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# Survey of IPv6 Support in Commercial Firewalls

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## Purpose and Scope of Study

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- 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

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- 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

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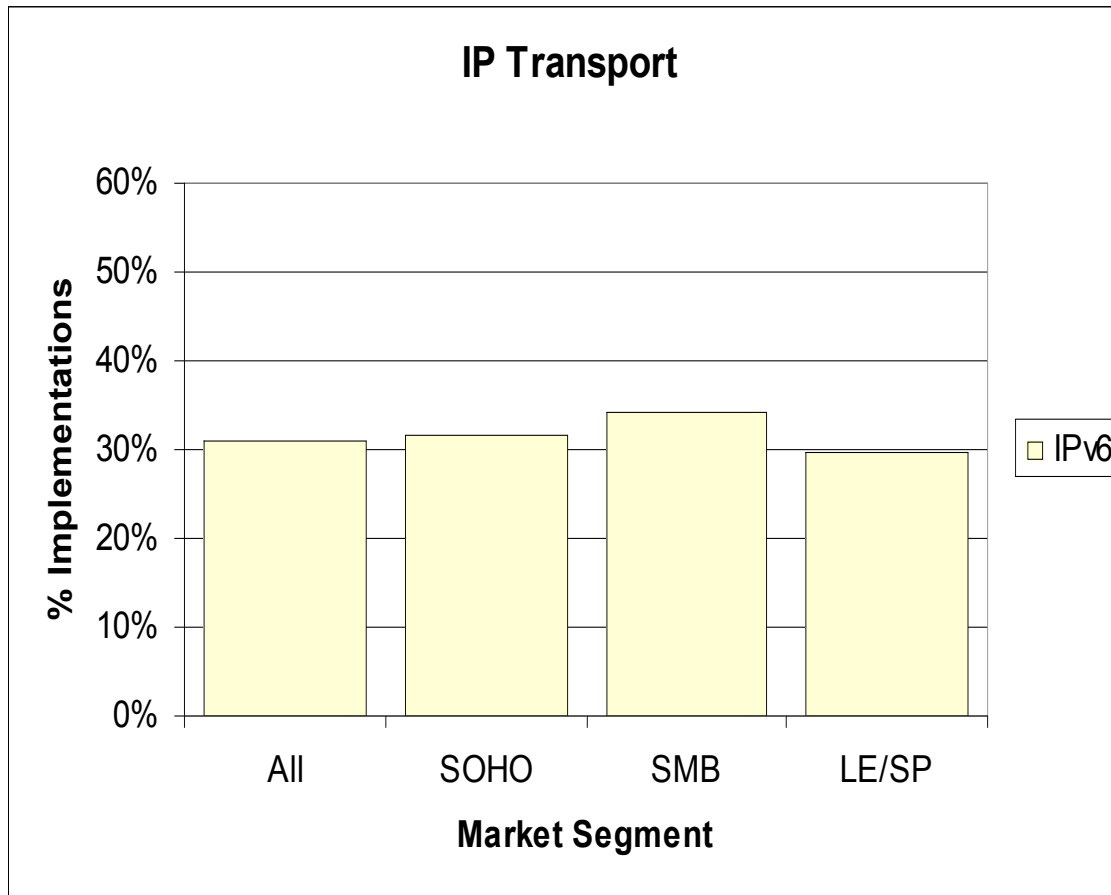
- Compile a list of commercial firewall products
  - Various resources yielded approximately 60 products
  - Identify target market segments for products:
    - Small office, home office (SOHO)
    - Small and medium business (SMB)
    - Large Enterprise, service provider (LE/SP)
- Survey commonly available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

