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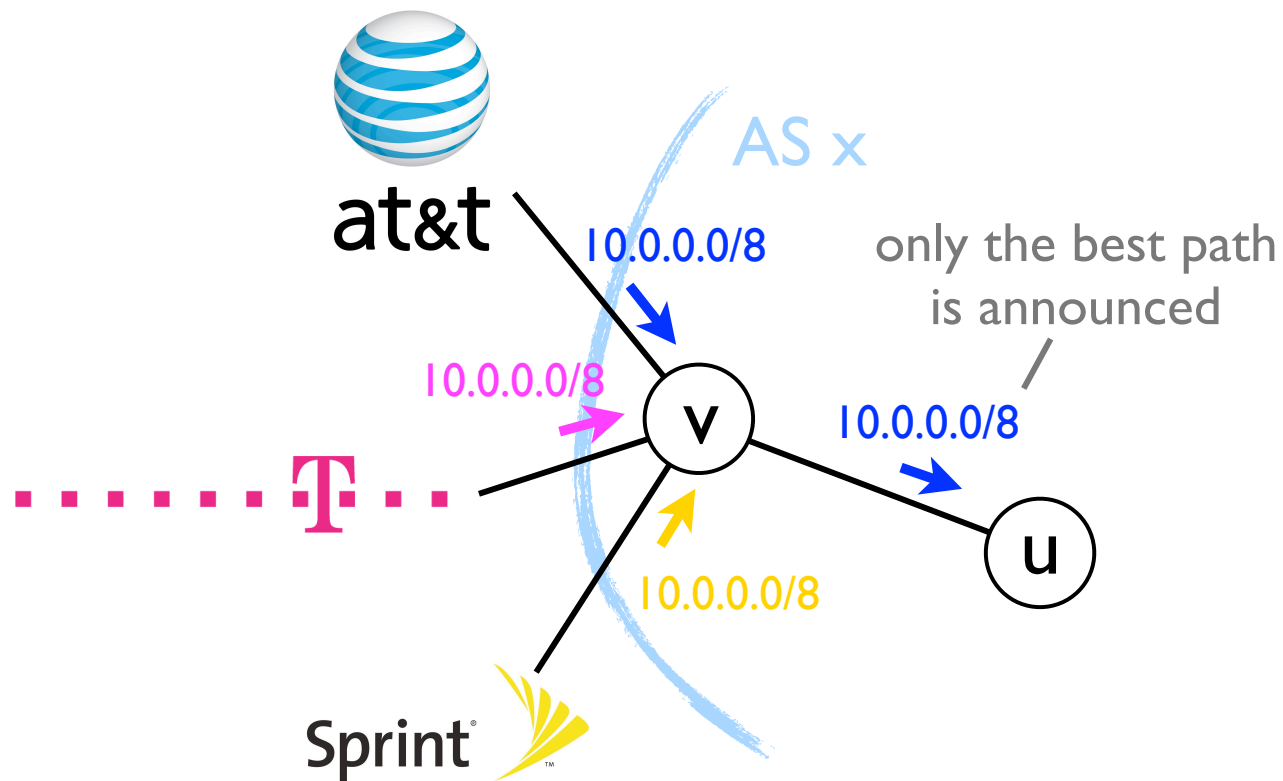
Scalability of iBGP Path Diversity Concepts

Introduction - iBGP Path Diversity iBGP Path Diversity Schemes Scalability Prediction

