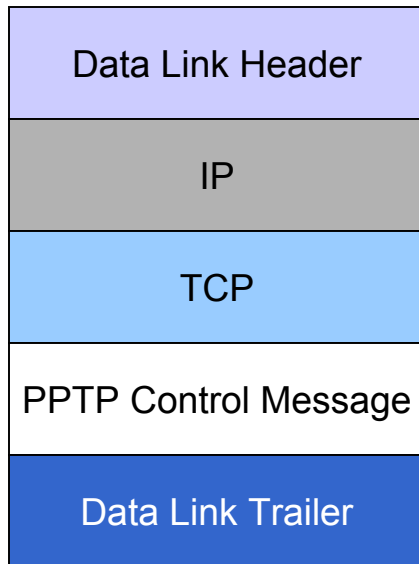
SSL/TLS

SSH

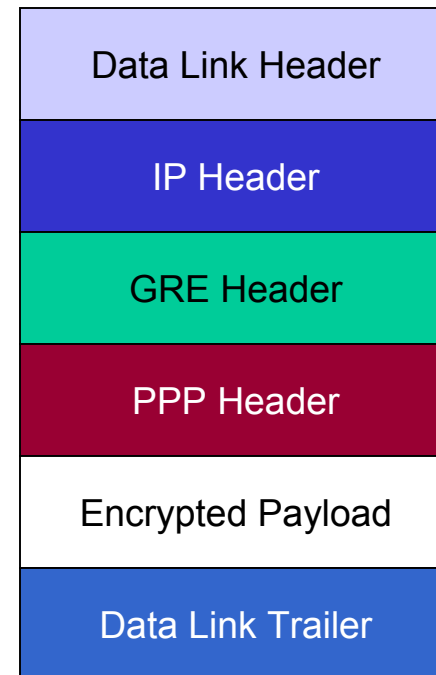
PPTP

Point to Point Tunneling Protocol was developed to
tunnel through a PPP connection
(RFC 2637)

PPTP Control Packet



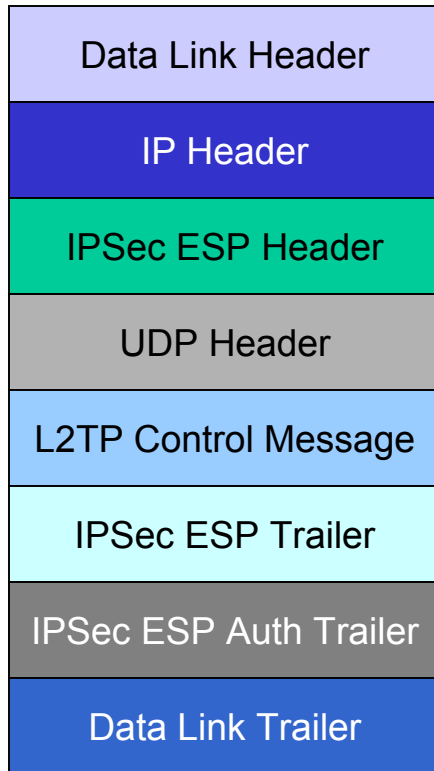
PPTP Data Packet



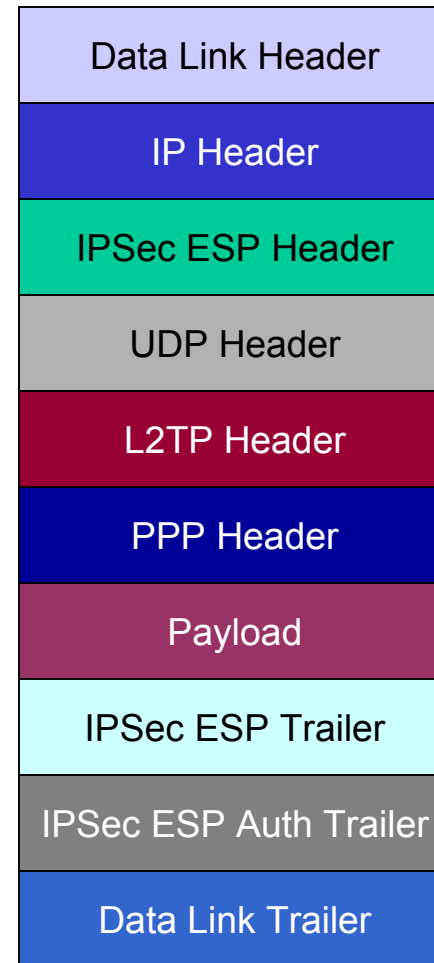
L2TP

Layer 2 Tunneling Protocol combines the best of L2F (Layer 2 Forwarding) with the best of PPTP protocol and also tunnels through a PPP connection
(RFC 3070)

