The Impact of Transport Header Encryption on Operation and Evolution of the Internet

draft-fairhurst-tsvwg-transport-encrypt-04

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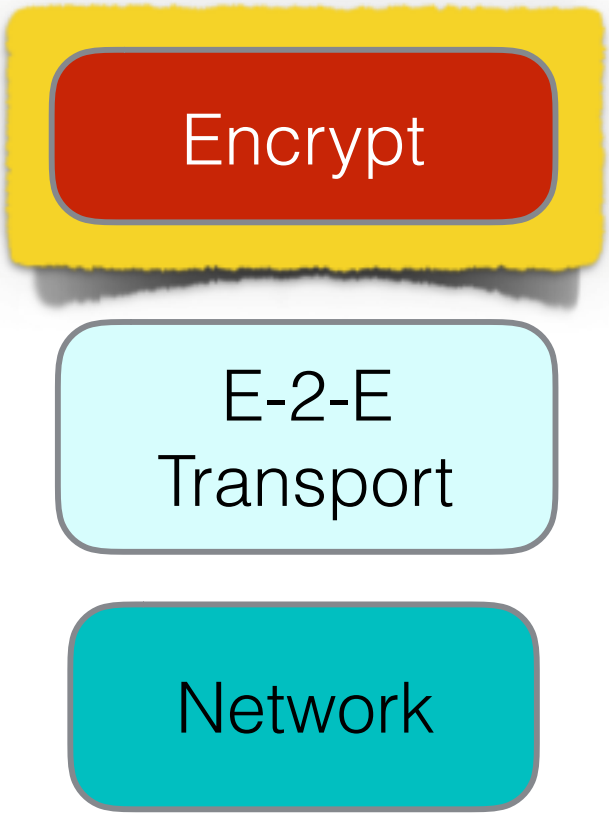
Transport

- Transports ***discover and adapt*** to the properties of the current Internet path:
  - adapting to changes in path characteristics
  - avoiding unwanted side effects of congestion, PMTU, etc
  - avoiding impact on other flows sharing a part of the path
  - avoiding congestion collapse

- Design of current methods have benefited from measurement and insights of the operations community to understand trade-offs

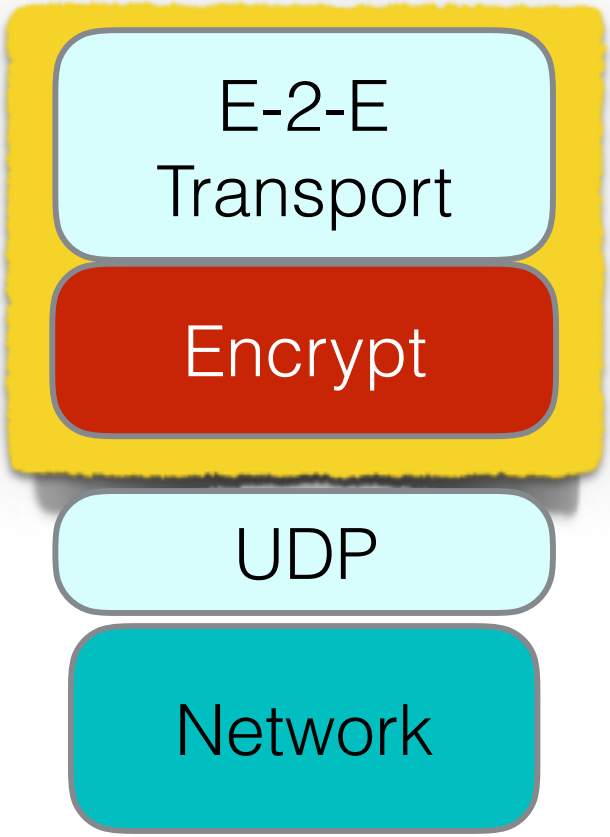
Encryption

Once most Internet packets looked like this:



RFC 793, 1981

Soon they could all look like this:



2017: Does this matter?

Transport Header Encryption

- Encryption is not new… IPSEC, VPNs, TOR, etc
- But, a growing trend for various reasons, e.g.:
  - Encryption can overcome ossification, allowing deployment of new transports with new mechanisms
  - Encryption ***helps*** protect privacy
  - Encryption transfers ***more control*** to “origin” servers

- So, what other impacts are there if ***more*** traffic is encrypted?

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- ***Protocol Interactions:*** for Diagnostics and troubleshooting
    - Could be as simple as helping locate customer performance issues, but if an operator does not see the packets, they are unlikely to help!

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  - To understand what is currently being used and with what effect?
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  - Encryption hides the actual used protocol mechanism
- Individual mechanisms need to be evaluated while considering other mechanisms, across a range of network topologies
  - Broadness of deployability is the key challenge
  - Often has been the focus of research/academic contributors (e.g., IRTF ICCRG, and research publications).

Next Steps

- How does the IETF provide incentives to ensure good practice that benefits the wide diversity of requirements for the Internet community as a whole?

- HELP!!!! We are looking for people to read and help understand the implications
  - Please read: draft-fairhurst-tsvwg-transport-encrypt

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