tial communication to cellular wireless devices is largely to blame for high latency measures. Similar spikes that may be consistent with handoff also dissipate over time, to more conventional latencies that support application traffic. With this data, researchers should be able to reason about what to expect in terms of false outage detection for a given timeout and how to design probing methods to account for these behaviors.

Our initial hypothesis was that it would be a simple matter to confirm that widely used timeout values would be adequate for studying outages, or failing that, that one or two additional seconds would be enough. However, as memory capacity and performance becomes less of a limiting factor, we believe that the lesson of this work is to design network measurement software to approach outage detection using a method comparable to that of TCP: send another probe after 3 seconds, but continue listening for a response to earlier probes, at least for a duration based, at least in part, on the error rates implied by Table 2. We plan to use 60 seconds when we need a timeout, and avoid timeouts otherwise.

Acknowledgments

We would like to express our sincere appreciation to the authors of the ISI Internet survey for both publishing their data and designing their data collection method to collect the unmatched responses that enabled this analysis.

We also would like to thank Zakir Durumeric for incorporating our changes into https://github.com/zmap/zmap/blob/master/src/probe_modules/module_icmp_echo_time.c in order to support explicit matching of responses and calculating round trip times in the stateless Zmap.

This research was supported in part by ONR grant N00173-13-1-G001.

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