Putting DNS in Context

Mark Allman
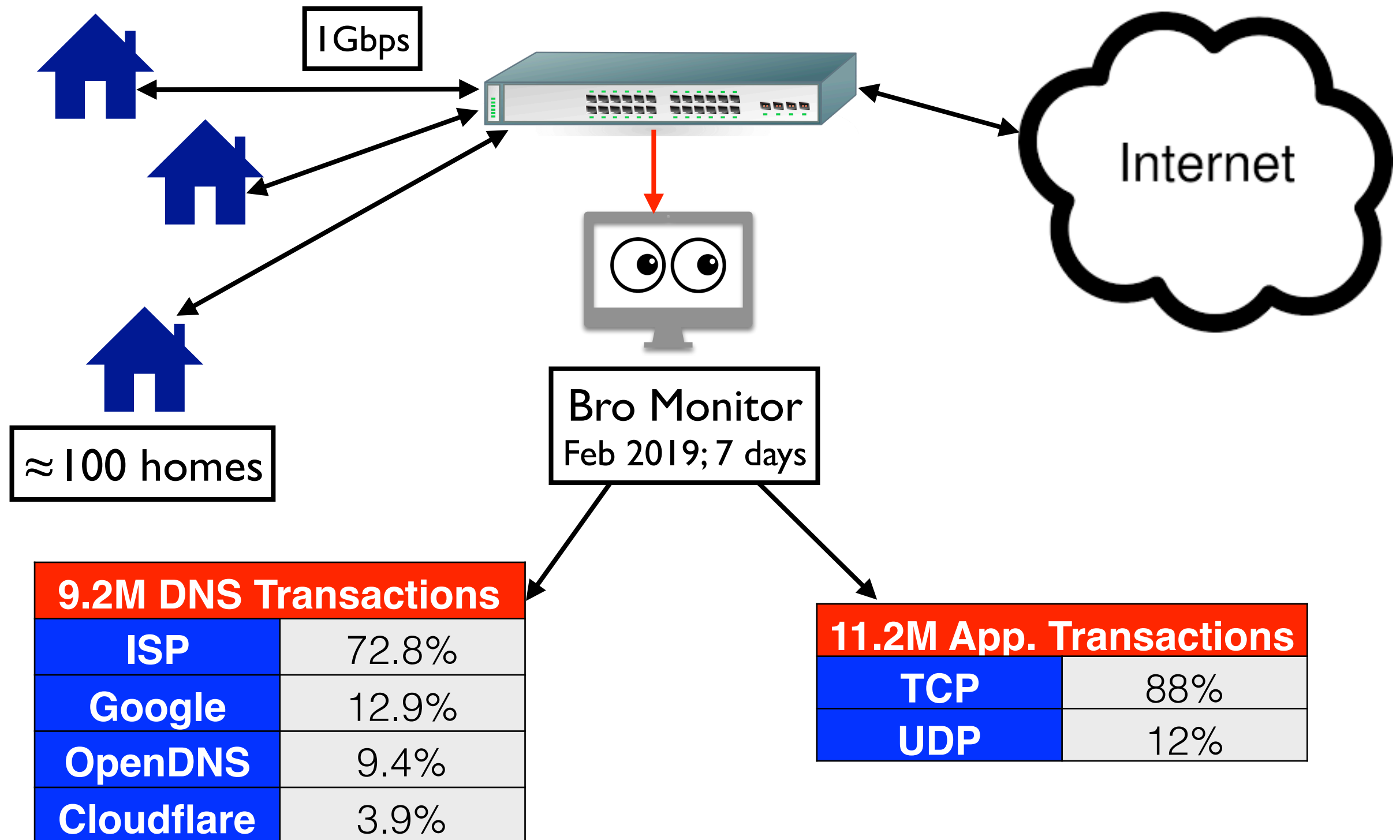*International Computer Science Institute*

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"I was drivin' through the misty rain
Searchin' for a mystery train
Boppin' through the wild blue
Tryin' to make a connection with you"

Dataset From Case Connection Zone

1 Gbps

Internet

≈ 100 homes

Bro Monitor
Feb 2019; 7 days

9.2M DNS Transactions	
ISP	72.8%
Google	12.9%
OpenDNS	9.4%
Cloudflare	3.9%

11.2M App. Transactions	
TCP	88%
UDP	12%

DNS Record Origin

	% Connections
No DNS	7.2
Local Cache	42.9
Prefetched	7.8
Shared Resolver Cache	26.3
Auth Resolution Required	15.7

57.9% of conns. have *no direct DNS costs*

42.1% of conns. don't have needed DNS information on hand

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DNS Cost

- We say application connections requiring a DNS lookup experience *"significant DNS cost"* when *both* the following criteria are met:

    - DNS lookup duration > 20msec

    - DNS percentage contribution > 1%

DNS Cost

		DNS Duration	
		<= 20msec	> 20msec
DNS Percent	**<= 1%**	64.0	15.9
	> 1%	11.5	8.6

64% of transactions show an *insignificant* DNS cost using *both* criteria

27% of transactions show an *insignificant* DNS cost using *one* criteria

<9% of transactions show an *significant* DNS cost using *both* criteria

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Two Key Takeaways

- The majority of application transactions pay *no direct DNS cost*

- For the remainder, *the DNS cost is largely insignificant*

Questions? Comments?

Mark Allman, *mallman@icir.org*
https://www.icir.org/mallman/
@mallman_icsi