Which is the evolution of the BGP?

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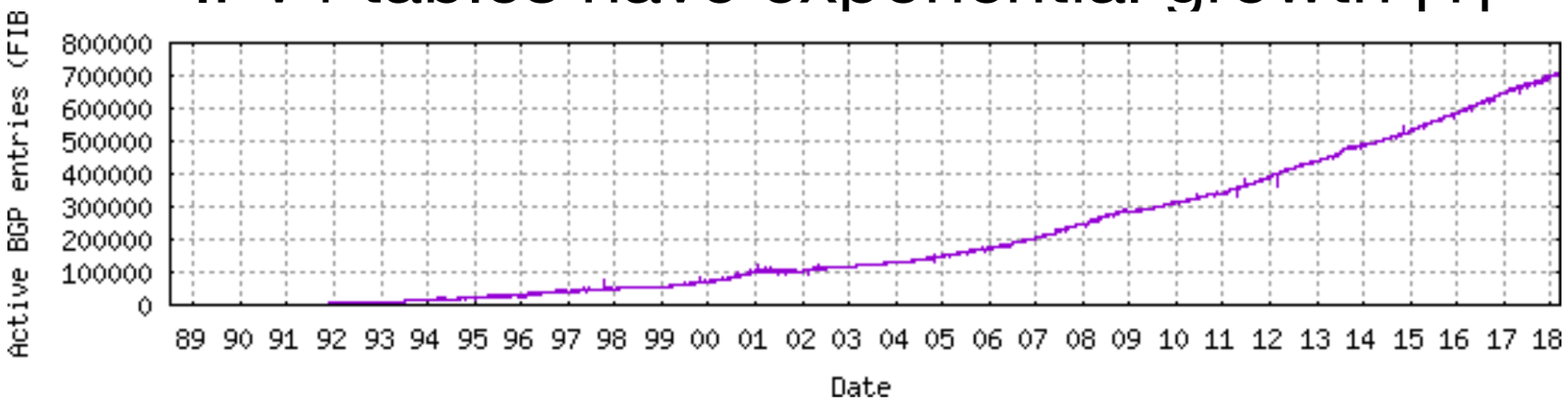
Universidad de Buenos Aires — CONICET

http://cnet.fi.uba.ar/en/

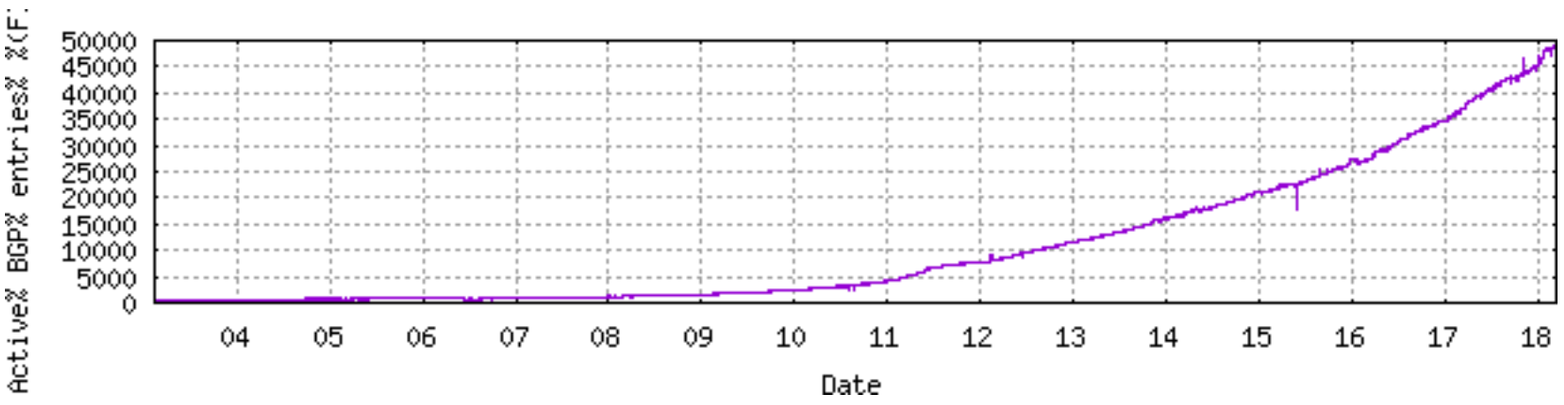
BPG tables sizes

- IPv4 tables have exponential growth [1]