## Information Gathering: Beyond Survey Data...

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



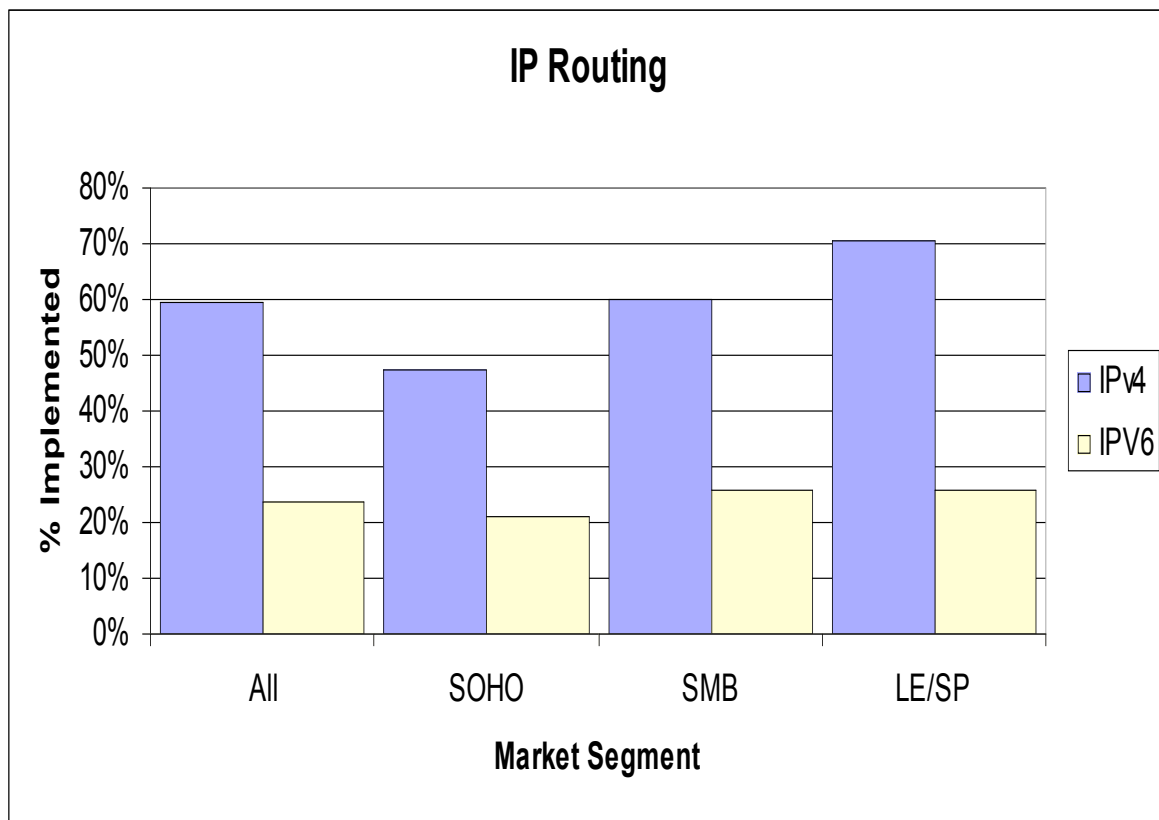
## Overall

- 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



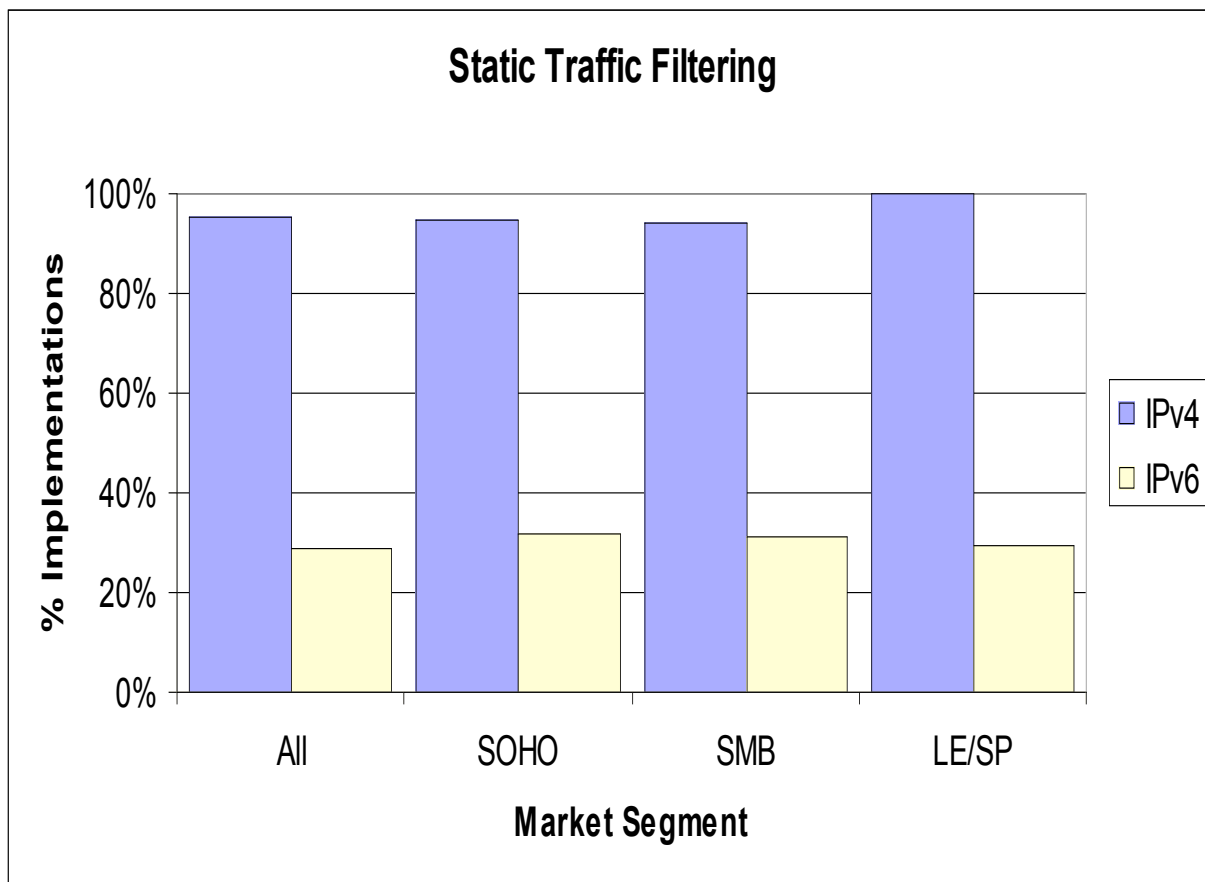
