

Configuring IPsec Router-to-Router with NAT Overload and Cisco Secure VPN Client

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Introduction

This sample configuration encrypts traffic from the network behind Light to the network behind House (the 192.168.100.x to 192.168.200.x network). Network Address Translation (NAT) overload is also done. Encrypted VPN Client connections are allowed into Light with wild-card, pre-shared keys and mode-config. Traffic to the Internet is translated, but not encrypted.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

The information in this document is based on these software and hardware versions:

- Cisco IOS® Software Release 12.2.7 and 12.2.8T
- Cisco Secure VPN Client 1.1 (shown as 2.1.12 in the IRE client **Help > About** menu)
- Cisco 3600 routers

Note: If you use the Cisco 2600 Series Routers for this kind of VPN scenario, then the routers must be installed with crypto IPsec VPN IOS images.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Conventions

Refer to Cisco Technical Tips Conventions for more information on document conventions.

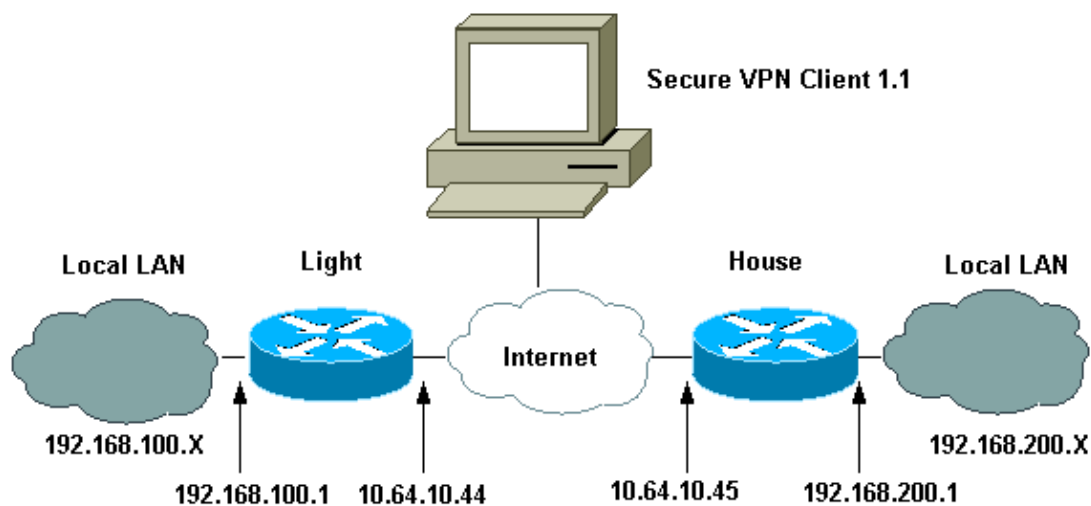
Configure

In this section, you are presented with the information to configure the features described in this document.

Note: Use the Command Lookup Tool (registered customers only) to find more information on the commands used in this document.

Network Diagram

This document uses this network setup:



Configurations

This document uses these configurations.

