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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