

# IAB Workshop on Stack Evolution in a Middlebox Internet (SEMI)

## 26-27 January 2015 - ETH Zürich, Switzerland

The Internet's transport layer has ossified, squeezed between narrow interfaces (from BSD sockets to pseudo-transport over HTTPS) and increasing in-network modification of traffic by middleboxes that make assumptions about the protocols running through them. This ossification makes it difficult to innovate in the transport layer, through the deployment of new protocols or the extension of existing ones. At the same time, emerging applications require functionality that existing protocols can provide only inefficiently, if at all.

To begin to address this problem, the Internet Architecture Board (IAB), within the scope of its IP Stack Evolution Program, is organizing a workshop to discuss approaches to de-ossifying transport, especially with respect to interactions with middleboxes and new methods for implementing transport protocols. Recognizing that the end-to-end principle has long been compromised, we start with the fundamental question of matching paths through the Internet with certain characteristics to application and transport requirements. Which paths through the Internet are actually available to applications? Which transports can be used over these paths? How can applications cooperate with network elements to improve path establishment and discovery? Can common transport functionality and standardization help application developers to implement and deploy such approaches in today's Internet? Could cooperative approaches give us a way to rebalance the Internet back toward its end-to-end roots?

### Topics

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For this workshop we would like to consider topics that speak to these questions, including the following:

- Development and deployment of transport-like features in application-layer protocols
- Methods for discovery of path characteristics and protocol availability along a path
- Methods for middlebox detection and characterization of middlebox behavior and functionality
- Methods for NAT and middlebox traversal in the establishment of end-to-end paths
- Mechanisms for cooperative path-endpoint signaling, and lessons learned from existing approaches
- Economic considerations and incentives for cooperation in middlebox deployment

We will explicitly focus on approaches that are **incrementally deployable** within the present Internet.

The outcome of the workshop will be architectural and engineering guidance on future work in the area, published as an IAB workshop report, based on discussion of proposed approaches; future work will be pursued within the IAB Stack Evolution Program. We will also explore possible areas for standardization, e.g. new protocols that separate signaling to and from on-path devices and common transport semantics from the rest of the transport protocol; and for general guidance, e.g. how transports as well as middleboxes can be designed and deployed to achieve these goals.

### Submission Instructions

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Attendance at the workshop is by invitation. Prospective participants are invited to submit short position papers outlining their views on one or more topics related to the scope of the workshop. Position papers will be referred and published on the IAB website at <http://www.iab.org/activities/workshops/semi/>.

**Submissions accepted at:**

**Submission Deadline:**

**Notification Deadline:**

**Workshop Dates:**

<https://easychair.org/conferences/?conf=semi2015>

31 October 2014

17 November 2014

26-27 January 2015



**ETH zürich**



Sponsored by the Internet Architecture Board, the Internet Society, and ETH Zürich. Mirja Kühlewind and Brian Trammell, General Chairs.