

# Virtual private networks (VPNs)

In this video, we're going to discuss how virtual private networks, or VPNs, add security to your network. When you connect to the internet, your internet service provider receives your network's requests and forwards it to the correct destination server. But your internet requests include your private information. That means if the traffic gets intercepted, someone could potentially connect your internet activity with your physical location and your personal information. This includes some information that you want to keep private, like bank accounts and credit card numbers. A virtual private network, also known as a VPN, is a network security service that changes your public IP address and hides your virtual location so that you can keep your data private when you're using a public network like the internet.

VPNs also encrypt your data as it travels across the internet to preserve confidentiality. A VPN service performs encapsulation on your data in transit. Encapsulation is a process performed by a VPN service that protects your data by wrapping sensitive data in other data packets. Previously, you learned how the MAC and IP address of the destination device is contained in the header and footer of a data packet. This is a security threat because it shows the IP and virtual location of your private network. You could secure a data packet by encrypting

it to make sure your information can't be deciphered,  
but then network routers won't be able to read  
the IP and MAC address to know where to send it to.  
This means you won't be able to connect to  
the internet site or the service that you want.  
Encapsulation solves this problem  
while still maintaining your privacy.  
VPN services encrypt your data packets and  
encapsulate them in other data packets  
that the routers can read.  
This allows your network requests  
to reach their destination,  
but still encrypts your personal data  
so it's unreadable while in transit.  
A VPN also uses an encrypted tunnel  
between your device and the VPN server.  
The encryption is unhackable without a cryptographic key,  
so no one can access your data.

VPN services are simple and offer  
significant protection while you're on the internet.  
With a VPN,  
you have the added assurance that your data is encrypted, and  
your IP address and  
virtual location are unreadable to malicious actors.

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