Virtual Private Network (VPN) traffic leakages in dual-stack hosts/networks

(draft-gont-opsec-vpn-leakages-00)

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IETF 85
Atlanta, GA, USA. November 4-9, 2012

Introduction

- Many VPN implementations do not support IPv6
  - they block local IPv4 connectivity
  - but do nothing about the IPv6 connectivity
- In dual-stack host/network scenarios, hosts might end up using IPv6:
  - there could be IPv6-based recursive DNS servers
  - a domain-name might have AAAA records

…either legitimately, or **maliciously**

Problem statement

- Sensitive traffic might leak out (privacy issue):
  - e.g. user/passwords sent in the clear
- A host might get owned over the unsecured IPv6
  - then then trust relationship implied by the VPN could be leveraged by the attacker
- Popular VPN implementations found vulnerable to these issues

Possible mitigations

- Disable IPv6 when employing the VPN
- Police Neighbor Discovery and DHCPv6 packets
  - may prove to be tricky
  - ND messages could be leveraged to install more-specific routes to cause traffic leakages
  - What should be done with link-local traffic?

Thanks!

- Feedback welcome on opsec@ietf.org

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