

A Vocabulary of Path Properties

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Terminology: Extend Path Definition

Entities may have **different visibility** of paths and treat paths at **different levels of abstraction**.

Paths can be:

- ▶ A sequence of physical nodes and links
- ▶ A sequence of logical nodes (e.g., ASes)
- ▶ Detailed down to physical layer technologies
- ▶ Expressed as just a combination of source and destination

Terminology: Reverse Path

Add the notion of a reverse path:

- ▶ A path used by a remote node in the context of bidirectional communication.

Rework of the Use Case Section

- ▶ “Path Selection”: Textual changes
- ▶ “Performance Monitoring and Enhancement”:
Removed
- ▶ “Traffic Configuration”: Split into
 - ▶ “Protocol Selection”: Entities select appropriate protocols or configure protocol parameters
 - ▶ “Service Invocation”: Entities invoke additional functions influencing on-path nodes (e.g., 0-RTT Transport Converter to enable MPTCP or TCPinc capabilities)

New Path Properties

- ▶ **“Transparency”**: A node is transparent with respect to a protocol if it does not modify headers of this protocol and it processes packets independently of protocol-specific meta-information (e.g., an IP router could be transparent to transport protocols, while a NAT actively modifies TCP and UDP headers).
- ▶ **“Symmetric Path”**: Two paths are symmetric if a path and its reverse path consist of the same path elements, but in reverse order.

Security-related Properties

We do not define specific security-related path properties, instead, we discuss security-related properties in the Security Considerations.

- ▶ Difficult to characterize (threat model?)
- ▶ Security-related properties are typically orthogonal to the path properties defined in this document.
 - ▶ Path properties describe what function the **network** applies to packets
 - ▶ Confidentiality and integrity describe what function the **communicating parties** apply to packets

Minor Modifications

- ▶ “Access Technology”: Emphasize focus on physical and link layer
- ▶ “Service Function”: Add note that service functions may require symmetric paths

Questions/Comments?

In particular, what do you think about:

- ▶ Transparency Property
- ▶ New Security Considerations content