60% of firewalls surveyed participate as peers in IPv4 routing or perform neighbor discovery (35 of 42)

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)

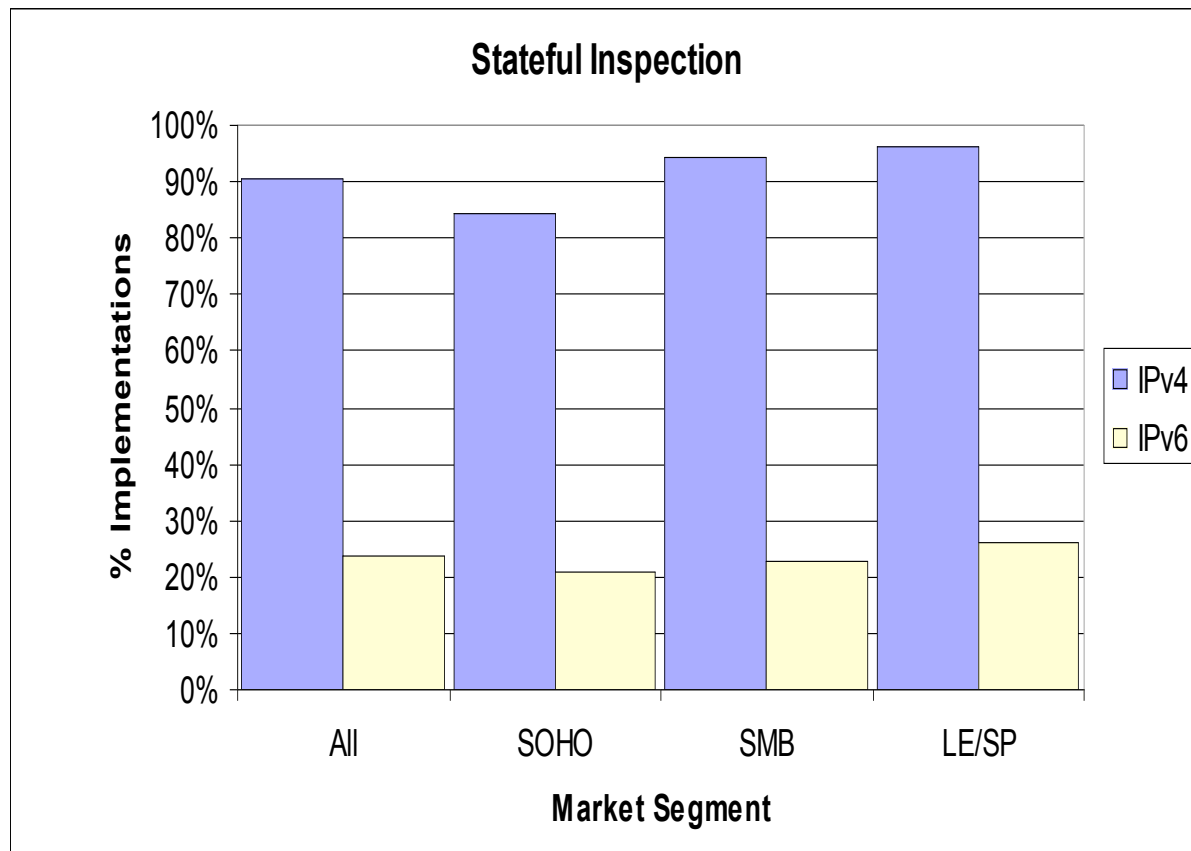
29% provide static filtering when IPv6 is used (12 of 42)

