Survey of IPv6 Support in Commercial Firewalls

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Purpose and Scope of Study

• Determine IPv6 transport support and security service availability among commercial firewall products

• Survey only, no product testing

• Scope: did not include
  – Personal firewall software
  – Open Source firewall projects
  – Commodity broadband access device that only "block ports and such"
Objectives

• How broadly is IP version 6 (IPv6) transport supported by commercial firewalls?
• Is support for IPv6 transport and security services available for all market segments?
• Are security services commonly used at Internet firewalls available when IPv6 transport is used?
• Can an organization use IPv6 today and enforce a security policy at a firewall that's comparable to one it would enforce using IPv4?
Methodology

• Compile a list of commercial firewall products
  – Various resources yielded approximately 60 products
  – Identify target market segments for products:
    • Small office, home office (SOHO)
    • Small and medium business (SMB)
    • Large Enterprise, service provider (LE/SP)
• Survey commonly available security services
  – List based on vendor technical specifications and input from firewall administrator community
Information Gathering: Beyond Survey Data...

- Direct vendor contact by email and telephone
  - Technical support, sales, marketing, general inquiries
  - Technical staff identified by colleagues and ICSA Labs

- 3rd party corroboration
  - Discussion with firewall administrators familiar with product
  - Discussion on firewall mailing lists

- Other corroboration
  - Review technical specifications, user and administration guides when made available

- Ultimately, 42 of 60 products included in report
IPv6 Transport

Overall
- All firewalls surveyed support IPv4 transport
- 31% of firewalls surveyed support IPv6 transport (13 of 42)

Breakdown (IPv6)
- SOHO: 32% (6 of 19)
- SMB: 34% (12 of 35)
- LE/SP: 30% (8 of 27)
IPv6 Routing

60% of firewalls surveyed participate as peers in IPv4 routing or perform neighbor discovery (35 of 42)

24% participate in IPv6 routing

Breakdown (IPv6)
• SOHO: 21% (4 of 19)
• SMB: 26% (9 of 35)
• LE/SP: 30% (8 of 27)
Static Packet Filtering

95% of firewalls surveyed provide static filtering when IPv4 is used (40 of 42)

29% provide static filtering when IPv6 is used (12 of 42)

Breakdown (IPv6)
- SOHO: 32% (6 of 19)
- SMB: 31% (11 of 35)
- LE/SP: 30% (8 of 27)
Stateful traffic inspection

90% of firewalls surveyed offer stateful inspection when IPv4 is used (38 of 42)

24% of products do so when IPv6 is used

Breakdown (IPv6)
- SOHO: 21% (4 of 19)
- SMB: 23%, (8 of 35)
- LE/SP: 26% (7 of 27)
81% products across all market segments offer Application Level inspection when IPv4 is used (34 of 42)

17% when IPv6 is used

Breakdown (IPv6)
- SOHO: 3 out of 19 (16%)
- SMB: 6 out of 35 (17%)
- LE/SP: 5 out of 27 (19%)

[Note: This question covers a broad swath of features. Subsequent studies should inquire about specific features]
76% of surveyed firewalls provide IDS/IPS when IPv4 is used (32 of 42)

14% of products provide IDS/IPS when IPv6 is used (6 of 42)

Breakdown (IPv6)
• SOHO: 1 out of 19 (5%)
• SMB: 5 out of 35 (14%)
• LE/SP: 6 out of 27 (22%)

5% availability of IDS/IPS among SOHO products when IPv6 transport is used biases result
This result does not include commercial appliances that are "IDS/IPS only".
DDoS Protection

76% of surveyed firewalls provide IDS/IPS when IPv4 is used (34 of 42)

21% of products provide IDS/IPS when IPv6 is used (9 of 42)

Breakdown (IPv6)
• SOHO: 4 out of 19 (21%)
• SMB: 8 out of 35 (23%)
• LE/SP: 7 out of 27 (26%)
14% of products surveyed are able to tunnel IPv4 traffic in IPv6 transport

29% of products are able to encapsulate IPv6 traffic in IPv4 tunnels
IPv6 Transport support (Market Leaders)

- Commercial firewall market dominated by small number of vendors
- Availability of IPv6 transport support improves when consumer choice is narrowed to the market leaders
- Sophisticated traffic inspection and advanced security features are still not prevalent
Observations from Vendor Comments

• IPsecv6 support is not as fully-featured as IPv4
  – some vendors support fewer Internet Key Exchange (IKE) peer authentication options, or only support manual keying

• User Interfaces are not as robust
  – IPV6 transport can only be configured using a command line interface.

• IDS and DDoS support not as robust
  – Signature sets for IDS/IPS inspection engines for IPv6 not as extensive as sets for IPv4.
  – Number and kinds of DoS attacks they can detect and block are fewer when IPv6 transport is used.
"Why no support?"

- Vendors who responded that they had no IPv6 support typically claimed that they have received few if any requests for products that support IPv6.
Conclusions

• Support for IPv6 transport and security services is available from commercial firewalls for all market segments

• Firewall products that support IPv6 transport generally provide (some form of traffic inspection), event logging, and IP Security (IPsecv6)
Conclusions

• IP version 6 (IPv6) transport is not broadly supported by commercial firewalls.

• Across all market segments, less than one in three products support IPv6 transport and security features.
  – Support among the firewall market share leaders improves this figure somewhat

• Availability of advanced security features when IPv6 transport is used is weakest in SOHO and SMB segments and strongest in the LE/SP segment.