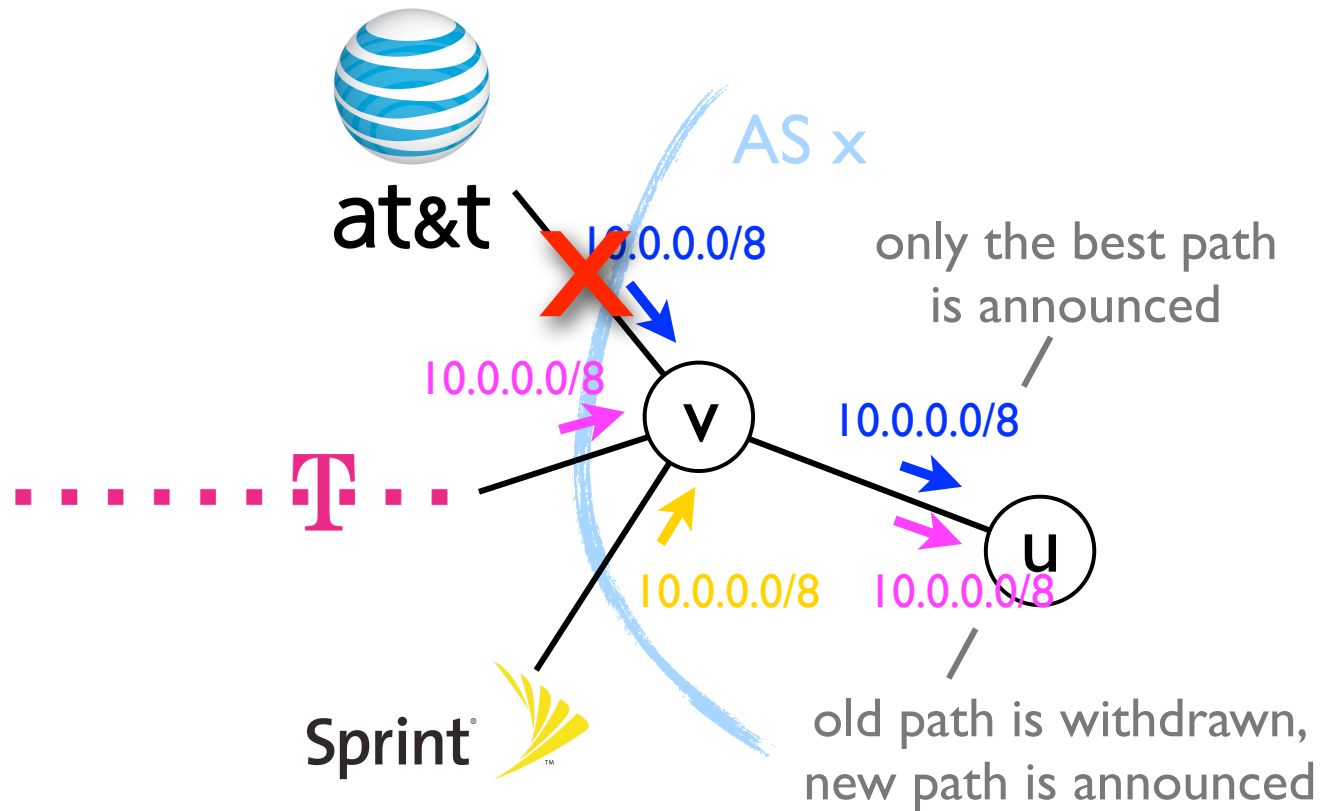
Structure of the talk

Introduction - iBGP Path Diversity

Scalability of iBGP Path Diversity Concepts



Classical iBGP



convergence problems churn correctness problems no load sharing

Classical iBGP

iBGP Path Diversity Schemes

Scalability of iBGP Path Diversity Concepts

<p>AS-wide best paths</p> <p>path with best local preference</p>	<p>n best paths</p>	<p>all known paths</p> <p>optimal path and local group bests</p> <p>AS-wide best paths and best next paths</p> <p>paths that remain after n steps</p>	<p>n best paths for each peer-AS groups</p>
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iBGP path diversity schemes

AS-wide best paths
 path with best local preference

n best paths

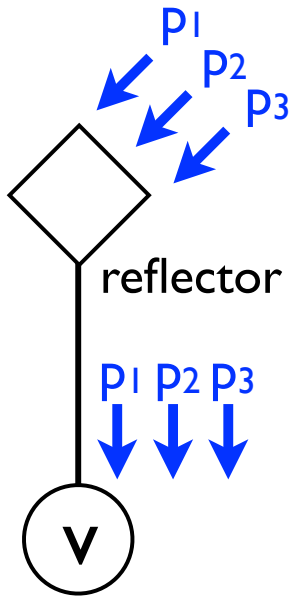
all known paths
 optimal path and local group bests