Breakdown (IPv6)

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



# Stateful traffic inspection



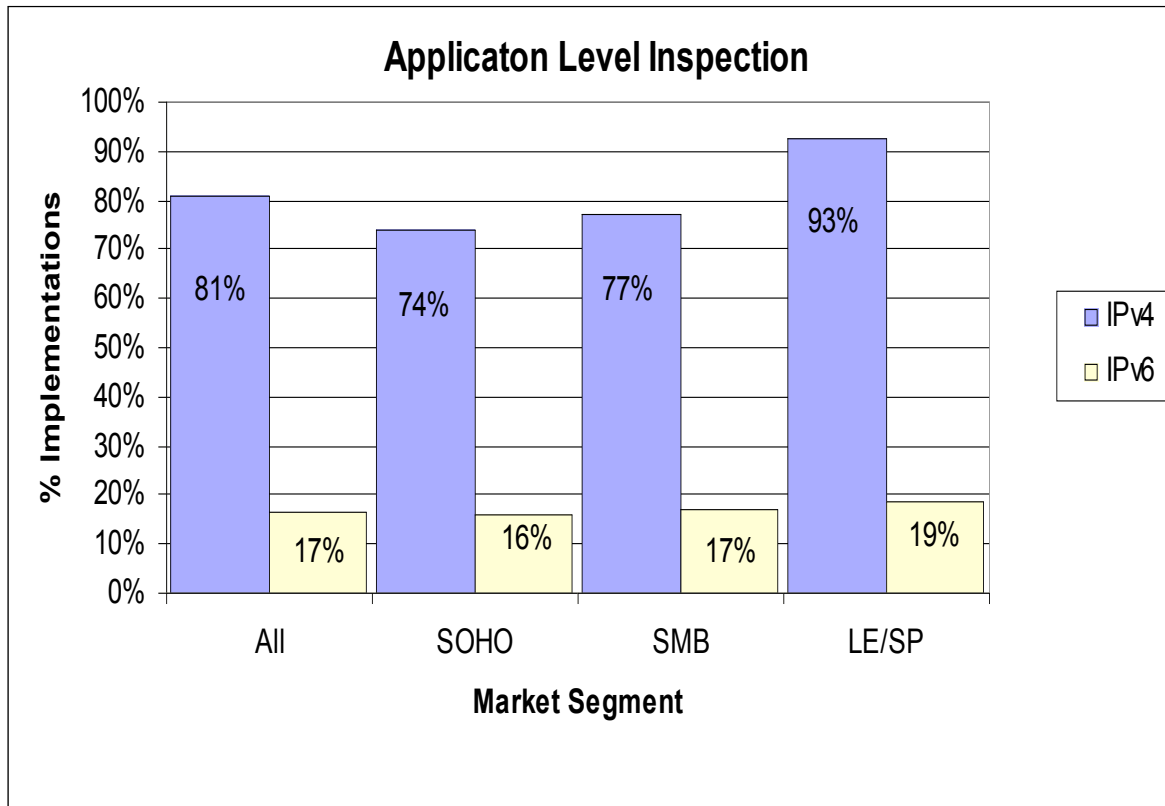
90% of firewalls surveyed offer stateful inspection when IPv4 is used (38 of 42)

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)