- Light Configuration
- House Configuration
- VPN Client Configuration

Light Configuration

```
Current configuration : 2047 bytes
!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Light
!
boot system flash:c3660-ik9o3s-mz.122-8T
!
ip subnet-zero
!
ip audit notify log
ip audit po max-events 100
```

```
ip ssh time-out 120
ip ssh authentication-retries 3
!

!--- IPsec Internet Security Association and
!--- Key Management Protocol (ISAKMP) policy.

crypto isakmp policy 5
  hash md5
  authentication pre-share

!--- ISAKMP key for static LAN-to-LAN tunnel
!--- without extended authenticaton (xauth).

crypto isakmp key cisco123 address 10.64.10.45 no-xauth

!--- ISAKMP key for the dynamic VPN Client.

crypto isakmp key 123cisco address 0.0.0.0 0.0.0.0

!--- Assign the IP address to the VPN Client.

crypto isakmp client configuration address-pool local test-pool
!
!
!
crypto ipsec transform-set testset esp-des esp-md5-hmac
!
crypto dynamic-map test-dynamic 10
  set transform-set testset
!
!

!--- VPN Client mode configuration negotiation,
!--- such as IP address assignment and xauth.

crypto map test client configuration address initiate
crypto map test client configuration address respond

!--- Static crypto map for the LAN-to-LAN tunnel.

crypto map test 5 ipsec-isakmp
  set peer 10.64.10.45
  set transform-set testset

!--- Include the private network-to-private network traffic
!--- in the encryption process.

  match address 115

!--- Dynamic crypto map for the VPN Client.

crypto map test 10 ipsec-isakmp dynamic test-dynamic
!

call rsvp-sync
!
!
!
!
!
fax interface-type modem
mta receive maximum-recipients 0
!
controller E1 2/0
```

```

!
!
!
interface FastEthernet0/0
 ip address 10.64.10.44 255.255.255.224
 ip nat outside
 duplex auto
 speed auto
 crypto map test
!
interface FastEthernet0/1
 ip address 192.168.100.1 255.255.255.0
 ip nat inside
 duplex auto
 speed auto
!
interface BRI4/0
 no ip address
 shutdown
!
interface BRI4/1
 no ip address
 shutdown
!
interface BRI4/2
 no ip address
 shutdown
!
interface BRI4/3
 no ip address
 shutdown
!

!--- Define the IP address pool for the VPN Client.

 ip local pool test-pool 192.168.1.1 192.168.1.254

!--- Exclude the private network and VPN Client
!--- traffic from the NAT process.

 ip nat inside source route-map nonat interface FastEthernet0/0 overload
 ip classless
 ip route 0.0.0.0 0.0.0.0 10.64.10.33
 ip http server
 ip pim bidir-enable
!

!--- Exclude the private network and VPN Client
!--- traffic from the NAT process.

 access-list 110 deny ip 192.168.100.0 0.0.0.255 192.168.200.0 0.0.0.255
 access-list 110 deny ip 192.168.100.0 0.0.0.255 192.168.1.0 0.0.0.255
 access-list 110 permit ip 192.168.100.0 0.0.0.255 any

!--- Include the private network-to-private network traffic
!--- in the encryption process.

 access-list 115 permit ip 192.168.100.0 0.0.0.255 192.168.200.0 0.0.0.255
!

!--- Exclude the private network and VPN Client
!--- traffic from the NAT process.

 route-map nonat permit 10
 match ip address 110
!

```

```
!  
dial-peer cor custom  
!  
!  
!  
!  
!  
line con 0  
line 97 108  
line aux 0  
line vty 0 4  
!  
end
```

House Configuration

Current configuration : 1689 bytes

```
!  
version 12.2  
service timestamps debug uptime  
service timestamps log uptime  
no service password-encryption  
!
```

```
hostname house  
!
```

```
boot system flash:c3660-jk8o3s-mz.122-7.bin  
!
```

```
ip subnet-zero  
!
```

```
no ip domain-lookup  
!
```

```
ip audit notify log  
ip audit po max-events 100  
ip ssh time-out 120  
ip ssh authentication-retries 3  
!
```

!-- IPsec ISAKMP policy.

```
crypto isakmp policy 5  
  hash md5  
  authentication pre-share
```

!-- ISAKMP key for static LAN-to-LAN tunnel without xauth authentication.

```
crypto isakmp key cisco123 address 10.64.10.44 no-xauth  
!
```

```
crypto ipsec transform-set testset esp-des esp-md5-hmac  
!
```

!-- Static crypto map for the LAN-to-LAN tunnel.

```
crypto map test 5 ipsec-isakmp  
  set peer 10.64.10.44  
  set transform-set testset
```