AS-wide best paths and best next paths

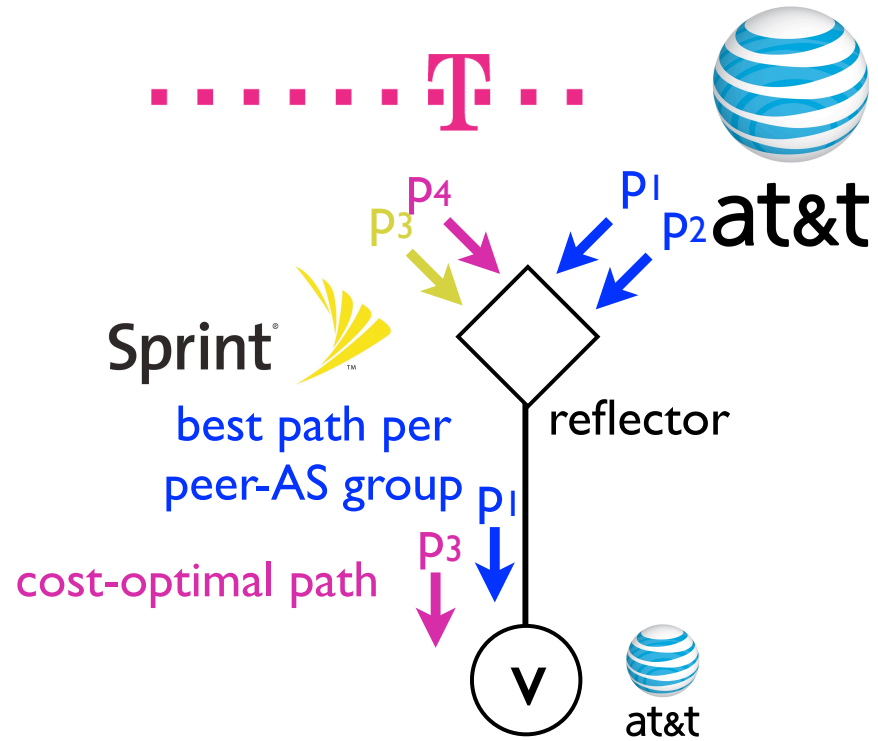
n best paths for each peer-AS groups

paths that remain after n steps

Schemes covered by our analysis



all known paths

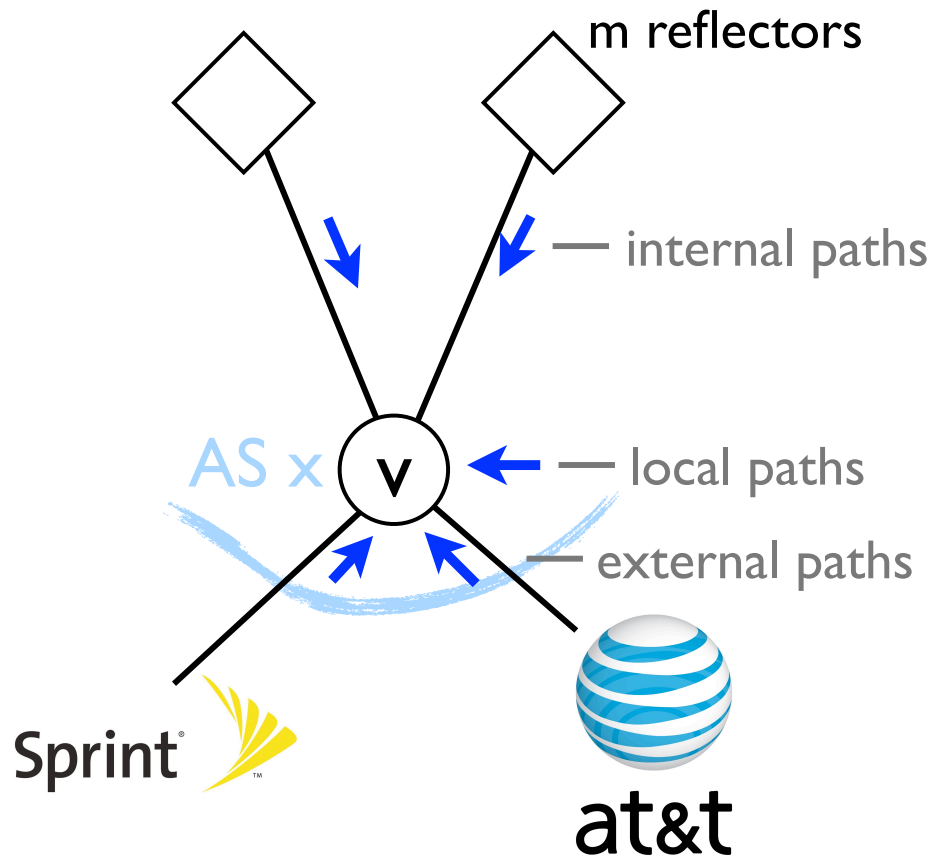


cost-optimal path and best path for local peer-AS group

Schemes discussed today

Scalability Prediction