https://www.cidr-report.org/as2.0/

- Even hierarchy of IPv6 has the same problem



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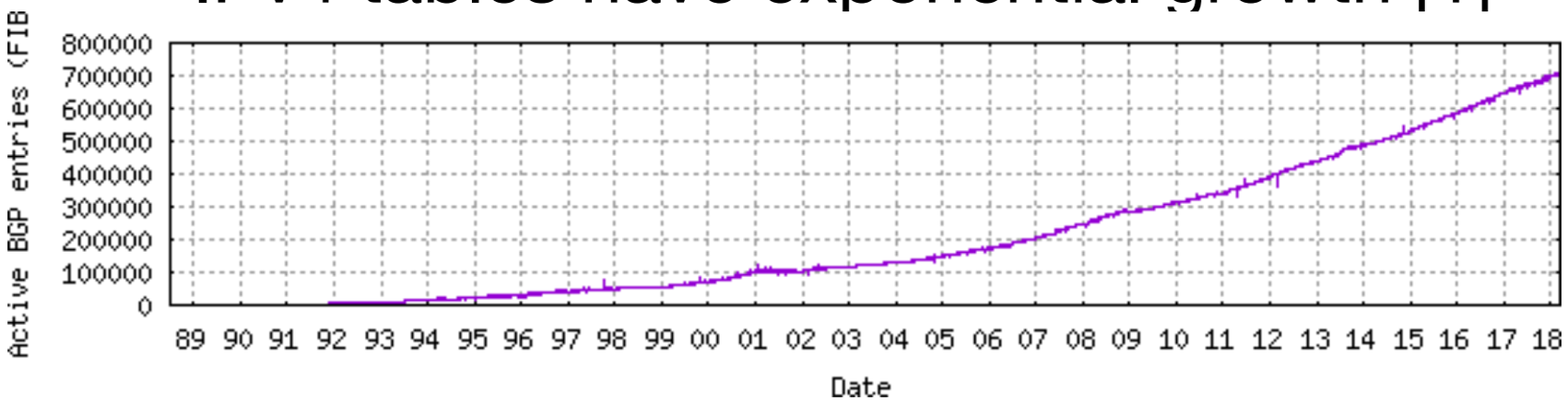

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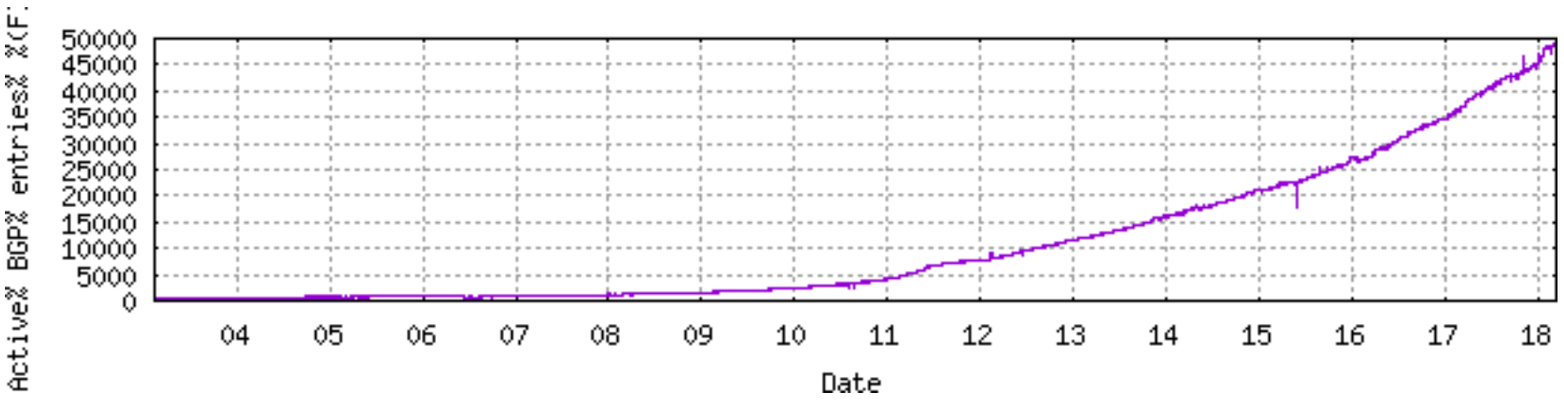

