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TCP-HICCUPS

Monterey, CA; Naval Postgraduate School

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cmand.org : TCP-HICCUPS

TCP-HICCUPS

What:

TCP-HICCUPS (Handshake-based Integrity Check of Critical Underlying Protocol Semantics) is a lightweight extension to TCP that can help it infer when it is being misinterpreted due to packet header modifications made by middleboxes. HICCUPS applies a *tamper-evident* seal to the TCP 3-way handshake that is incrementally deployable and cooperative with today's middleboxes. HICCUPS is currently under development; please [contact us](#) for details or more information.

Why:

The modern Internet contains a variety of **middleboxes** that operate on network traffic in ways other than traditional IP routing. Middleboxes are used for a number of reasons: enhance performance, enforce policies, and add new network features. Examples range from a large corporate firewall to the wireless router you have at home.

Unfortunately, middleboxes are often hard to setup and configure. Misconfigurations and out-of-

date or non-standard behaviors occur regularly and in some cases can severely degrade TCP performance. The causes are often subtle and can be a challenge to diagnose. Even more troubling is the impact middleboxes have on protocol innovation: any new option, repurposed field, or otherwise unrecognized behavior is often misunderstood and blocked, hindering the deployment of new protocols and extensions.

Who:

- Ryan Craven (NPS / SPAWAR)
- Robert Beverly (NPS)
- Mark Allman (ICSI)

Output:

- **A Middlebox-Cooperative TCP for a non End-to-End Internet**
Ryan Craven, Robert Beverly, and Mark Allman
Proceedings of ACM [SIGCOMM 2014](#) Conference, August 2014 (to appear).
- **[Techniques for the detection of faulty packet header modifications](#)**
Ryan Craven, Robert Beverly, and Mark Allman
NPS Technical Report CS-14-002, March, 2014.
- Implementation of TCP-HICCUPS (to be made available soon):
 - Patch for Linux kernel v3.9.4
 - Test client for use on a TCP-HICCUPS kernel
 - Platform-independent raw sockets client for use on non-HICCUPS kernels

Funding:

- [NSF CNS-1213155](#)
- [SPAWARSYSCEN Atlantic 2013-TIKI-030](#)

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Last Modified: Thu, 22 May 2014 19:16:57 -0700

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