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IPsec VPN Made Easy

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Agenda

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- VPN Deployment & Management Challenges
- Technology background
- Cisco Easy VPN Solution
- Q&A

A Star Topology IPsec VPN

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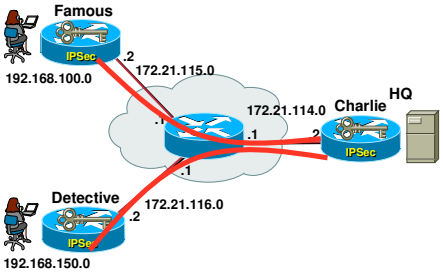

Star Topology Central Site Router

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```
! Let's be courageous and let's define
! One crypto map entry per remote peer
! ...
crypto map HQ 10 ipsec-isakmp
 set peer 172.21.115.2
 set transform-set encrypt-des
 match address 101

crypto map HQ 20 ipsec-isakmp
 set peer 172.21.116.2
 set transform-set encrypt-des
 match address 102
```


Large Networks: n(n-1)/2 issue

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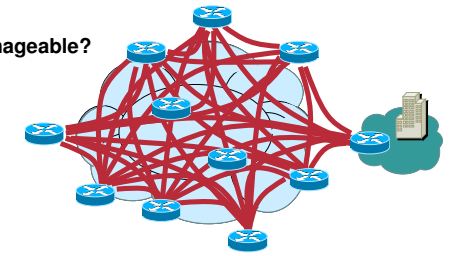
Is this Manageable?



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VPN Deployment & Management Challenges

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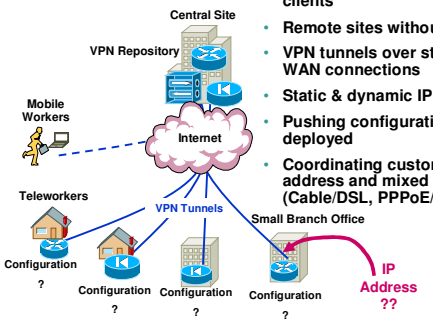
- Heterogeneous CPE devices and clients
- Remote sites without on-site support
- VPN tunnels over static and dynamic WAN connections
- Static & dynamic IP addresses
- Pushing configuration changes once deployed
- Coordinating custom configuration, IP address and mixed WAN environment (Cable/DSL, PPPoE/hostname)



VPN Technology Requirements

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Encapsulate original (green) packet in a new packet (red), traverse shared backbone and require:

- Per packet encryption and authentication
- Private address assignment
- Private services assignment (DNS, WINS, domain,..)
- End point authentication (user, device)
- Network Address Translation

Technology background - IKE Xauth/Mode-cfg

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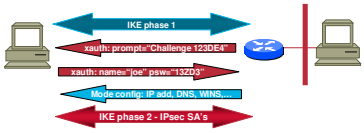

Attribute	Value	Type	Length
INTERNAL_IP4_ADDRESS	1	Variable	0 or 4 octets
INTERNAL_IP4_NETMASK	2	Variable	0 or 4 octets
INTERNAL_IP4_DNS	3	Variable	0 or 4 octets
INTERNAL_IP4_NBNS	4	Variable	0 or 4 octets
INTERNAL_ADDRESS_EXPIRY	5	Variable	0 or 4 octets
INTERNAL_IP4_DHCP	6	Variable	0 or 4 octets
APPLICATION_VERSION	7	Variable	0 or more
INTERNAL_IP4_SUBNET	13	Variable	0 or 8 octets
...		...	
Reserved for future use	16-16383		

Attribute	Value	Type
XAUTH-TYPE	16520	Basic
XAUTH-USER-NAME	16521	Variable ASCII string
XAUTH-USER-PASSWORD	16522	Variable ASCII string
XAUTH-PASSCODE	16523	Variable ASCII string
XAUTH-MESSAGE	16524	Variable ASCII string
XAUTH-CHALLENGE	16525	Variable ASCII string
XAUTH-DOMAIN	16526	Variable ASCII string
XAUTH-STATUS	16527	Basic
XAUTH-NEXT-PIN	16528	Variable
XAUTH-ANSWER	16529	Variable ASCII string
...		...

draft-dukes-ike-mode-cfg-03.txt

draft-beaulieu-ike-xauth-03.txt

Cisco Easy VPN Solutions Leverages Cisco Unified VPN Client Framework

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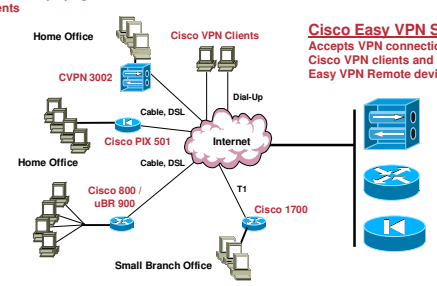
Cisco Easy VPN Remote
Eliminates complex remote-side configuration simplifying VPN deployments

Cisco Easy VPN Server
Accepts VPN connection from Cisco VPN clients and Cisco Easy VPN Remote devices



Remote Access Using Cisco Easy VPN

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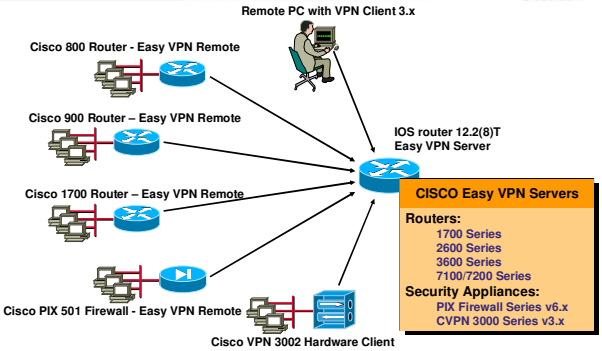

CISCO Easy VPN Servers

Routers:
- 1700 Series
- 2600 Series
- 3600 Series
- 7100/7200 Series

Security Appliances:
- PIX Firewall Series v6.x
- CVPN 3000 Series v3.x

Easy VPN Feature Support

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- Mode configuration version 6 support
- Xauth version 6 support
