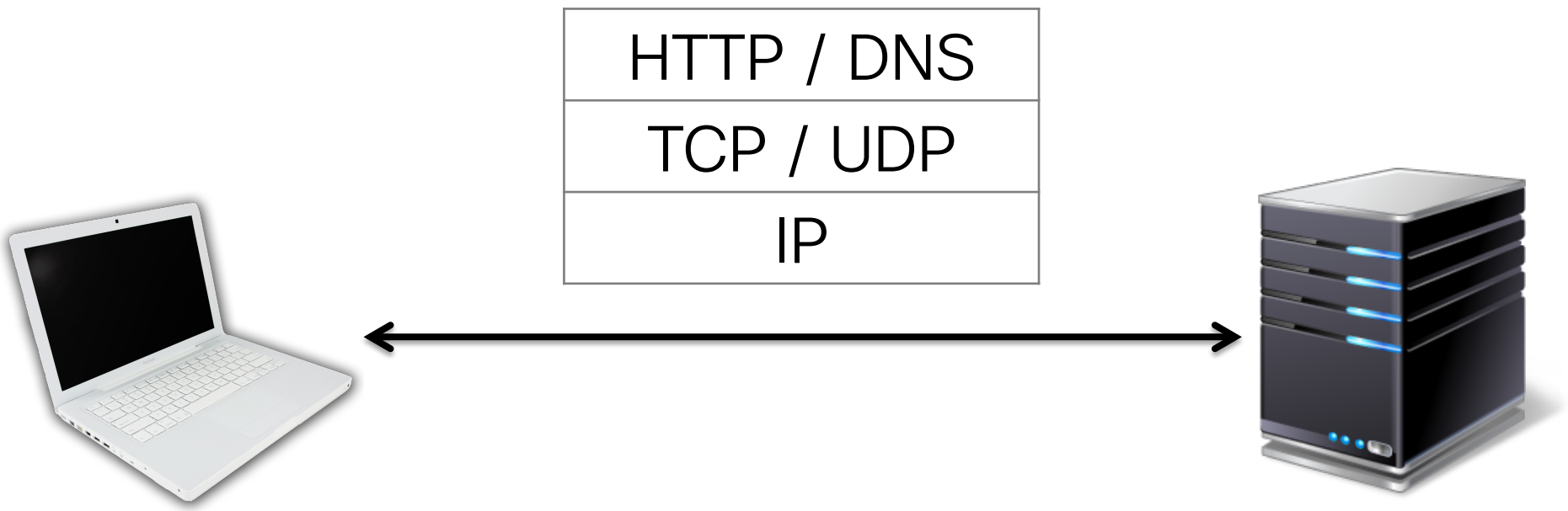
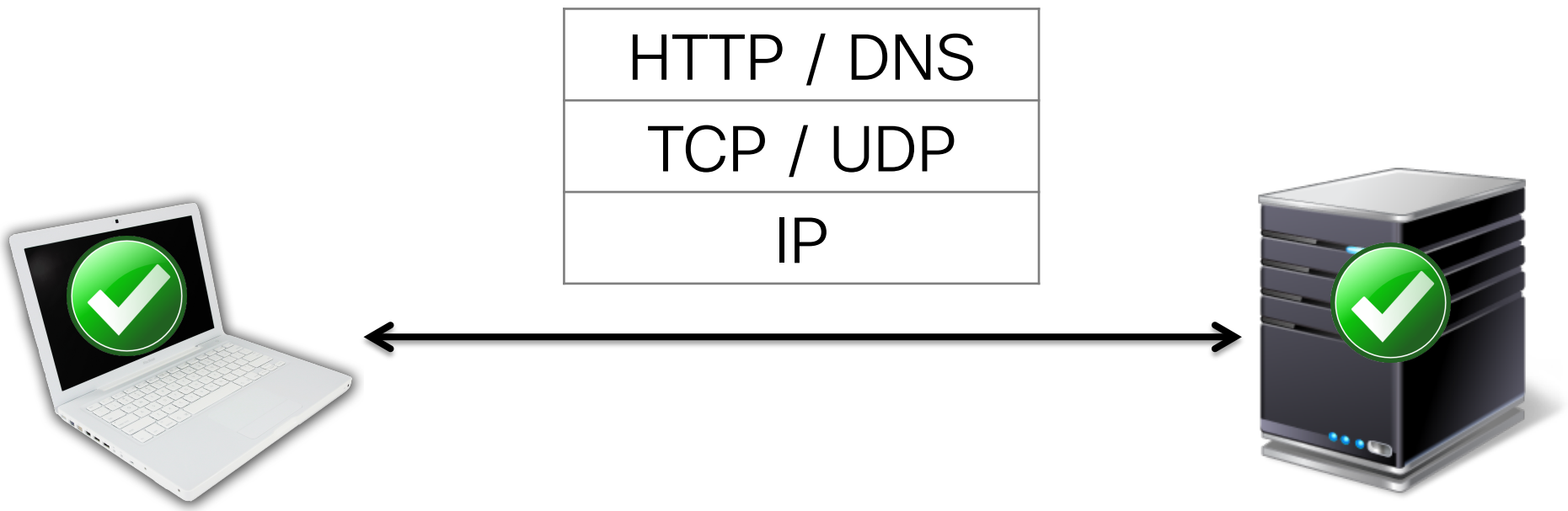
Privacy in the Internet Engineering Task Force

