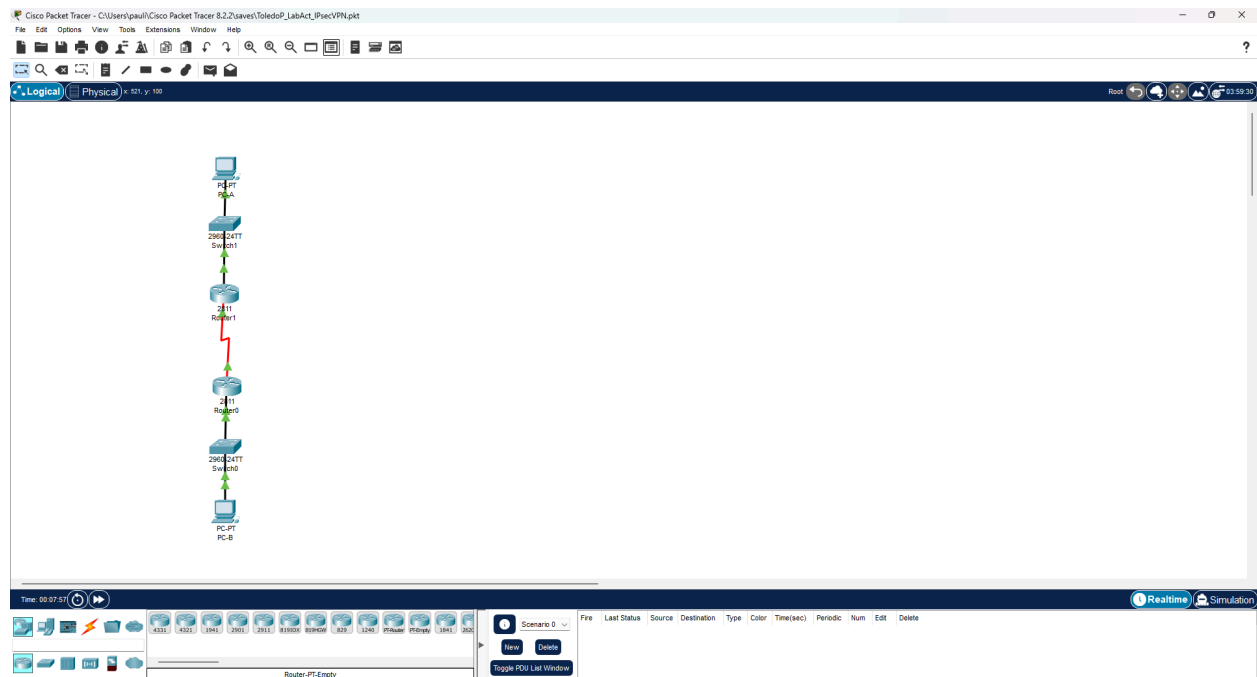


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CCS2A\_L1

## Networks and Communications

### Network Topology Screenshot



### Verification Commands

#### Router1#show crypto isakmp sa

```
Router1
Physical Config CLI Attributes
IOS Command Line Interface
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wvl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to
export@cisco.com.

cisco 2811 (MPC860) processor (revision 0x200) with 60416K/5120K bytes of memory
Processor board ID JAD06190MTZ (4292891495)
2 FastEthernet interface(s)
2 Low-speed serial(sync/async) network interface(s)
DRAM configuration is 64 bits wide with parity disabled.
256K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)

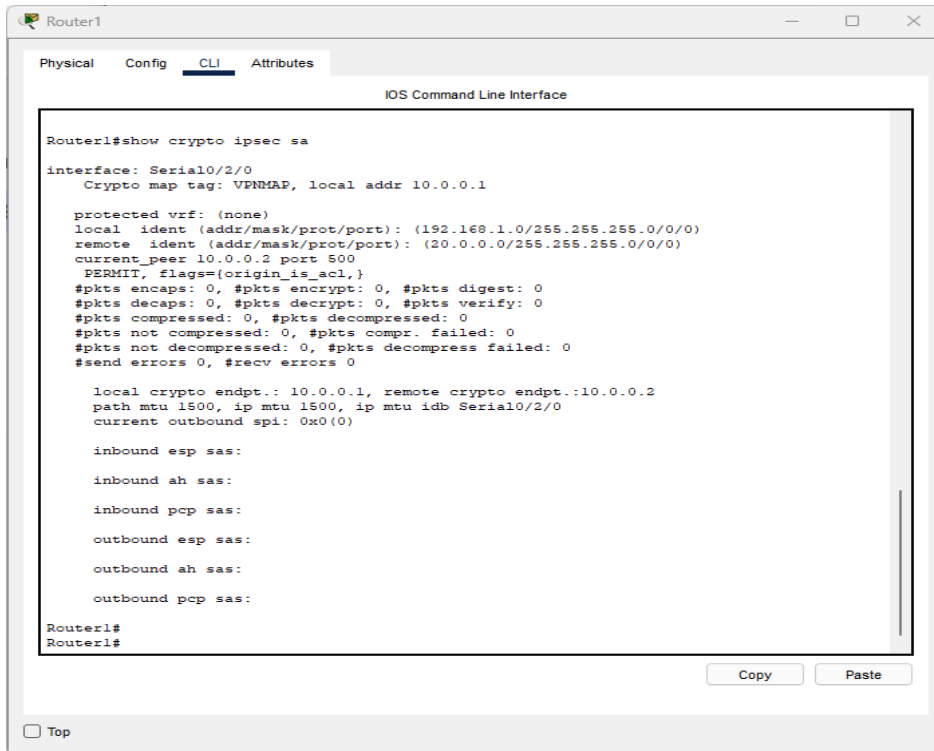
Press RETURN to get started!

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
%LINK-5-CHANGED: Interface Serial0/2/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/2/0, changed state to up

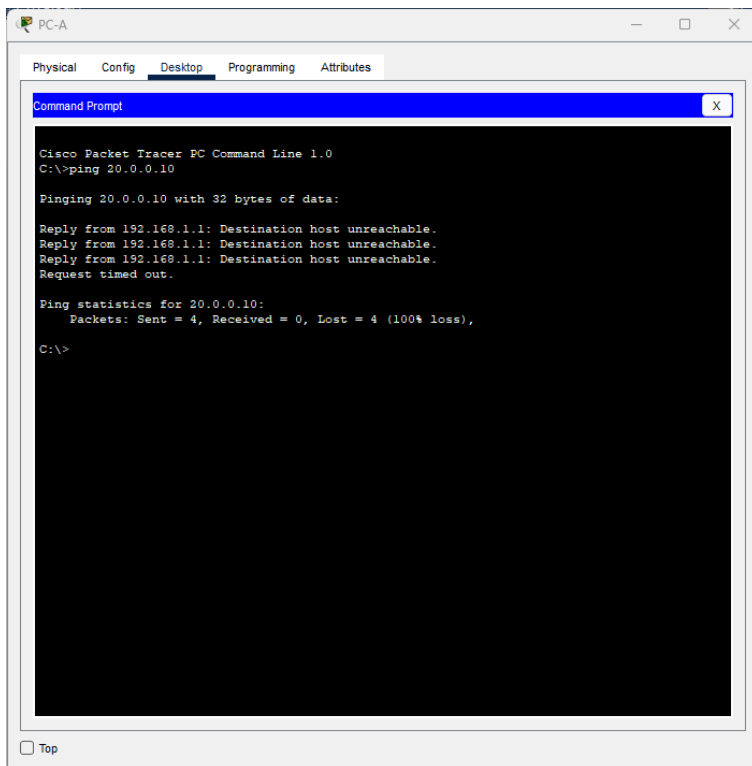
Router1>enable
Router1#show crypto isakmp sa
IPv4 Crypto ISAKMP SA
dst src state conn-id slot status

IPv6 Crypto ISAKMP SA
```

## Router1#show crypto ipsec sa



## Ping Configuration



## **Laboratory Questions**

### **1. What is the purpose of VPN?**

- A VPN is used to create a secure and private network connection when using public networks. VPN disguises a device's online identity and encrypts the internet traffic. This will make it difficult for third parties to track the device's activities online and steal data.

### **2. What security benefits does IPsec provide?**

- IPsec (Internet Protocol Security) provides several security benefits, including *encryption*, which ensures data confidentiality by making it unreadable to unauthorized parties, and *authentication*, which verifies the identity of communicating devices to prevent spoofing. It also offers *integrity protection*, ensuring that data isn't altered during transmission, and *anti-replay protection*, which blocks attackers from intercepting and reusing old data packets. These features make IPsec a strong security protocol for VPNs and secure network communications.

### **3. Explain why pre-shared keys are essentials for IPsec VPNs.**

- Pre-shared keys (PSKs) are vital for IPsec VPNs as they authenticate devices before establishing a secure tunnel. By ensuring both parties share a secret key, PSKs prevent unauthorized access and protect against spoofing, ensuring encrypted communication remains private and trustworthy.

### References

- What is VPN? How It Works, Types of VPN.* (2023, May 5). /.  
<https://www.kaspersky.com/resource-center/definitions/what-is-a-vpn>
- Simplilearn. (2023, August 7). *What is Internet Protocol Security? Applications and Benefits.* Simplilearn.com.  
<https://www.simplilearn.com/understanding-ipsec-rar37-article>