# Application Level Inspection



81% products across all market segments offer Application Level inspection when IPv4 is used (34 of 42)

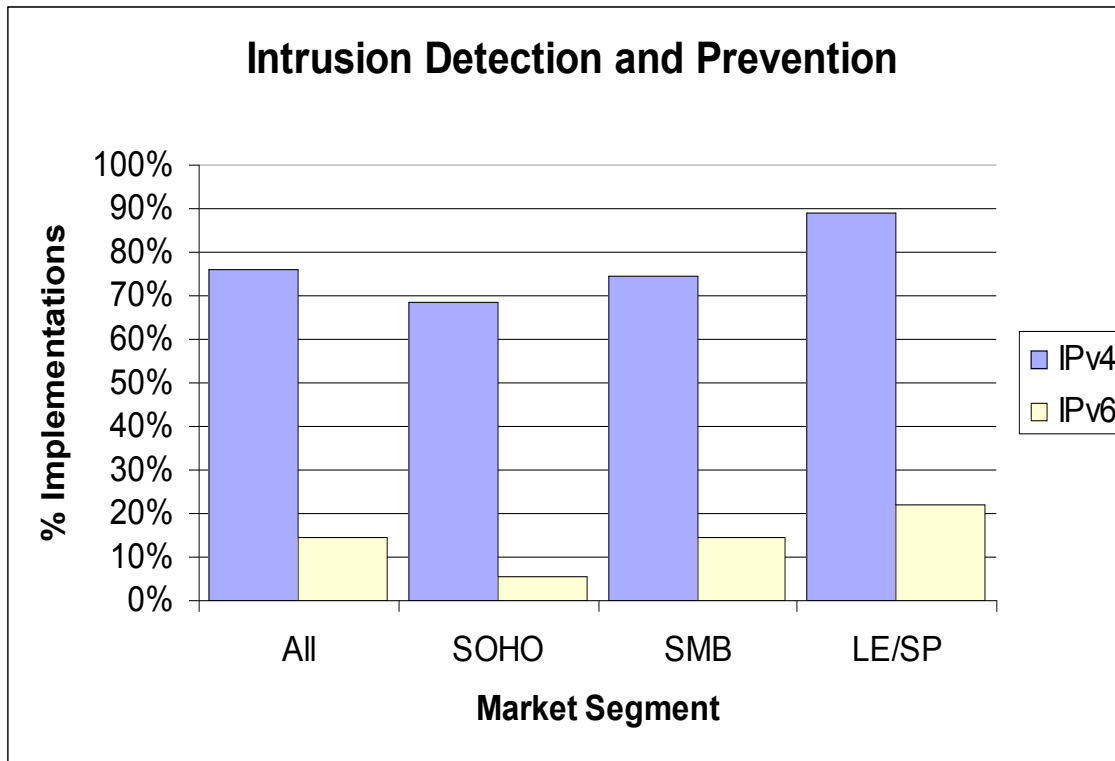
17% when IPv6 is used

## 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]

# Intrusion Detection, Prevention



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)