Alissa Cooper

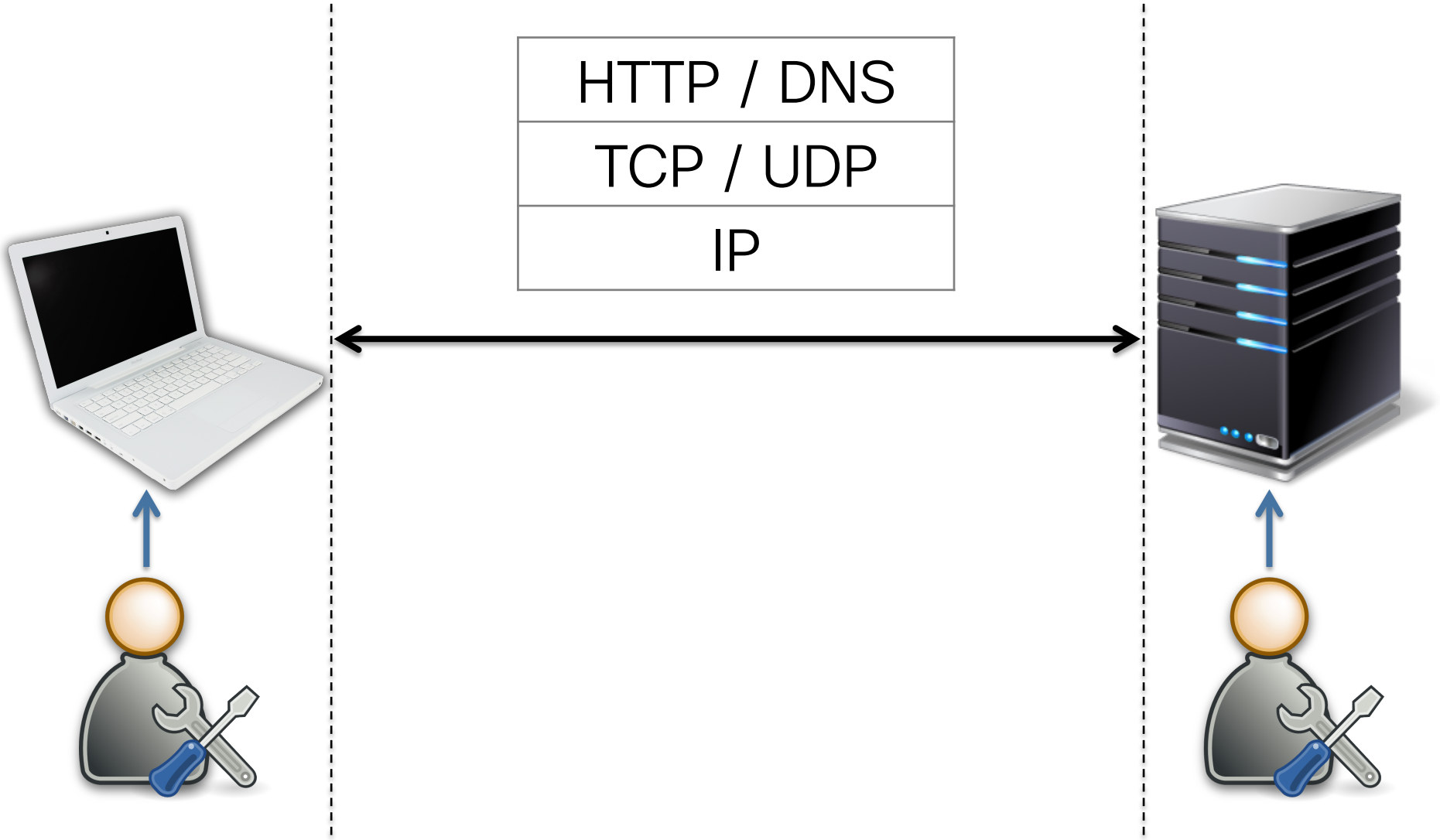
What the IETF does



What the IETF does



What the IETF does



Historic areas of focus

Confidentiality

Data integrity

Authentication

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Confidentiality

Data integrity

Authentication

Communications privacy threats mitigated:
surveillance, interception, spoofing, etc.

Information privacy threats not so much:
identification, correlation, disclosure, secondary use, etc.

Early years

Security Considerations

Security issues are not discussed in this memo.

Some security history

- 1993: Every spec must include security considerations (RFC 1543). But no guidance about what to include.
- 2003: Detailed guidance and threat model published (RFC 3552).
- Supportive IETF culture evolved.
  - Security Directorate (SecDir) reviews every spec before publication.
  - Security advisors can be assigned to working groups.
  - Security Area Advisory Group (SAAG) meetings and security tutorials at IETF meetings.

Security Area Directors, 1980s-2008

Policy history

- 1996: Statement on Cryptographic Technology (RFC 1984)
  - “encourage policies that allow ready access to uniform strong cryptographic technology for all Internet users in all countries”
- 2000: IETF Policy on Wiretapping (RFC 2804)
  - “The IETF has decided not to consider requirements for wiretapping as part of the process for creating and maintaining IETF standards.”

Some information privacy history

- Until recently: Ad hoc treatment
  - IPv6 “Privacy Addresses” (RFC 3041/4941)
  - SIP privacy extensions (RFC 3323/3325)
- 2010: IAB Privacy Program formed
  - Workshop, plenary talks, liaising with other standards groups
- 2013: Privacy Considerations for Internet Protocols (RFC 6973)

Privacy Considerations for Internet Protocols

- Terminology
- Threat Model
  - Combined Security-Privacy Threats: surveillance, stored data compromise, intrusion, misattribution
  - Privacy-Specific Threats: correlation, identification, secondary use, disclosure, exclusion
- Threat Mitigations
  - Data minimization: anonymity, pseudonymity, identity confidentiality
  - User participation
  - Security
- Guidelines
  - Identifiers, persistence, fingerprinting, correlation, retention, user controls, defaults, etc.