- IKE Dead Peer Detection (DPD)
- Split tunneling control
- Dynamic NAT/PAT configuration
- Proxy DNS
- Group-based policy control

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Push VPN Policy with Cisco Easy VPN

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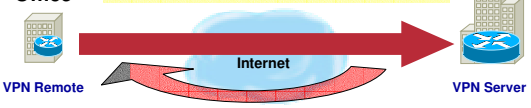
Branch Office

IKE mode config allows VPN parameters to be pushed to a client

HQ



Dynamically updated:

- Central services and security policy
- Offload VPN function from local devices
- Client and Network Extension mode

- Internal IP Address
- Internal Network Mask
- Internal DNS Server
- Internal WINS Server
- Split tunneling
- IPsec Transforms

Centralized control:

- Configuration and security policy pushed at the time of the VPN tunnel establishment

Easy VPN server - Reverse Route Injection

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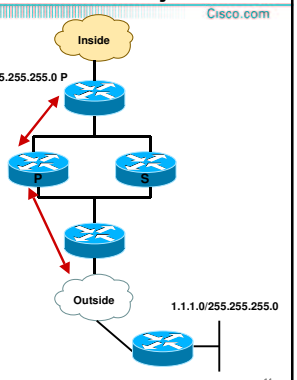
- Remote connects to HSRP VIP, attaches to Primary P.
- After QM success, route to 1.1.1.0/24created by RRI and advertised to inside router.
- Returning traffic (from inside) destined for 1.1.1.0 is sent via the correct router.



IKE Keepalives - Dead Peer Detection (DPD)

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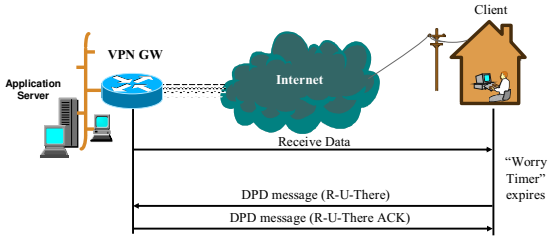

www.ietf.org/internet-drafts/draft-ietf-ipsec-dpd-01.txt

Cisco Easy VPN Remote Initiation on Cisco Routers & Security Appliances

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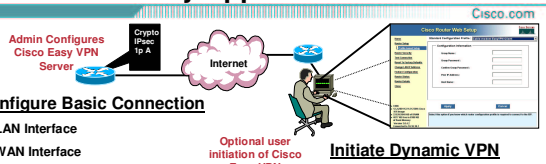

1. Configure Basic Connection
   - LAN Interface
   - WAN Interface
   - DNS Address
   - DHCP Address
   - NAT / PAT Configuration (optional)
2. Configure Cisco Easy VPN Specifics
   - Mode (client or network ext.)
   - Peer address
   - VPN tunnel interface
   - Group name and password
   - User name and password

Initiate Dynamic VPN

100% pre-configured and automated initiation

Optional: admin final set up with Web, CLI, Telnet or console

Optional: user final set up (Cisco 800 & uBR900, CVPN 3002 and Cisco PIX 501 FW only)

- Group Name, Group Password, Peer IP Address, Host Name

•Optional: dynamic/ongoing device authentication

Simple with GUI - Example Cisco 800 Series

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Setting up Cisco Easy VPN Remote

- Non-technical users can enable Easy VPN with simple login information provided by IT
- No pre-configuration required, standard router configuration can be used

Cisco Easy VPN Remote GUI support on Cisco 800, 900, Cisco PIX Firewalls, and CVPN 3002

Scalable VPN Deployment & Management

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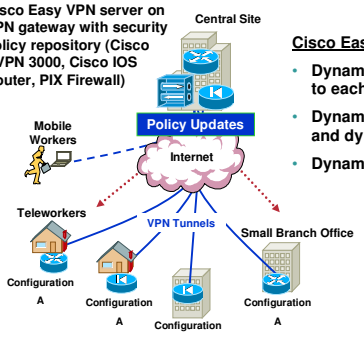
Cisco Easy VPN server on VPN gateway with security policy repository (Cisco CVPN 3000, Cisco IOS Router, PIX Firewall)



Cisco Easy VPN Remote and Server

- Dynamic policy updates, pushed to each CPE and clients
- Dynamic VPN tunnels over static and dynamic WAN connections
- Dynamic & static IP addresses

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Summary - Cisco Easy VPN Benefits

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- Streamlines VPN deployments for remote offices and teleworkers
- Simplifies on-going VPN management
- Ensures and applies up-to-date policies before connections are established
- Removes complex remote-side administration burden
- Provides a consistent policy, key management and system management approach for all Cisco VPN CPE devices - routers, security appliances and software clients

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Questions?

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Thank you!

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