

**TCP Performance Enhancing Proxy Terminology**  
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Abstract

This document presents definitions for many terms to be used during the discussion of various TCP Performance Enhancing Proxies (PEP). A PEP, located between two end-systems, is used to, in some way, enhance a TCP connection. PEP's are commonly referred to as spoofing, connection splitting gateways, etc.

**1. Introduction**

This document presents definitions for many terms to be used during the discussion of various TCP Performance Enhancing Proxies (PEP). A PEP, located between two end-systems, is used to enhance a TCP connection. PEP's are commonly referred to as spoofing, a connection splitting gateway, etc. With commonly agreed definitions, it is expected that PEP designers will be able to discuss more clearly the advantages and disadvantages of their PEP methods.

This document is a strawman, based on conversations conducted on the tcppep mailing list. For information on subscribing to the tcppep mailing list reference: <http://tcppep.lerc.nasa.gov>

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## **2. Definitions for TCP Performance Enhancing Proxy Terms**

### **asymmetric link**

A link which has different rates for the forward channel (used for data segments) and the back, or return, channel (used for ACKs).

### **raw bandwidth**

The total capacity (bytes/sec) of an unloaded link available to carry information.

### **available bandwidth**

The total capacity (bytes/sec) of a link that is available at any given time. May be lower than raw bandwidth due to competing traffic.

### **bandwidth utilization**

The actual amount of information delivered over a link, in a given period, expressed as a percent of the raw bandwidth on that link.

### **gateway**

A device capable of initiating and terminating IP connections on behalf of a user. (eg. firewall, proxy, etc.) Not necessarily, but could be, the same as a "router".

### **opaque**

A modification that requires changes to be made to both end-systems.

### **protocol tunneling**

When a packet from an originating host is subsequently wrapped for transmission, and the wrapper later removed for final delivery to an end host.

### **proxies**

An entity in the network acting on behalf of a user (with or without the user's knowledge)

Type 1: Traditional web proxy, which contains content and requires a configuration change on the client end. (mirrors seem like a brute force/higher level implementation of this)

Type 2: Does not break the end-to-end TCP connection, but modifies things like ACK spacing to improve performance. This proxy is invisible to client and server.

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Type 3: Uses TCP splitting for communications between two end-systems, and is invisible to client and server.

#### router

A device for routing IP packets through an internetwork.

#### Snoop

A TCP-aware link layer developed for wireless packet radio or cellular networks. It works by caching segments at a wireless base station. If the base station sees dupacks for a segment that it has cached, it retransmits the missing segment while suppressing the dupack stream back to the sender until the wireless receiver starts to ack new data. [[BSK95](#)]

#### split-connection

A TCP connection that has been terminated, before reaching the destination end-system, in order to initiate a second connection towards the end-system. [[BB95](#)]

#### TCP splitting

Using one or more split-connections, for communications between two unaltered end-systems.

#### translucent

A modification that requires changes to be made at only one end-system.

#### transparent

No changes are necessary in either of the end-systems.

#### Acknowledgements

I would like to thank the people who contributed to the tcppep mailing list. Most of the definitions were extracted from discussions on this list.

#### References

- [BSK95] Hari Balakrishnan, Srinivasan Seshan, Randy H. Katz. Improving Reliable Transport and Handoff Performance in Cellular Wireless Networks. ACM Wireless Networks, 1(4), December 1995.

[BB95] A. Bakre and B. R. Badrinath. I-TCP: Indirect TCP for Mobile Hosts. In Proceedings of the 15th International Conference on Distributed Computing Systems (ICDCS), May 1995.

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