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- 2010: IAB Privacy Program formed
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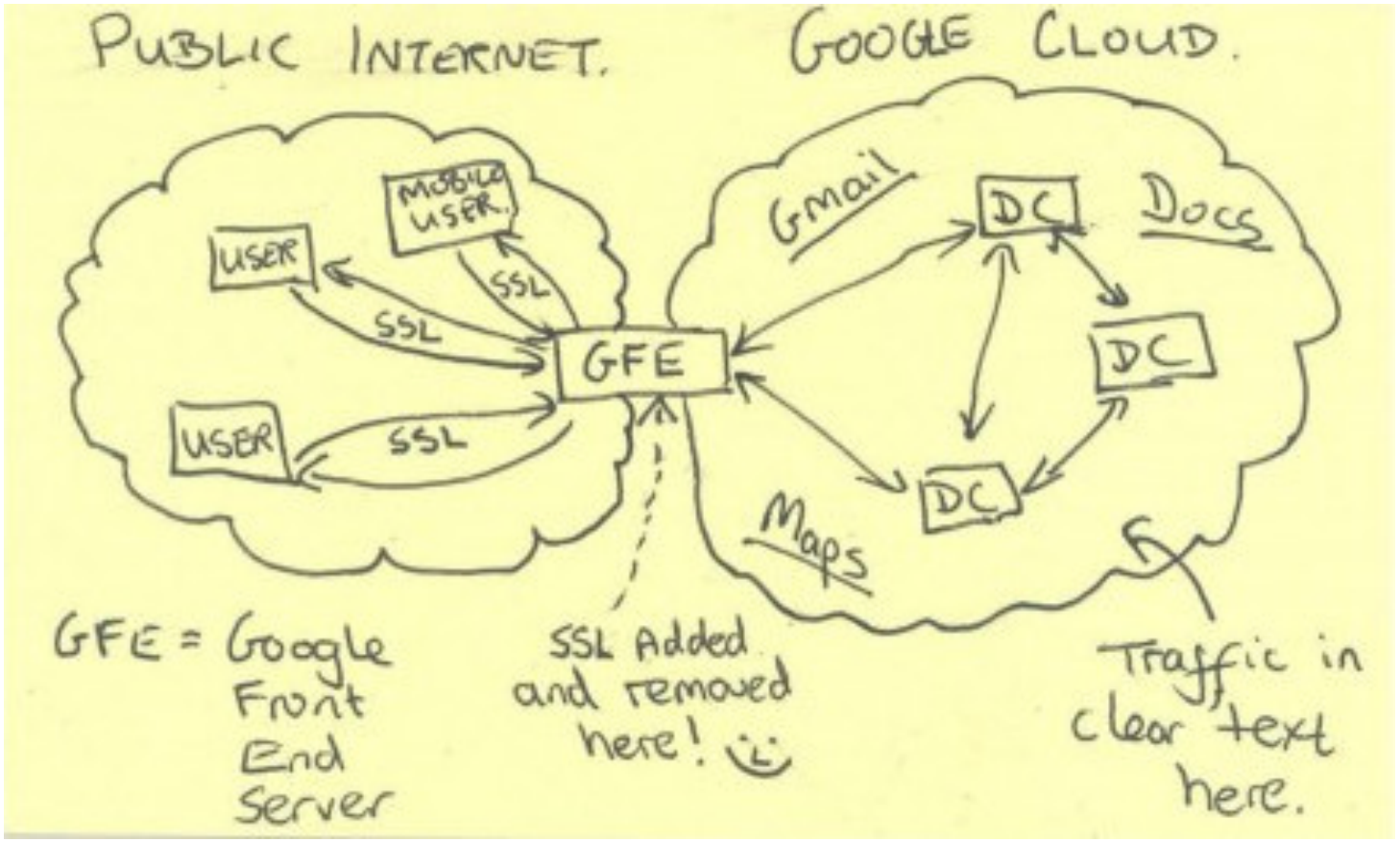
- 2013: Privacy Considerations for Internet Protocols (RFC 6973)
- Supportive culture harder to cultivate for information privacy, but we’ve been trying.
