The case for an informed path selection service
(draft-bonaventure-informed-path-selection-00.txt)

IDIPS: ISP-Driven Informed Path Selection
(draft-saucez-idips-00.txt)

O. Bonaventure - D. Saucez - B. Donnet
The choice of the paths is important

- Multiple source addresses
- Multiple destination addresses

=> Paths with different performances and costs

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<th>ISPB</th>
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Company or small ISP Network
Multihomed networks are confronted to TE requirements [15]:

Case 1: Primary/Backup

Case 2: Load Sharing across links

Case 3: Best Path

Case 1: Primary/Backup

Shim6 uses backup links only when primary are not available.

possible with RFC3484 [13] but...

... hard to maintain on large networks

RFC3484, February 2003
Case 2: Load Sharing

Shim6 should prefer one path over the other. It is possible with RFC3484 [13] but...

... the preferences are static

... how to dynamically move traffic from one link to the other?

... how to coordinate hosts choices?
Case 3: Best Path

Observation: Feasible paths have much varying properties

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How to support TE in Shim6

Shim6 must deal with TE requirements

Problem:

- the hosts cannot know the entire topology
- the hosts cannot analyze paths on demand

Solution:

- provide an independent service that can identify the best paths
- suggest changing locators even if no failure is detected
Propose a paths selection service that can be queried by the hosts:

- The client gives a list of source addresses and a list of destination addresses
- The server returns an ordered list of \((source, destination)\) couples.
  - The first entries in the ordered list are the more profitable
  - The list may not contain all the possible couples.
- IDIPS allows definition of complex preferences
2. IDIPS Request
src: [ISPA.A, ISPB.A]
dst: [ISPC.B, ISPA.B]

3. IDIPS Response
[(ISPA.A, ISPA.B),
 (ISPB.A, ISPC.B),
 (ISPB.A, ISPA.B)]

Traffic: src=IP.A, dst=IP.B
1. Shim6 4-way handshake

Locators: [ISPA.A, ISPB.B]

Locators: [ISPA.B, ISPC.B]

Traffic: src=ISPA.A, dst=ISPC.B
Traffic: src=ISPA.A, dst=ISPA.B
IDIPS with P-Shim6

P-Shim6 can ensure TE in multihomed networks

How to dynamically manage TE in P-Shim6?

Use IDIPS as the TE part of P-Shim6
Conclusion

• Multihomed site have TE requirements
• Combine Shim6 with a path selection service to ensure TE
• IDIPS unifies the decision between the AS and the hosts: The AS can optimize the resources consumption

• Is there interest from enterprise networks / ISPs ? (Feedback Needed!!!
Backup 1
Backup 2a

IETF 71      Shim6 WG

$cdf$

flow size (kbytes)

$\Delta=60 \text{ sec}$
$\Delta=300 \text{ sec}$
$\Delta=10 \text{ sec}$
$\Delta=120 \text{ sec}$
$\Delta=1 \text{ sec}$
$\Delta=1920 \text{ sec}$
$\Delta=86400 \text{ sec}$
Backup 2b