Scalability of iBGP Path Diversity Concepts



Find the formal details in the paper!

How many paths has a router v to manage?

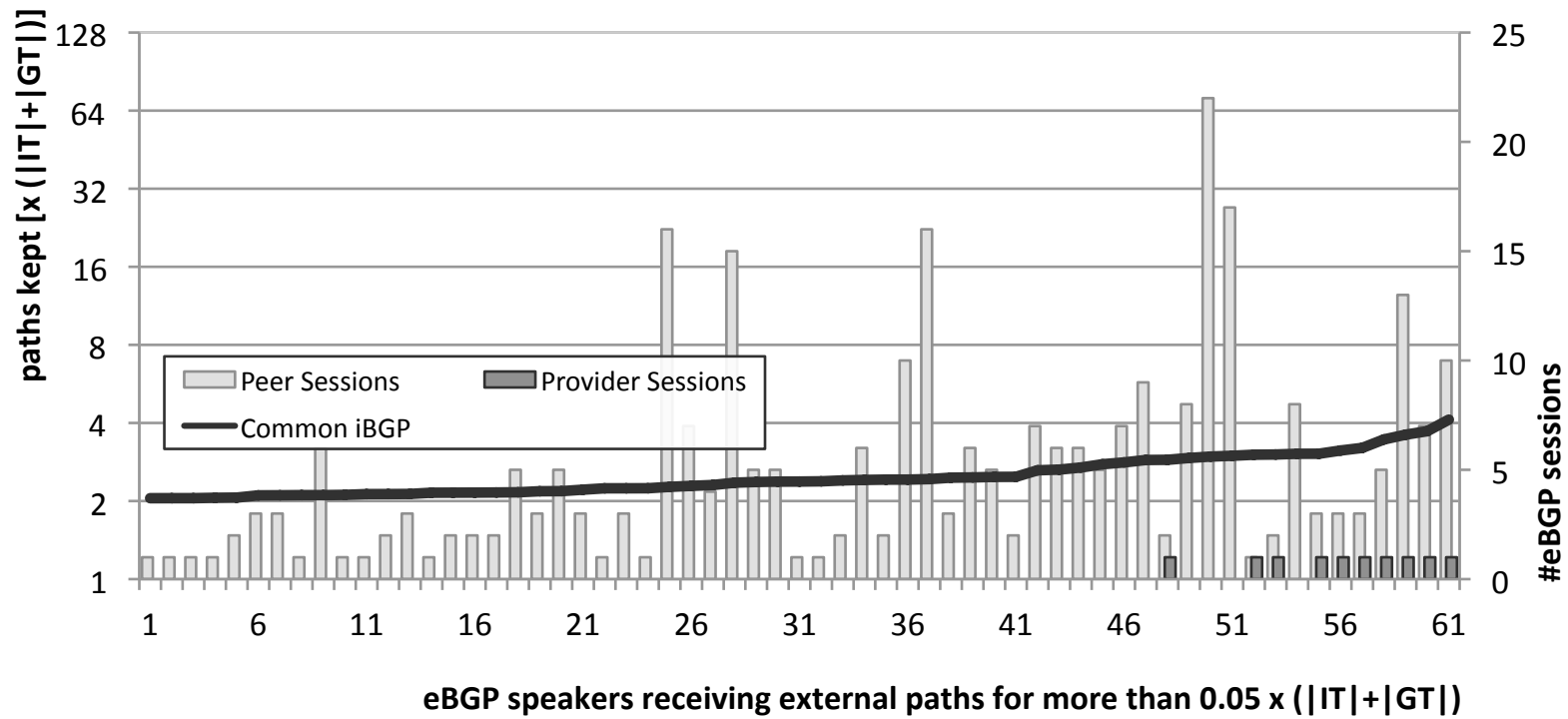
AS3320 - Structure

- Backbone of a large ISP (in Germany)
- 642 exclusive iBGP speakers (08/2009)
- 238 eBGP speakers (08/2009)
- m=2 reflector sessions at most clients