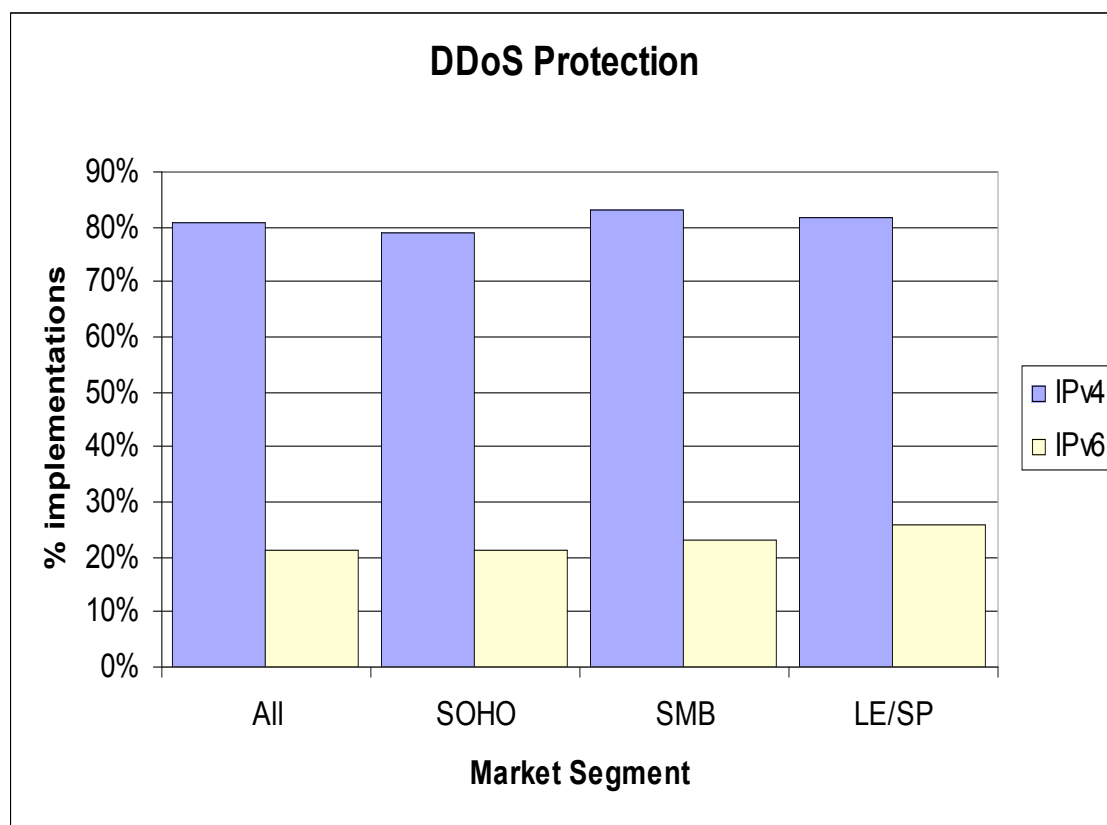
## Breakdown (IPv6)

- 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



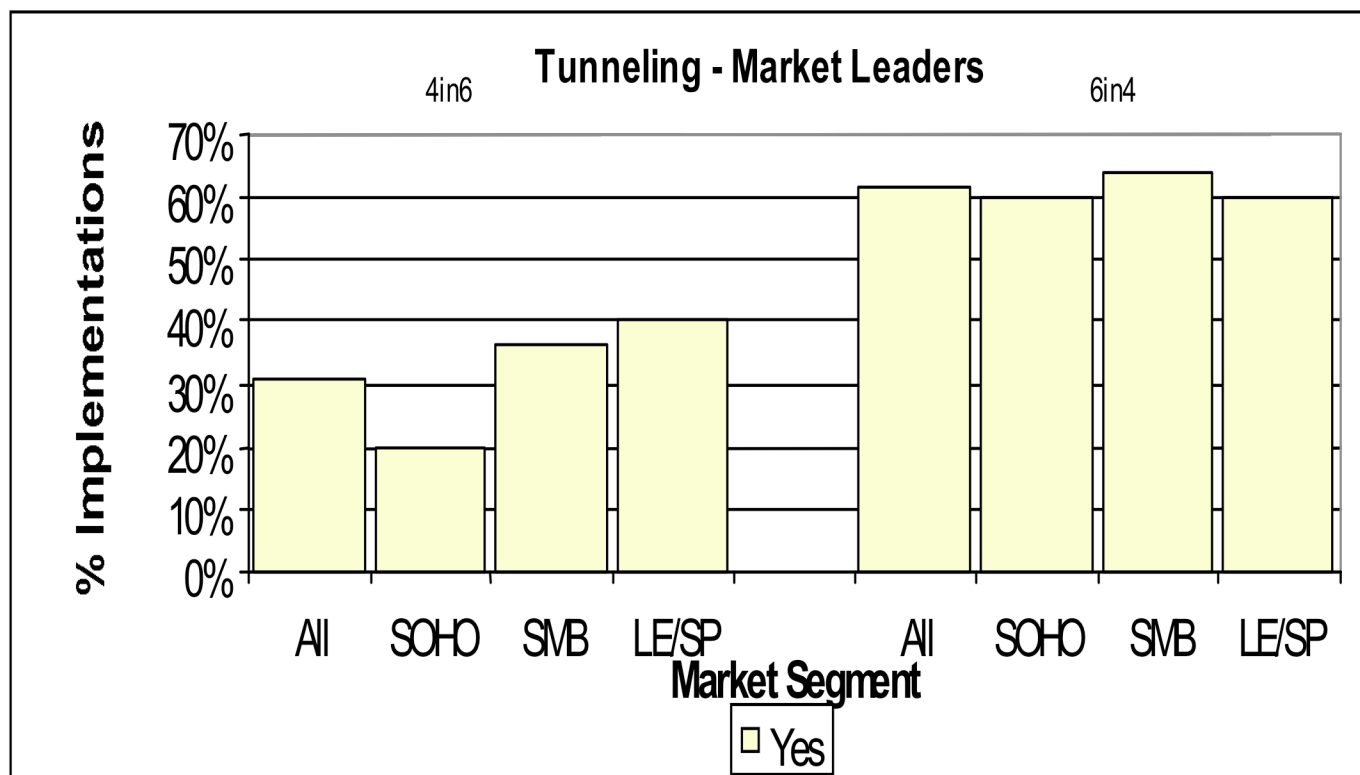
76% of surveyed firewalls provide IDS/IPS when IPv4 is used (34 of 42)