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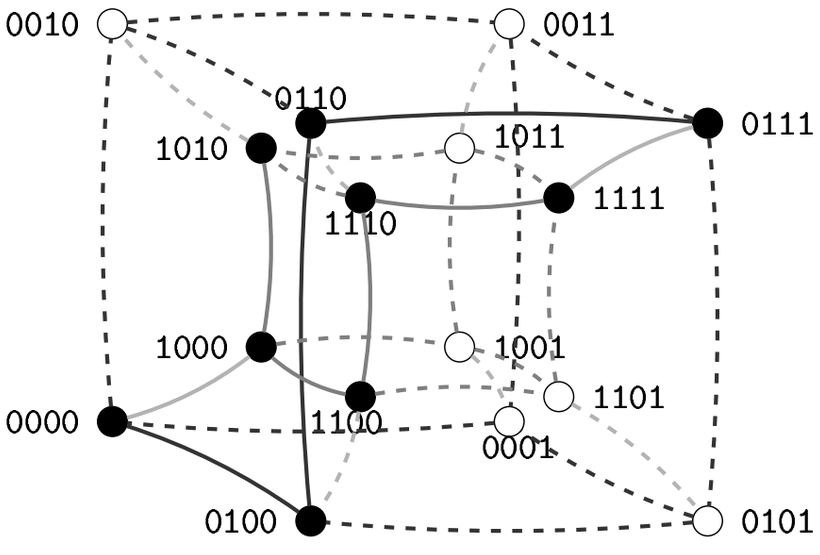
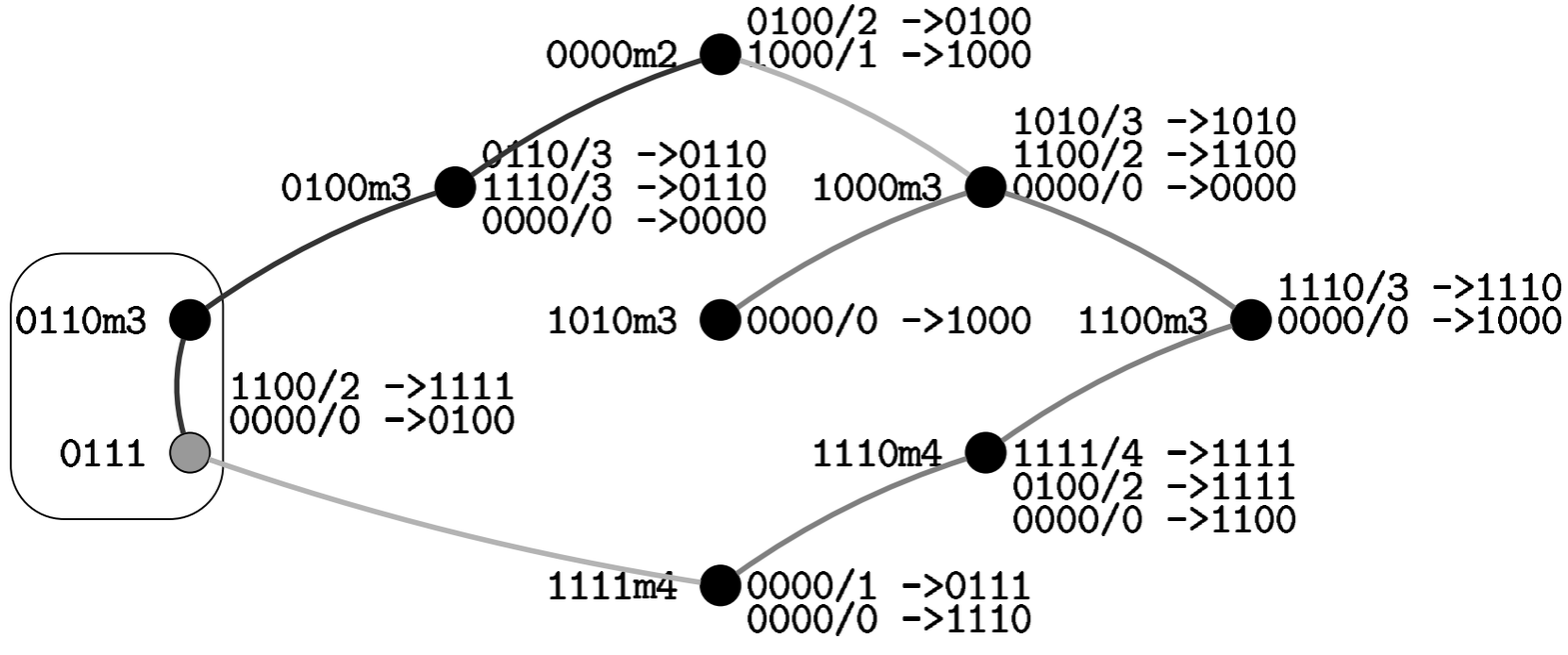
It is hardware dependent !