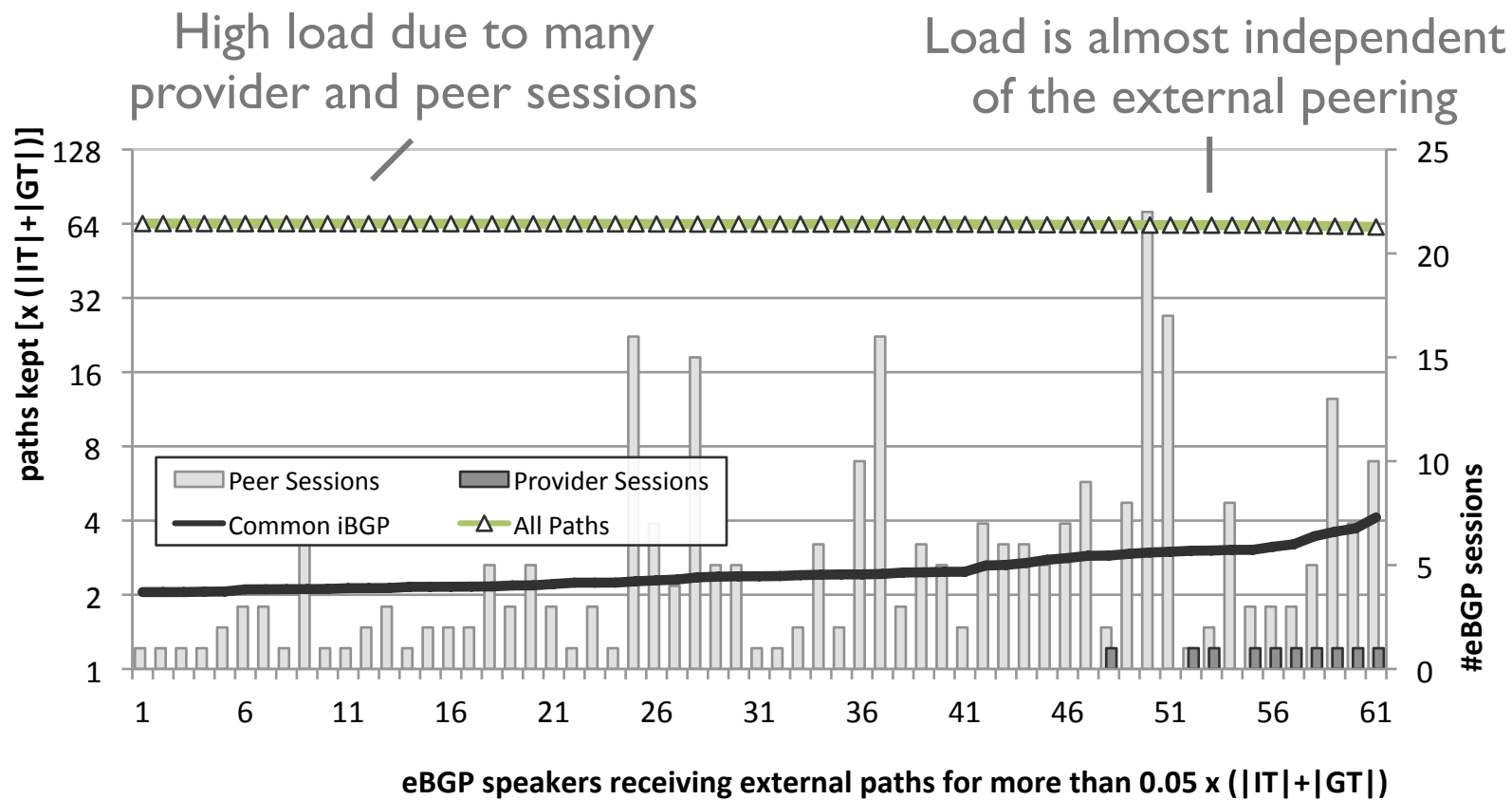
Peering and Paths

- One provider AS (08/2009)
- Several big peer ASs (08/2009)
- Peering with around 600 neighboring ASs (08/2009)
- Global routing table: ~300,000 prefixes
- Internal routing table: ~60,000 prefixes

