China Cracks Down on Tor Anonymity Network

A leading anonymity technology is targeted by the Chinese government for the first time.

By David Talbot

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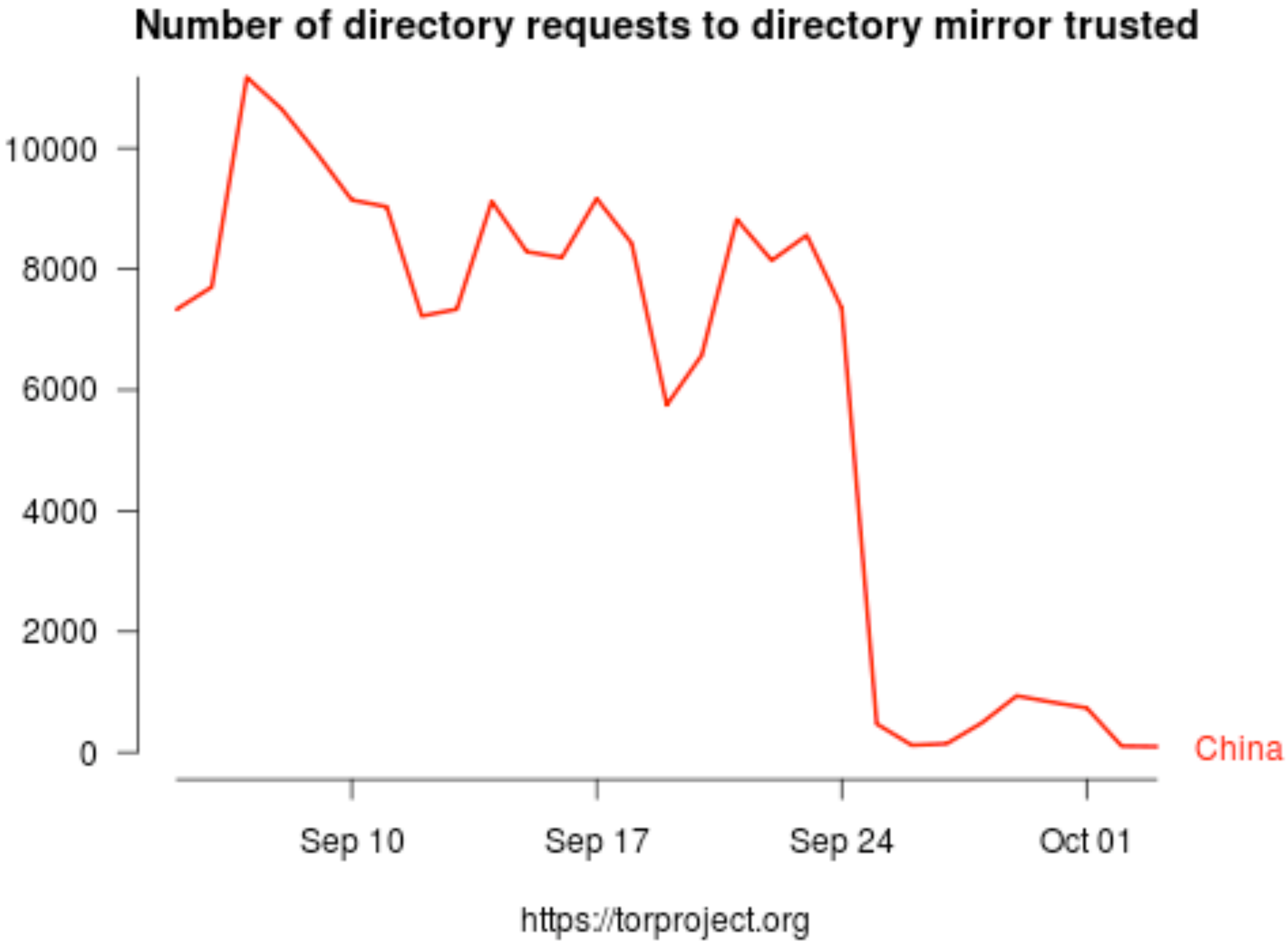
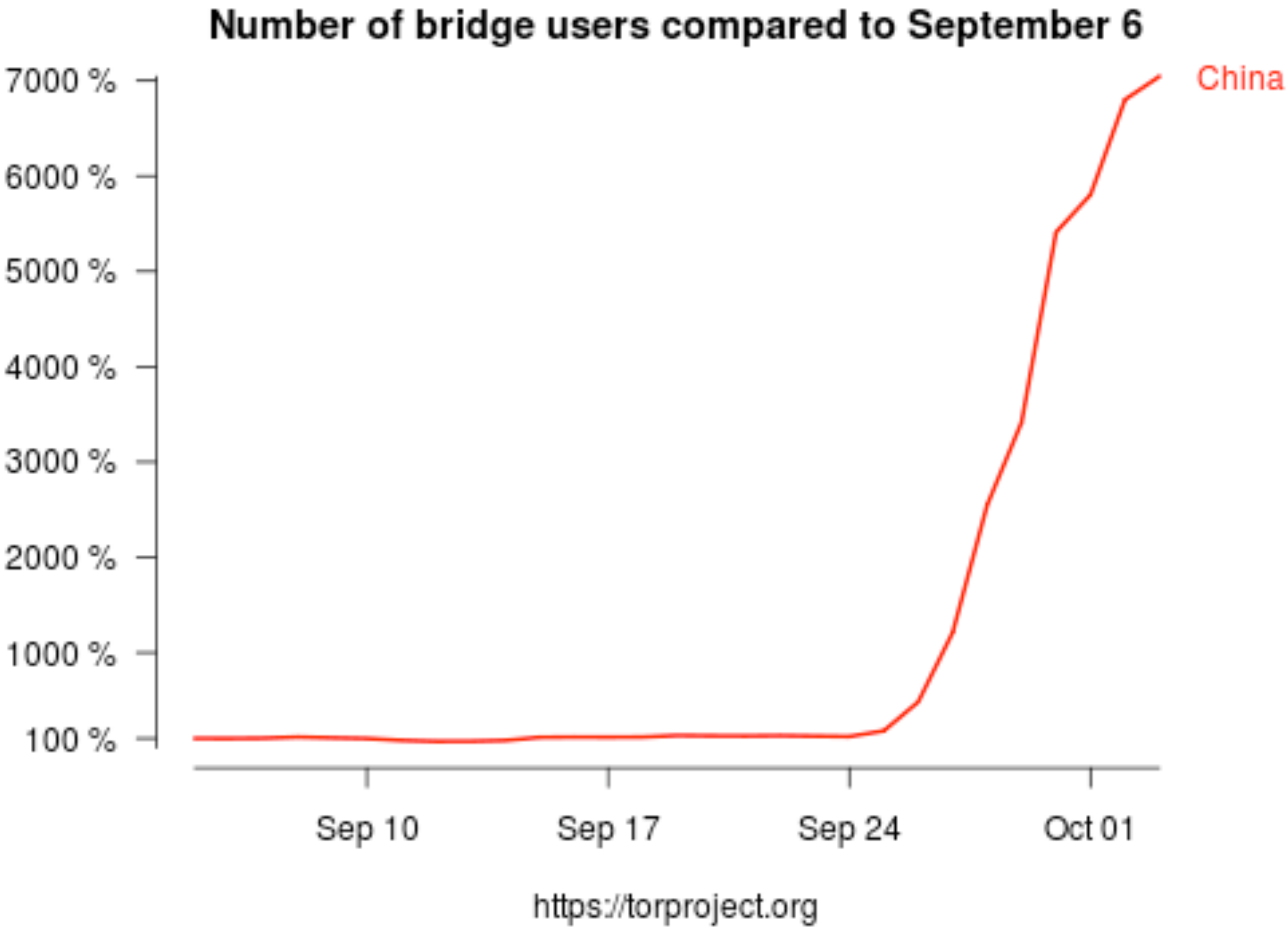
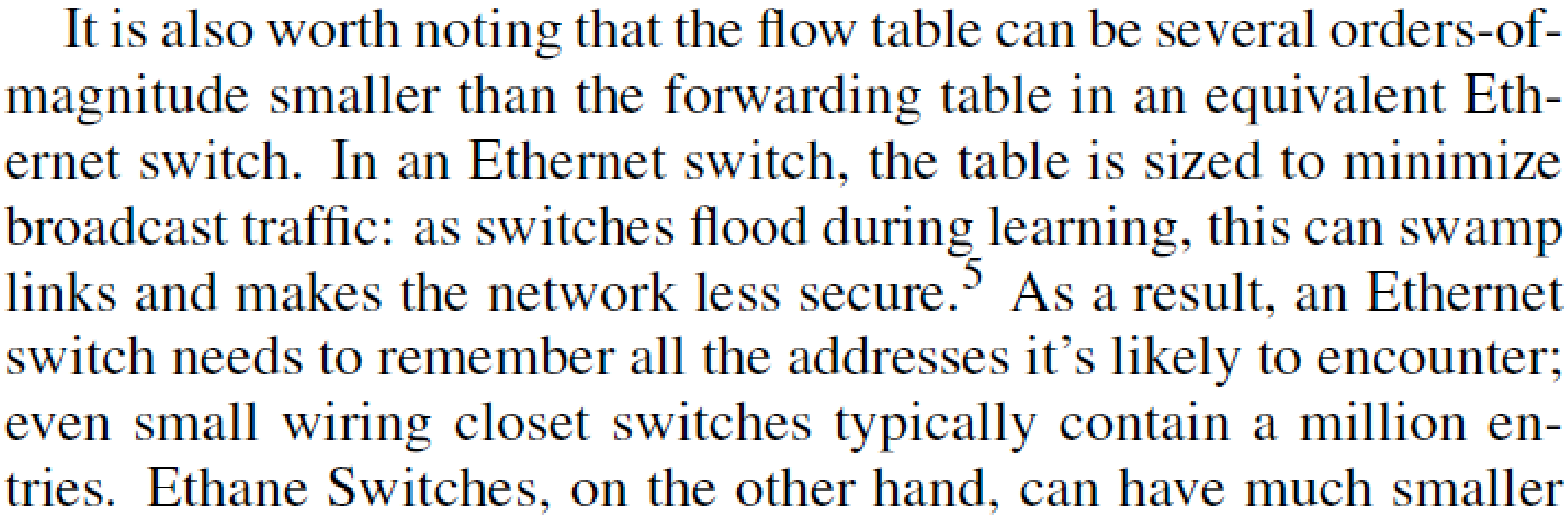
For the first time, the Chinese government has attacked one of the best, most secure tools for surfing the Internet anonymously. The clampdown against the tool, called Tor, came in the days leading up to the 60th anniversary of China's "national day" on October 1. It is part of a growing trend in which repressive nations orchestrate massive clampdowns during politically sensitive periods, in addition to trying to maintain Internet firewalls year-round.

