

G-Lab ASP2: Activities in Future Internet Routing

Michael Menth

University of Würzburg, Germany
menth@informatik.uni-wuerzburg.de

Abstract

The current interdomain routing system is not likely to scale in the future Internet. Figure 1 shows that the number of prefixes in the forwarding information bases (FIBs) of the routers in the default-free zone (DFZ) increases quickly.

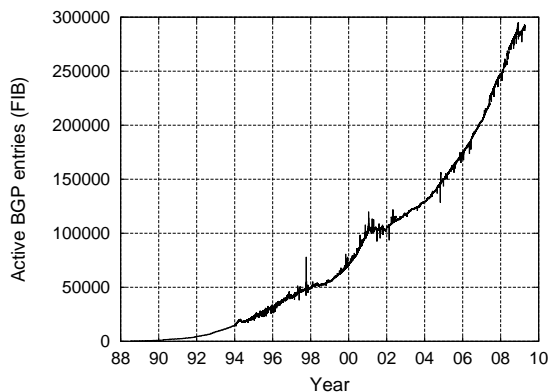


Figure 1. Number of FIB entries in DFZ routers.

It is not clear whether hardware can keep pace with this development at reasonable costs. The locator/identifier (Loc/ID) split separates node identification from core routing. It requires a mapping system to map locators to identifiers when packets are sent to make them routable in the Internet. The intention of the Loc/ID split is to slow down the growth and the dynamics of BGP data.

The partners of ASP2 have developed three different routing architectures based on this locator/identifier split [3, 1, 5]. Since the beginning of the project, these concepts have been discussed and compared.

The focus of the joint activities is on the construction of a mapping service. Trust, controllability, scalability, high performance, robustness, and economic balance are requirements. Initially, DHT-based structures seemed to be attractive due to their inherent scaling properties. However, the joint discussions revealed severe concerns regarding trust and controllability. As a result, two different mapping systems implementing a two-level lookup were developed [2, 4]. They are intended to be implemented in the experimental facility and tested with a prototype of HAIR [1]. As an example of the results, one of the developed mapping systems will be presented in detail [4].

References

- [1] A. Feldmann, R. Bush, L. Cittadini, O. Maennel, and W. Muehlbauer. HAIR: Hierarchical Architecture for Internet Routing. Technical report, Technical University Berlin, 2008.
- [2] O. Hanka, G. Kunzmann, C. Spleiß, J. Eberspächer, and A. Bauer. HiiMap: Hierarchical Internet Mapping Architecture. In *currently under submission*, 2009.
- [3] O. Hanka, C. Spleiss, G. Kunzmann, and J. Eberspächer. A Novel DHT-Based Network Architecture for the Next Generation Internet. In *International Conference on Networking (ICN)*, Cancun, Mexico, Mar. 2009.
- [4] M. Menth. A Global Mapping System for Identifiers Assigned in Prefix Blocks by Authorities, Mar. 2009. Workshop on Setup and Operation of Open Testbed Infrastructures in the Context of NGN and Future Internet - Status Quo and Quo Vadis, Kassel, Germany.
- [5] M. Menth, M. Hartmann, and D. Klein. Global Locator, Local Locator, and Identifier Split (GLI-Split). In *currently under submission*, 2009.