

# Classifying the Internet Backbone Traffic

Hyunchul Kim

[hkim@caida.org](mailto:hkim@caida.org)

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# Traffic Classification

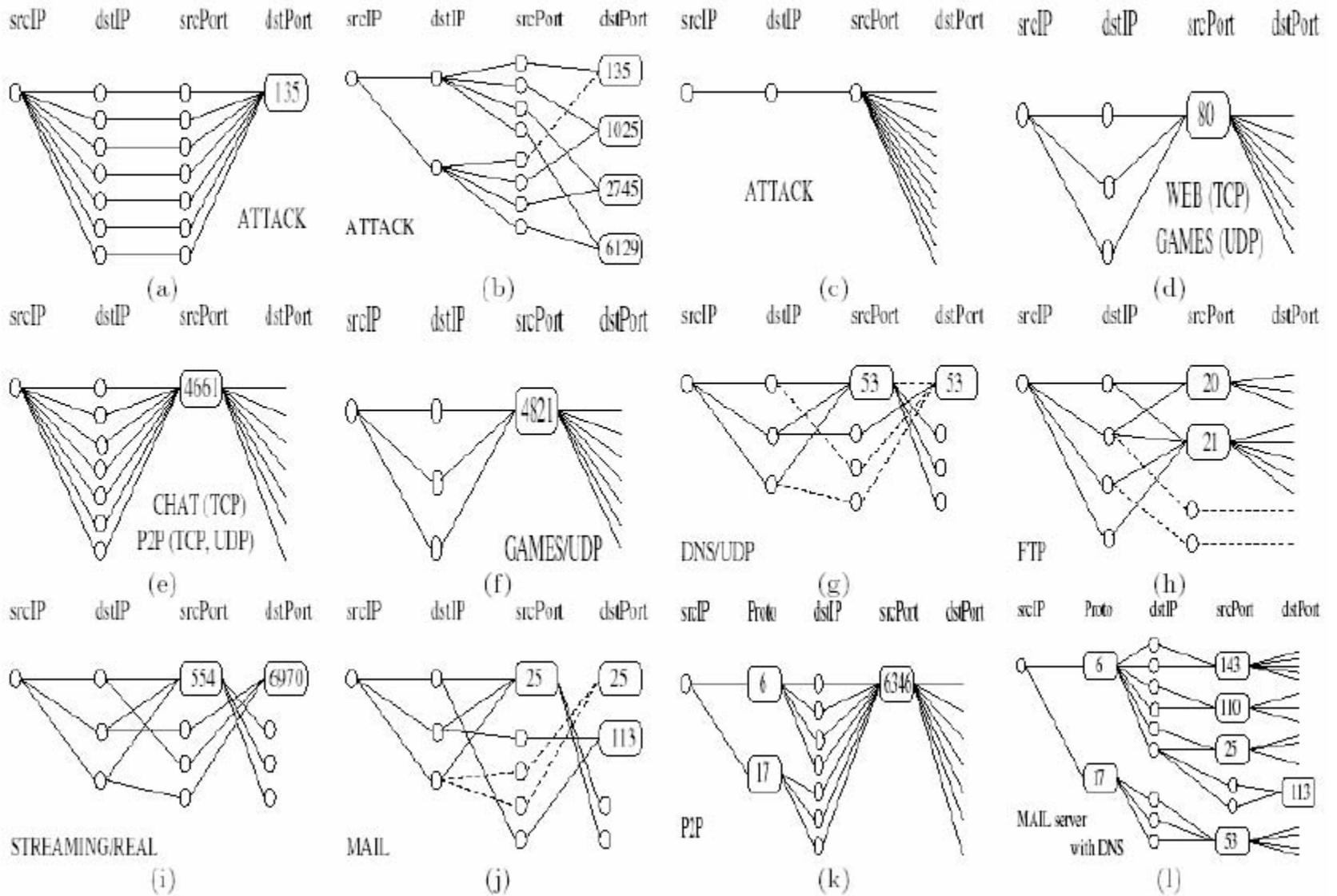
- An important task for [Karagiannis 05]  
monitoring trends of the applications in  
operational networks  
effective network planning and design
- Port number based  
Misleading  
79.3% of total traffic are classified as “Others”  
[Cho 06]
- Payload based  
Practically infeasible

# BLINC (BLINd Classification)

[Karagiannis 05]

- Based on the patterns of behavior of hosts
  - No examination of port numbers
  - No examination of user payload
  - Operates on flow records
- Identify “signature” communication patterns
- Highly accurate classification
  - >90% accuracy

# BLINC : Graphlet Library [Karagiannis 05]



# Backbone datasets

- Abilene IPLS–KSCY link  
2002 (OC48), 2004(OC192), 2006(OC192)
- Verio PAIX link from San Jose to Seattle  
2003&2004&2005(OC48), 2006(OC192)
- CENIC link between Sunnyvale and LA  
2005(OC192)

RED : We have the traces at CAIDA

BLUE : Anytime downloadable at <http://pma.nlanr.net/Special>

Black : Will capture new traces soon

# Expected Contributions

- Comparison of the classification results
  - Any changes for the last few years?
  - Research network and Commercial network
  - Port number based and BLINC (Abilene)
- Evaluate BLINC on backbone traces
  - Correctness?
    - Payload required
  - Improvements?
    - flow-size-aware BLINC?

# More Data from Other Countries

- Compare the classification results
  - Similarity&ifferences depending on the country?
  - Trends of P2P & Game traffic across the globe?
- Community building for Day-in-the-Life...
  - Contacting Broadband ISPs and Research Networks in Korea and China

# Issues in the community building

- REAL BENEFITS/GAINS to ISPs?
  - Resource sharing/exchange
  - Traffic analysis reports
  - Make government pay for equipments, ...
  - What else? Need to know what they want/need.
- Cooperation model
  - Data sharing  $\leftrightarrow$  results-only sharing

“知彼知己 百戰百勝”

*“If you know yourself as well as your enemy,  
you will come out of one hundred battles  
with one hundred victories.”*

in 孫子兵法 (The Art of War)  
by 孫子(Sun Tzu)

# Coming Soon

- “Day in the Life of the Internet” on <http://www.caida.org/projects/ditl>

# References

- [CAIDA 06] Day in the Life of the Internet.  
*<http://www.caida.org/projects/ditl>*
- [Cho 06] K. Cho, K. Fukuda, H. Esaki, and A. Kato. The Impact and Implications of the Growth in Residential User-to-User Traffic. Submitted to *ACM SIGCOMM*, 2006.
- [Fomenkov 04] M. Fomenkov, K. Keys, D. Moore, and K. Claffy. Longitudinal study of Internet traffic in 1998–2003. In *WISICT*, 2004.
- [Karagiannis 05] T. Karagiannis, D. Papagiannaki, and M. Faloutsos. BLINC: Multilevel Traffic Classification in the Dark. In *ACM SIGCOMM*, 2005.
- [Odlyzko 03] A. Odlyzko. In *Optical Transmission Systems and Equipment for WDM Networking II, Proc. Of SPIE*, vol. 5247, 2003.