"It was the first time the Chinese government has ever even included Tor in any sort of censorship circumvention effort," says Andrew Lewman, the executive director of Tor Project, the nonprofit that maintains the Tor software and network. "They were so worried about October 1, they went to anything that could possibly circumvent their firewall and blocked it."

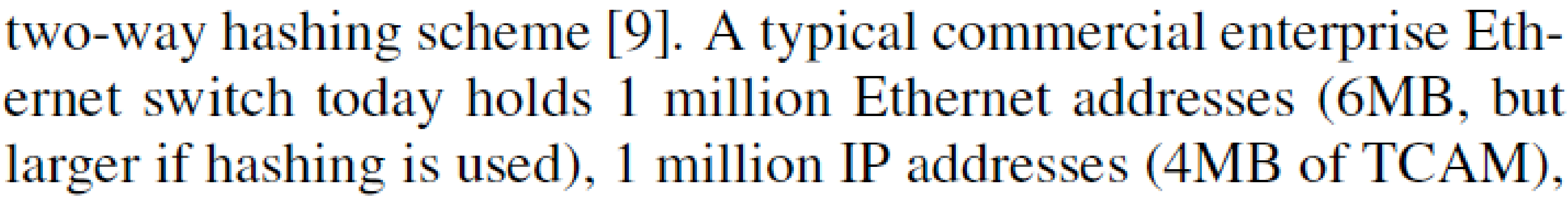
Tor is one of several systems that route data through intermediate computers called proxies, thereby circumventing government filters. To anyone watching


Number of directory requests to directory mirror trusted
10000
8000
6000
4000
2000
0
Sep 10
Sep 17
Sep 24
Oct 01
China
https://torproject.org


Number of bridge users compared to September 6
7000 %
6000 %
5000 %
4000 %
3000 %
2000 %
1000 %
100 %
China
Sep 10
Sep 17
Sep 24
Oct 01
https://torproject.org



It is also worth noting that the flow table can be several orders-of-magnitude smaller than the forwarding table in an equivalent Ethernet switch. In an Ethernet switch, the table is sized to minimize broadcast traffic: as switches flood during learning, this can swamp links and makes the network less secure.[5] As a result, an Ethernet switch needs to remember all the addresses it's likely to encounter; even small wiring closet switches typically contain a million entries. Ethane Switches, on the other hand, can have much smaller



two-way hashing scheme [9]. A typical commercial enterprise Ethernet switch today holds 1 million Ethernet addresses (6MB, but larger if hashing is used), 1 million IP addresses (4MB of TCAM),