*!-- Include the private network-to-private network traffic
!-- in the encryption process.*

```
  match address 115  
!  
call rsvp-sync  
cns event-service server
```

```
!  
!  
!  
!  
!  
fax interface-type modem  
mta receive maximum-recipients 0  
!  
!  
!  
interface FastEthernet0/0  
  ip address 10.64.10.45 255.255.255.224  
  ip nat outside  
  duplex auto  
  speed auto  
  crypto map test  
!  
interface FastEthernet0/1  
  ip address 192.168.200.1 255.255.255.0  
  ip nat inside  
  duplex auto  
  speed auto  
!  
interface BRI2/0  
  no ip address  
  shutdown  
!  
interface BRI2/1  
  no ip address  
  shutdown  
!  
interface BRI2/2  
  no ip address  
  shutdown  
!  
interface BRI2/3  
  no ip address  
  shutdown  
!  
interface FastEthernet4/0  
  no ip address  
  shutdown  
  duplex auto  
  speed auto  
!  
  
!--- Exclude the private network traffic  
!--- from the dynamic (dynamic association to a pool) NAT process.  
  
ip nat inside source route-map nonat interface FastEthernet0/0 overload  
ip classless  
ip route 0.0.0.0 0.0.0.0 10.64.10.33  
no ip http server  
ip pim bidir-enable  
!  
  
!--- Exclude the private network traffic from the NAT process.  
  
access-list 110 deny ip 192.168.200.0 0.0.0.255 192.168.100.0 0.0.0.255  
access-list 110 permit ip 192.168.200.0 0.0.0.255 any  
  
!--- Include the private network-to-private network traffic  
!--- in the encryption process.  
  
access-list 115 permit ip 192.168.200.0 0.0.0.255 192.168.100.0 0.0.0.255
```

```
!--- Exclude the private network traffic from the NAT process.
```

```
route-map nonat permit 10
  match ip address 110
!
!
!
dial-peer cor custom
!
!
!
!
!
line con 0
line aux 0
line vty 0 4
  login
!
end
```

VPN Client Configuration

```
Network Security policy:
  1- TOLIGHT
  My Identity
  Connection security: Secure
  Remote Party Identity and addressing
  ID Type: IP subnet
  192.168.100.0
  255.255.255.0
  Port all Protocol all

Connect using secure tunnel
  ID Type: IP address
  10.64.10.44

Pre-shared Key=123cisco

Authentication (Phase 1)
  Proposal 1
  Authentication method: pre-shared key
  Encryp Alg: DES
  Hash Alg: MD5
  SA life: Unspecified
  Key Group: DH 1

Key exchange (Phase 2)
  Proposal 1
  Encapsulation ESP
  Encrypt Alg: DES
  Hash Alg: MD5
  Encap: tunnel
  SA life: Unspecified
  no AH

2- Other Connections
  Connection security: Non-secure
  Local Network Interface
  Name: Any
  IP Addr: Any
  Port: All
```

Verify

Use this section to confirm that your configuration works properly.

The Output Interpreter Tool (registered customers only) (OIT) supports certain **show** commands. Use the OIT to view an analysis of **show** command output.

- **show crypto ipsec sa** Shows the phase 2 Security Associations (SAs).
- **show crypto isakmp sa** Shows the phase 1 SAs.

Troubleshoot

Use this section to troubleshoot your configuration.

Troubleshooting Commands

The Output Interpreter Tool (registered customers only) (OIT) supports certain **show** commands. Use the OIT to view an analysis of **show** command output.

Note: Refer to Important Information on Debug Commands before you use **debug** commands.

- **debug crypto ipsec** Shows the IPsec negotiations of phase 2.
- **debug crypto isakmp** Shows the ISAKMP negotiations of phase 1.
- **debug crypto engine** Shows the traffic that is encrypted.
- **clear crypto isakmp** Clears the SAs related to phase 1.
- **clear crypto sa** Clears the SAs related to phase 2.

Related Information

- [Configuring IPSec Network Security](#)
- [Configuring Internet Key Exchange Security Protocol](#)
- [IPsec Negotiation/IKE Protocol Support Page](#)
- [Cisco Secure VPN Client Support Pages](#)
- [Technical Support – Cisco Systems](#)

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