Possible alternatives?

- *Some works*: the **hyperbolic** topology of the Internet [2][3]
- Topology-aware Routing protocols (greedy): *routing tables size* ➔ number of neighbors.
- ANTop: Incomplete hypercubes [4][5]





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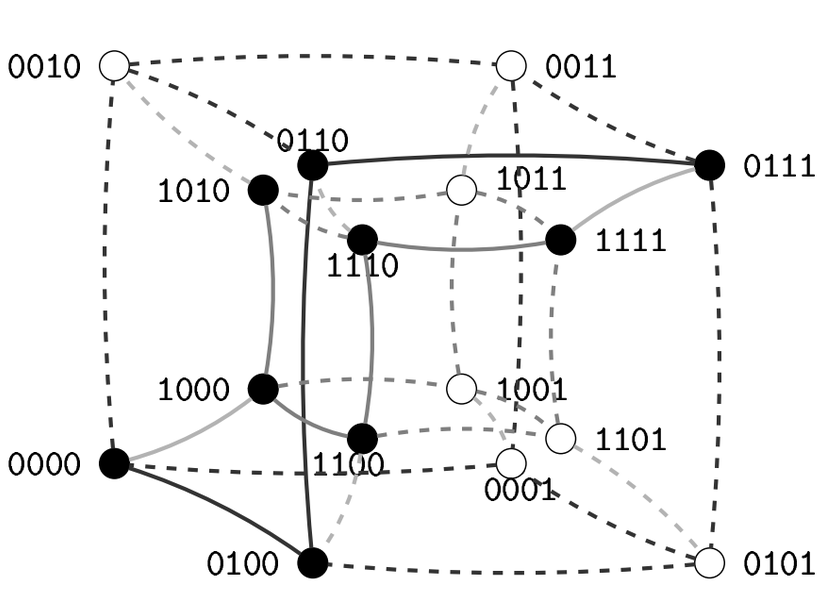