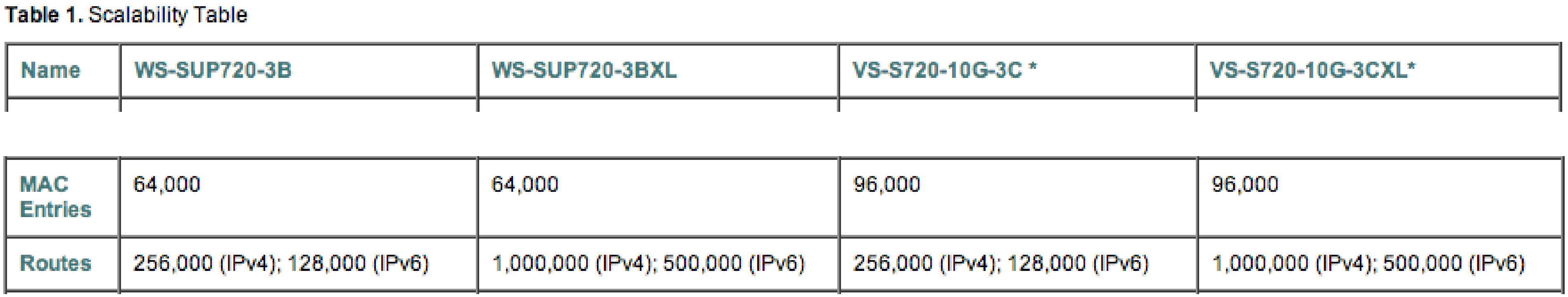


Table 1. Scalability Table

Name	WS-SUP720-3B	WS-SUP720-3BXL	VS-S720-10G-3C *	VS-S720-10G-3CXL*
MAC Entries	64,000	64,000	96,000	96,000
Routes	256,000 (IPv4); 128,000 (IPv6)	1,000,000 (IPv4); 500,000 (IPv6)	256,000 (IPv4); 128,000 (IPv6)	1,000,000 (IPv4); 500,000 (IPv6)