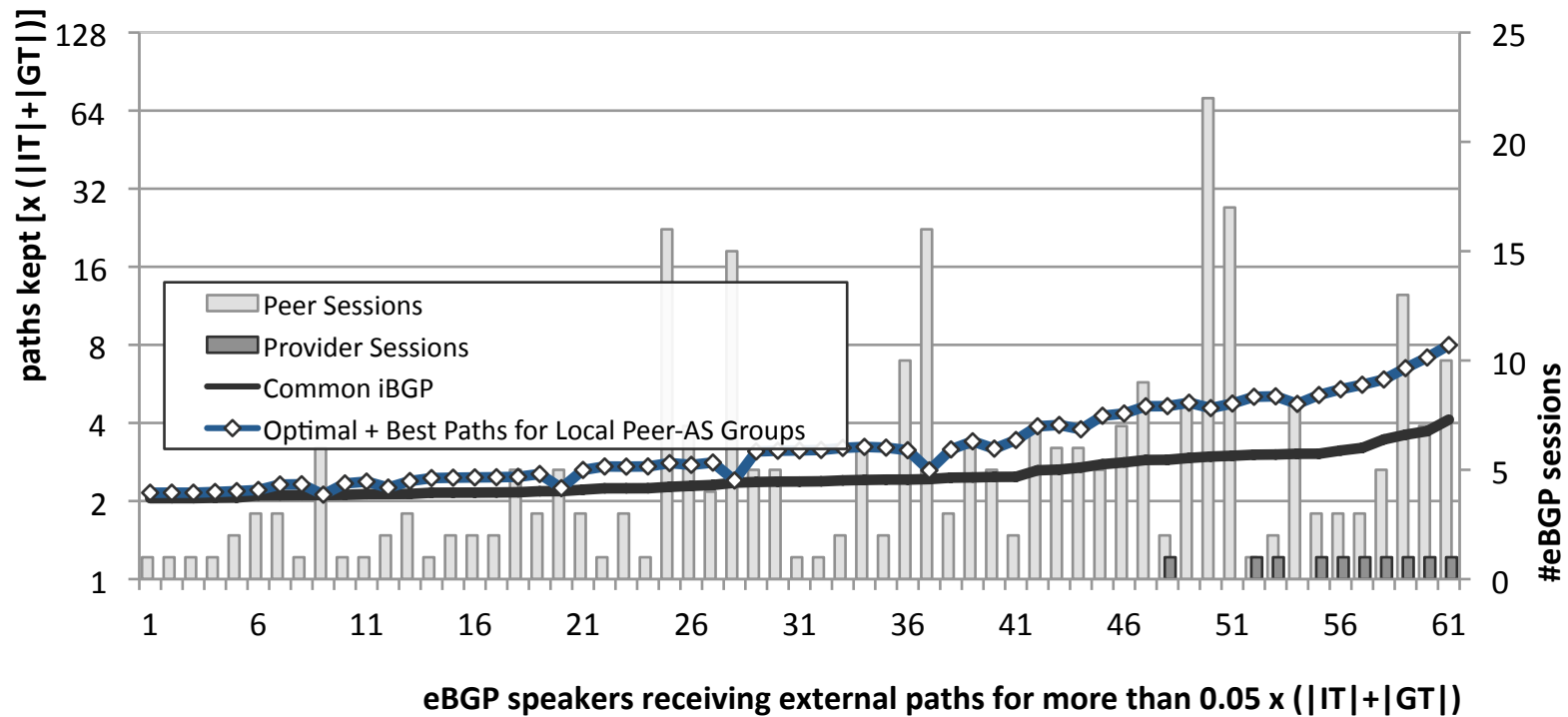
The reference system - AS3320



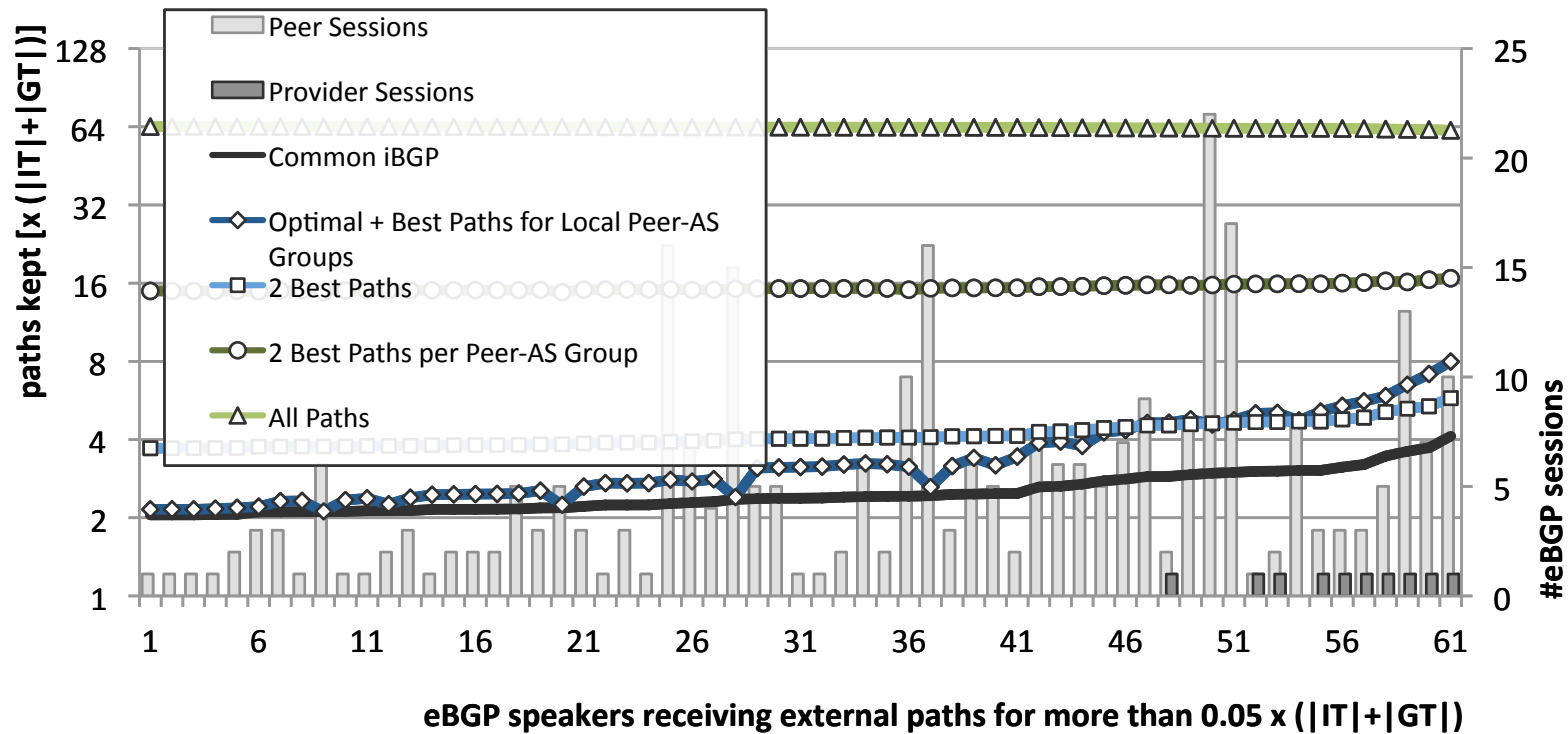
Common iBGP



Announcement of all paths



Announcement of optimal + best paths for local peer-ASs



Comparison of all schemes

Conclusion

Scalability of iBGP Path Diversity Concepts



Path Diversity is an important aspect for the future of iBGP.

Scalability predictions can be performed efficiently.

Especially simple schemes may cause a significant load growth.

Models and analyses of other schemes seem reasonable.

Takeaways and future work



<http://cs.bonn.edu/IV/ub/>

Questions?