

Lanka Education and Research Network

Internet Protocol Version 6 - IPv6

IPv6 Security (in brief)

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Deployment of IPv6 in a Campus Network

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Overview

- We protect our digital assets from IPv4 networks
- Do we need to do the same for IPv6?
- Who is more secure? IPv6 or IPv4 ?
- IPv6 means we are seen publically in the internet... Is it safe?
- Do we have to buy expensive hardware?
- Myths... around IPv6
- etc...

In General

- IPv6 Has built in security via IPsec (Internet Protocol Security).
 - IPsec Operates at OSI layer 3 or internet layer of the Internet Protocol Suite.
 - IPsec
 - Internet Engineering Task Force (IETF)
 - Encrypts the IP connection between computers
 - Data is encrypted at the packet level
 - The standard for IP encryption
 - Developed in conjunction with IPv6 and mandates by RFC in all implementations of IPv6.
 - Although IPsec was designed for IPv6 it can be and has been used to secure IPv4 traffic for some time now.
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IPSec

- Confidentiality
 - The sender can encrypt the packets before transmitting them across the network. In case of tapping or MITM, it cannot be read by anybody.
- Data Integrity
 - The receiver can verify whether the data was changed while travelling
- Origin authentication
 - The receiver can authenticate the source of the packet.
- Anti replay protection

IPSec

- But by RFC 6434, IPSec becomes a strong recommendation other than being a mandatory rule implementing IPv6 which were never used practically by most engineers

Two separate paths

- The main concern lies with security meant to monitor IPv4 traffic. This security needs to be updated to include IPv6.
- Firewalls need to be able to distinguish between IPv4 and IPv6. If you only have an IPv4 firewall you can have IPv6 running between you and the threat.
- If you use IPTables then you should also use IPv6Tables
- If you use ACL's for IPv4 then you need ACL's for IPv6 as well

ICMPv6

- Should we allow ICMPv6?

Message Number	Message Type	Code Field
128	Echo Request	RFC 4443 . Used for the ping command
129	Echo Reply	
130	Multicast Listener Query	RFC 2710 . Used for multicast group management
131	Multicast Listener Report	
132	Multicast Listener Done	
133	Router Solicitation	RFC 4861 . Used for neighbor discovery and autoconfiguration
134	Router Advertisement	
135	Neighbor Solicitation	
136	Neighbor Advertisement	
137	Redirect Message	
200 and 201	Private Experimentation	RFC 4443
255	Reserved for expansion of ICMPv6 informational messages	RFC 4443

Is IPv6 Secure?



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Questions

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Thank You

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