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%)

# Tunneling Capabilities

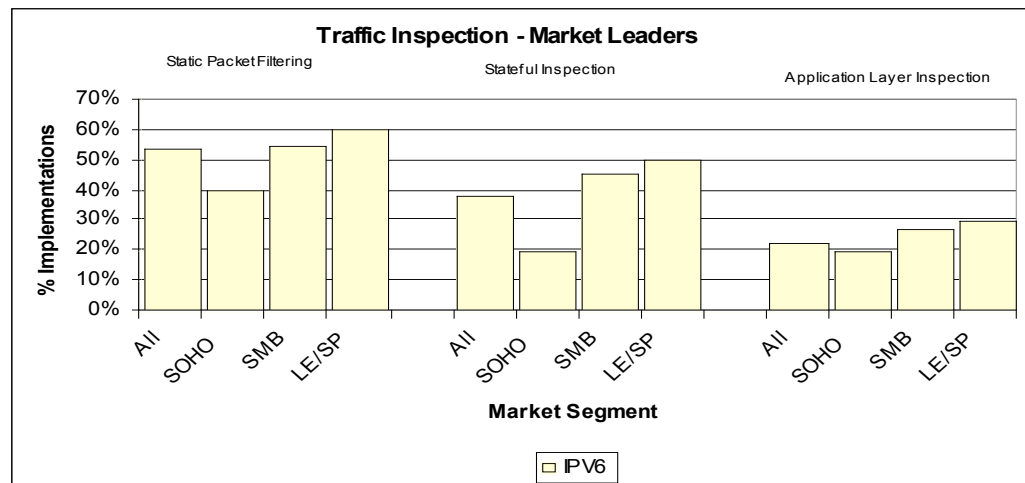
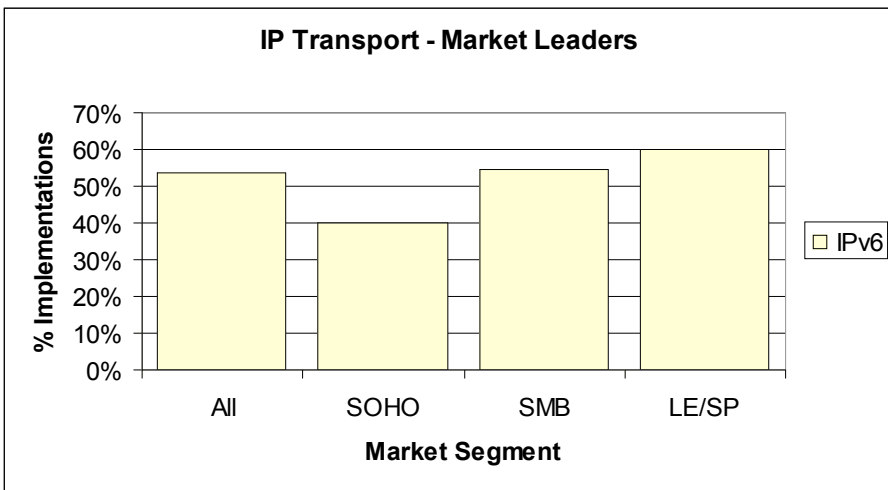


14% of products surveyed are able to tunnel IPv4 traffic in IPv6 transport

29 % of product 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

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- 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?"

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- 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

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- 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

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- 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.