L2TP Control Packet



L2TP Data Packet

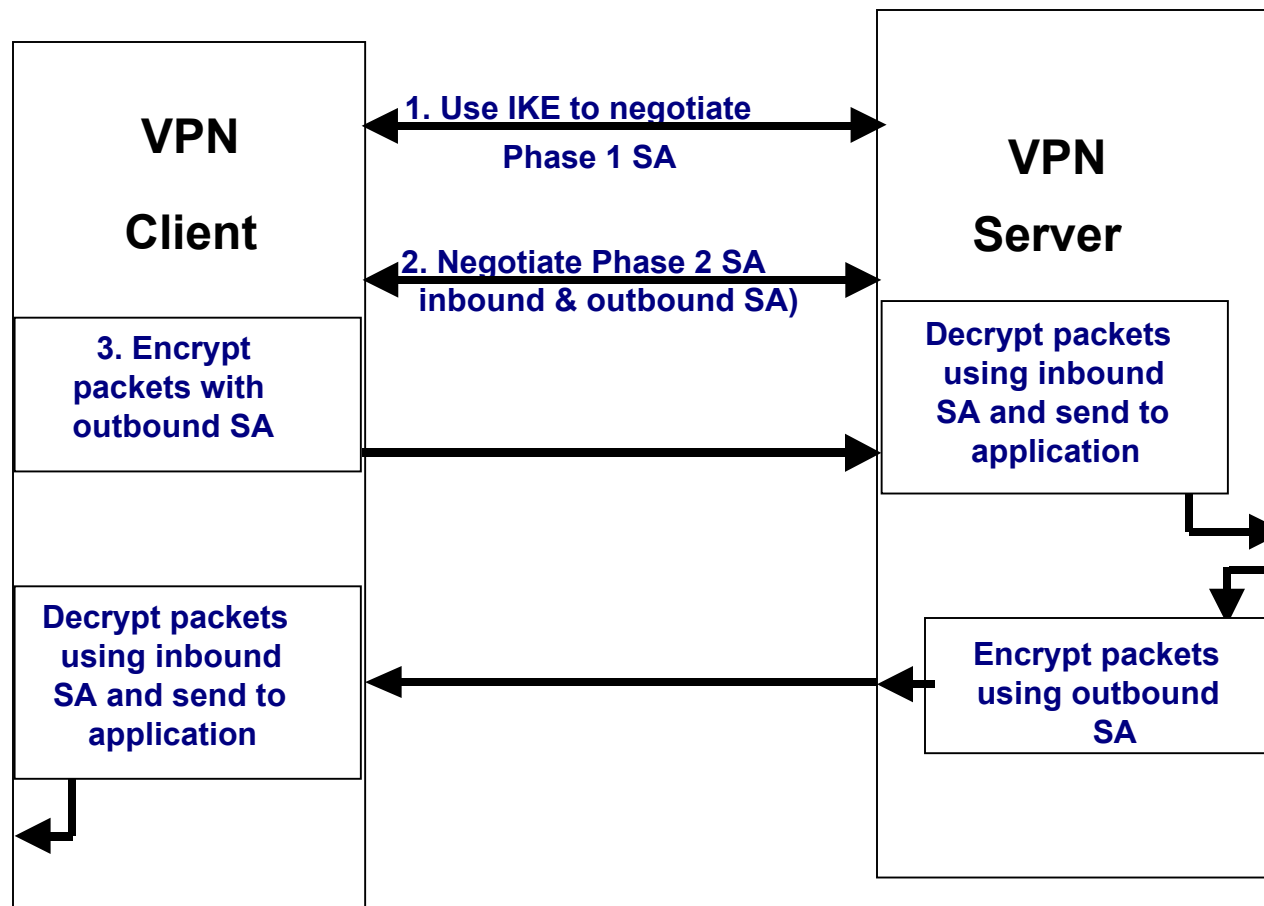


IPSec

Internet Protocol Security is an Internet Standard protocol used for securing data across the Internet (RFC 2401)

In a VPN environment IPSec can be used as a complete protocol solution or as the encryption tool within another VPN protocol such as L2TP

VPN via IPSEC



SSH

Secure Shell provides a single secure session between two computers over a shared network.

The session requires Server software on a Host and client software on a connecting client

Secure Shell Basics

