

Hierarchical Routing on Unstructured Identifiers

Gábor Németh, János Tapolcai, András Császár

Dept. of Telecommunications and Media Informatics
Budapest University of Technology and Economics
Budapest, Hungary

and

TrafficLab,
Ericsson Research
Laborc utca 1., Budapest, Hungary

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Outline

- i The Problems of the IP
- ii Existing Solutions
- iii Basic Observations
- iv Conceptual Method
 - v Reuse of Existing Technologies
- vi Conclusion

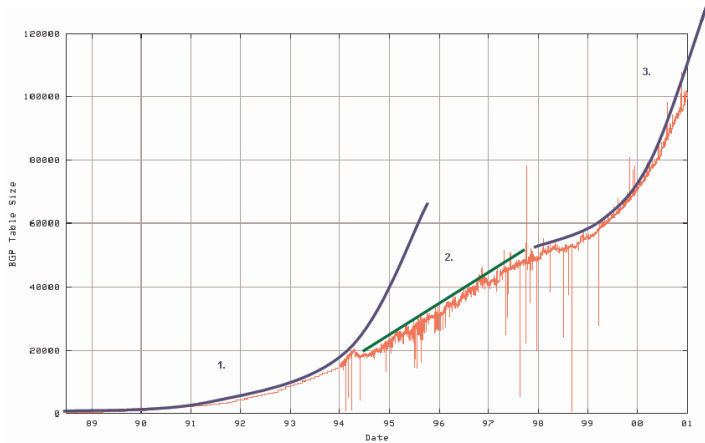
Part I

The Problems of the IP

The Problems of the IP Routing Paradigm

- exhausting name space ⇒ IPv6
- scalability problems
 - multi-homing
- security/privacy/trust
- mobility ⇒ MoIP

IP Scalability Problems



- 1 pre-CIDR
- 2 CIDR
- 3 multi-homing

Part II

Existing Solutions

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1

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2

...network

The network gives solutions to the edge networks to use all the features of the multi-homing with PI addresses.

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- Six/One, shim6

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- GSE/8+8, LIST, eFIT

Part III

Basic Observations

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Part IV


Conceptual Method

Flat + Flat

- flat network ID
- flat host ID

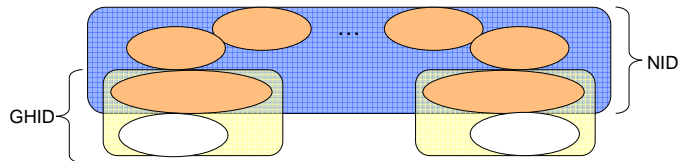
Flat + Flat

- flat network ID
 -  NID

- flat host ID
 -  GHID

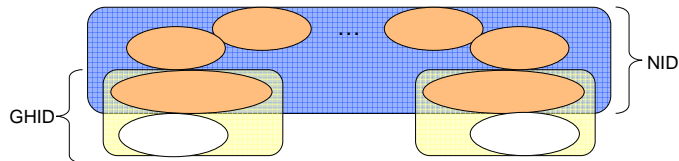
Flat + Flat, BUT

- overlapping identifier scopes



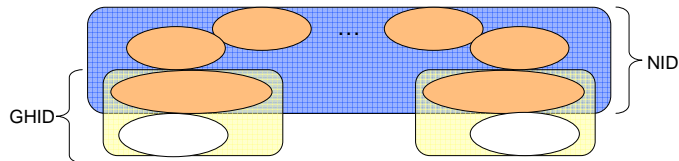
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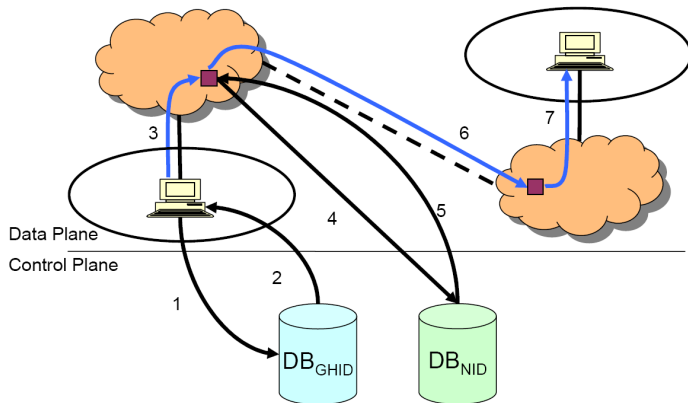


Flat + Flat, BUT

- overlapping identifier scopes
 - NID: between ASes and in the direct provider networks
 - GHID: in the edge and in the direct provider networks



Routing

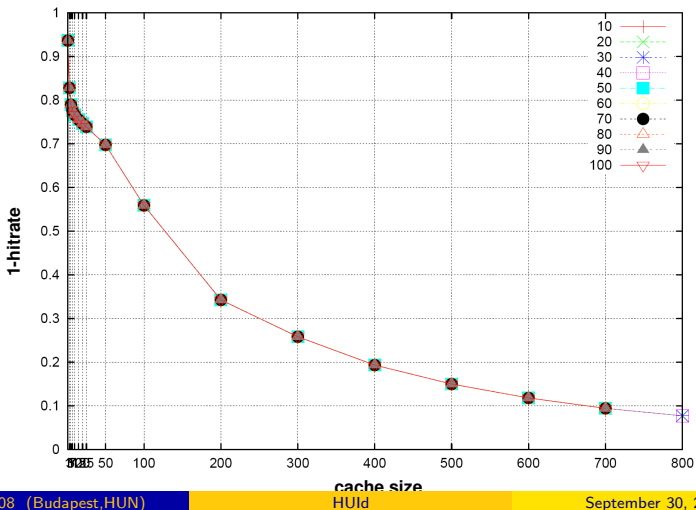


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Part V

Reuse of Existing Technologies

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 - two resolutions
 - *FQDN* - *GHID* (FQDN - IP) already in DNS
 - *GHID* - *NID* (IP - ASN) is missing, but
 - something similar is already in it (invers resolution), so
 - it can be easily injected into the “DNS”

Part VI

Conclusion

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- i a need for a new routing paradigm
 - ▣ but small changes in hosts
- ii id/loc split with overlapping identifier scopes
 - ▣ reduced single point of failure
- iii caching for higher performance
 - ▣ cache sizes are not problematic

Thak You!