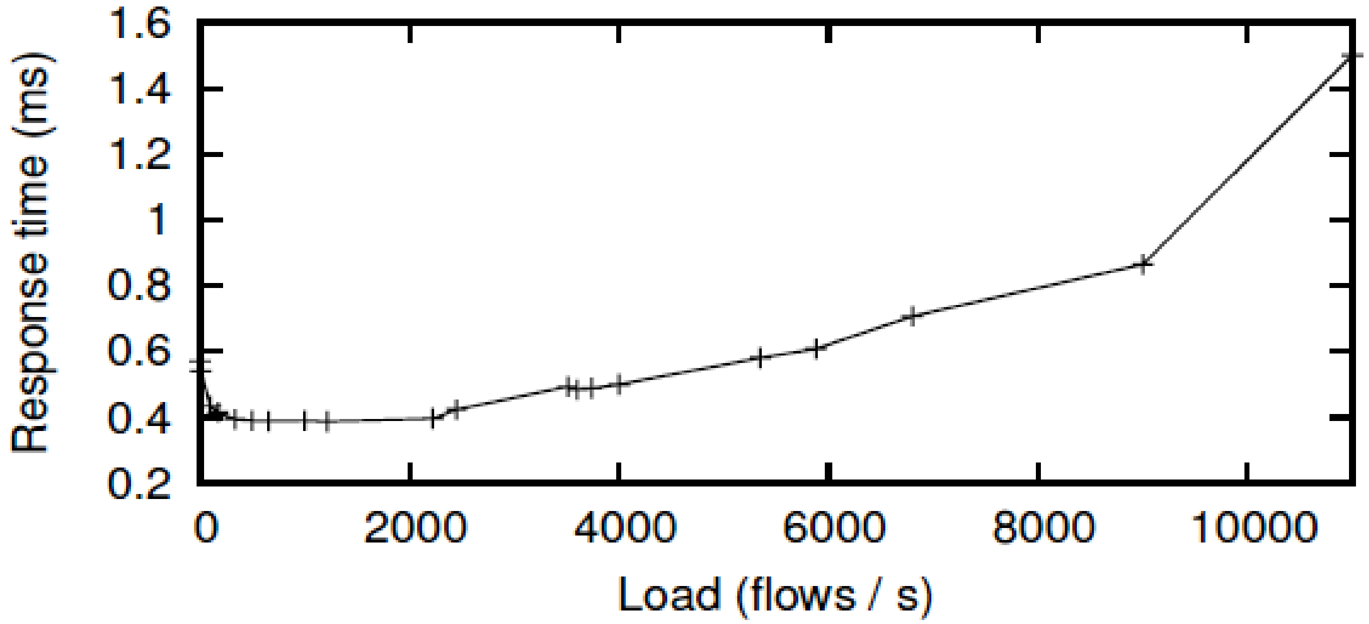


Figure 6: Flow-setup times as a function of Controller load. Packet sizes were 64B, 128B and 256B, evenly distributed.

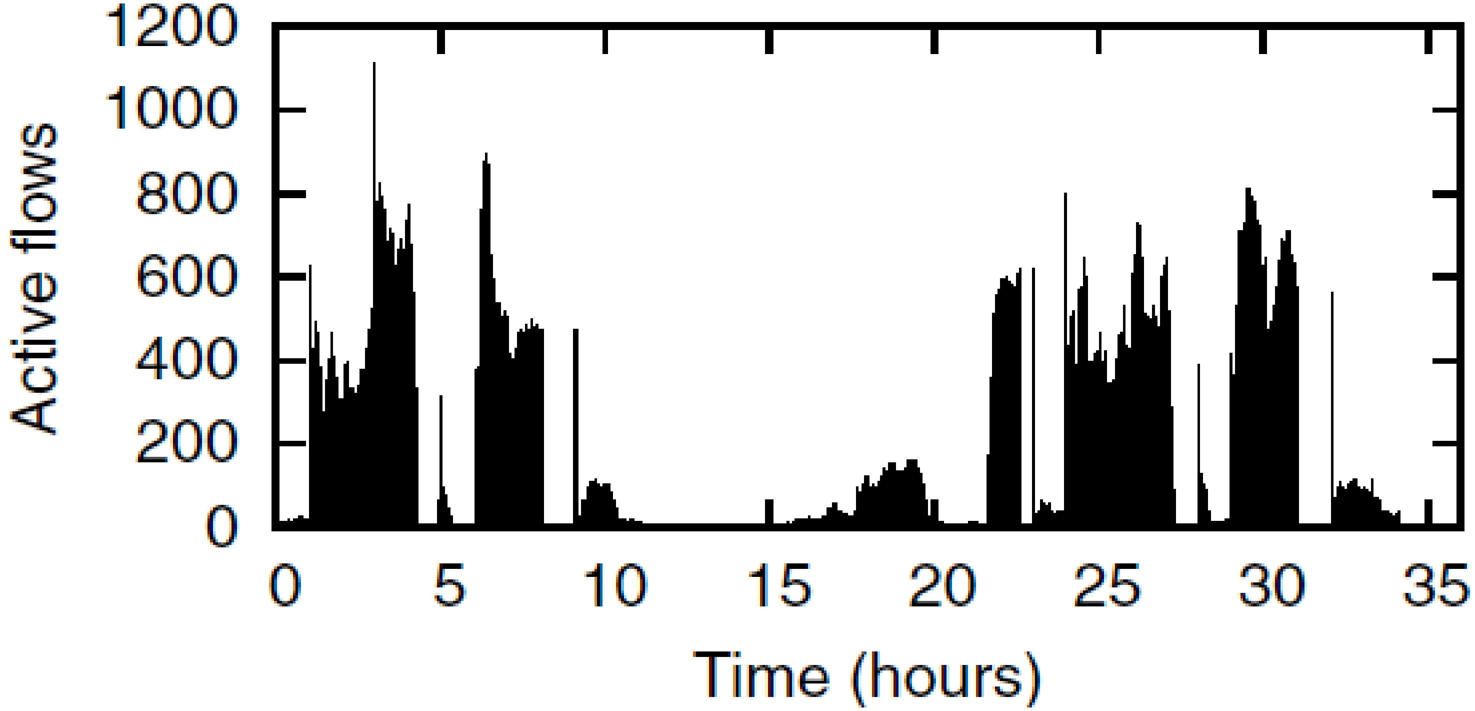


Figure 7: Active flows for LBL network [19].

heads. The Controller was configured with a policy file of 50 rules and 100 registered principles; routes were precalculated and cached. Under these conditions, the system could handle 650,845 bind events per second and 16,972,600 permission checks per second. The