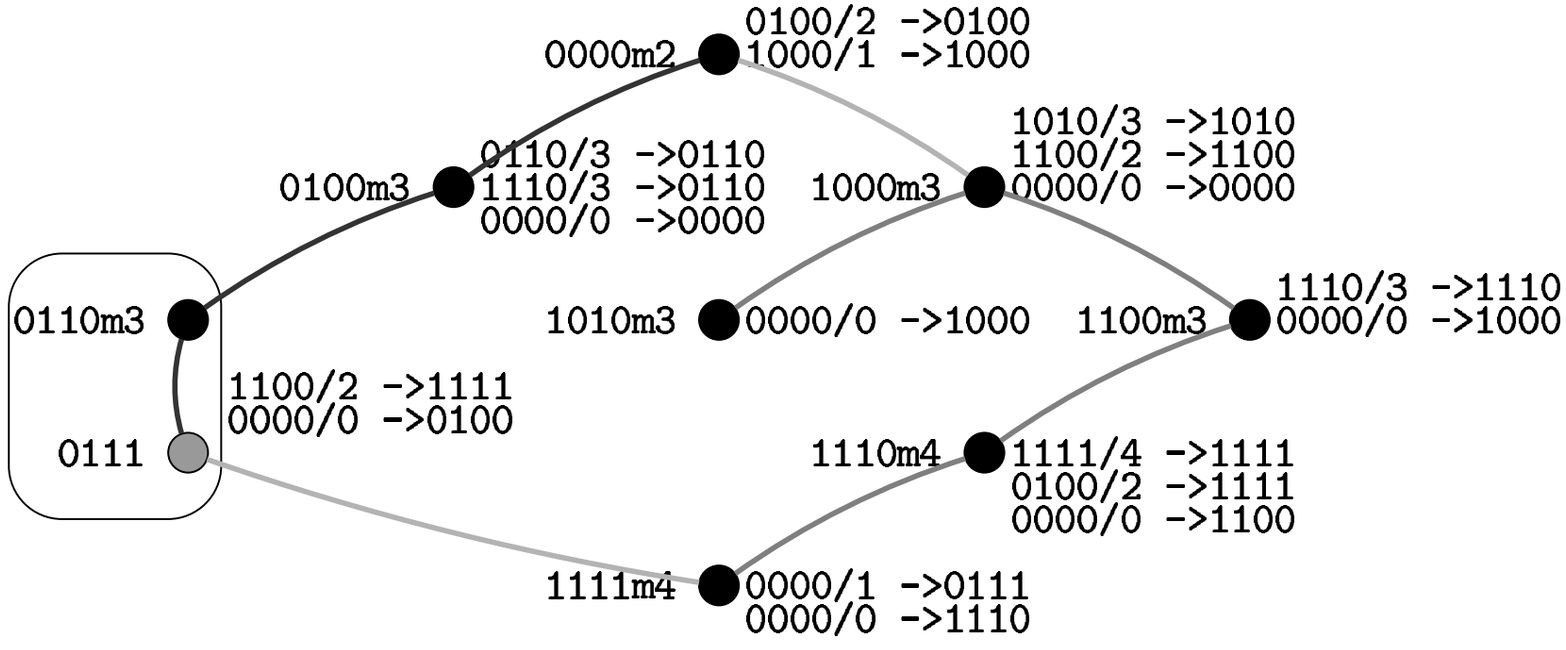

It is software dependent !

References

(1) 2017 BGP Table Size Prediction and Potential Impact on Stability of Global Internet Infrastructure. http://bgphelp.com/2017/01/01/bgpsize/

(2) Cvetkovski, Andrej, and Mark Crovella. “Hyperbolic Embedding and Routing for Dynamic Graphs.” In *INFOCOM 2009, IEEE*, 1647–55. IEEE, 2009. http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=5062083.

(3) Krioukov, Dmitri, Fragkiskos Papadopoulos, Maksim Kitsak, Amin Vahdat, and Marián Boguná. "Hyperbolic geometry of complex networks." Physical Review E 82, no. 3 (2010): 036106.

(4) Alvarez-Hamelin, José I., Aline C. Viana, and Marcelo D. de Amorim. “DHT-Based Functionalities Using Hypercubes.” In *Ad-Hoc Networking*, 157–76. Springer, 2006. http://link.springer.com/chapter/10.1007/978-0-387-34738-7_12.

(5) ANTop (Adjacent Network Topologies), Linux open source. https://github.com/CoNexDat/ANTop