  - Issues and expertise more diffuse
  - Guidance inherently less concrete
  - Really hard problems: traffic analysis, fingerprinting, ...
- Something else happened in summer 2013 ...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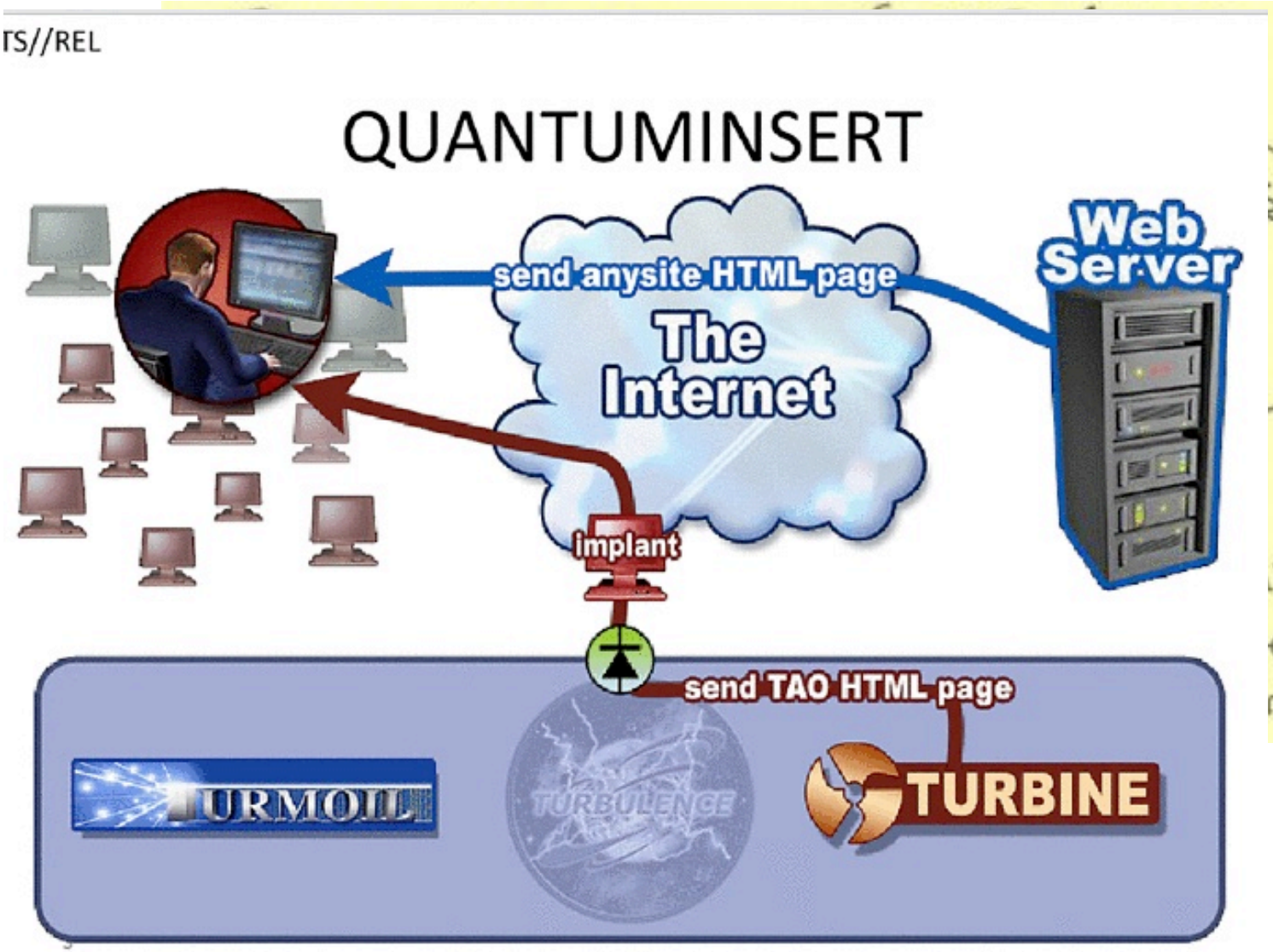
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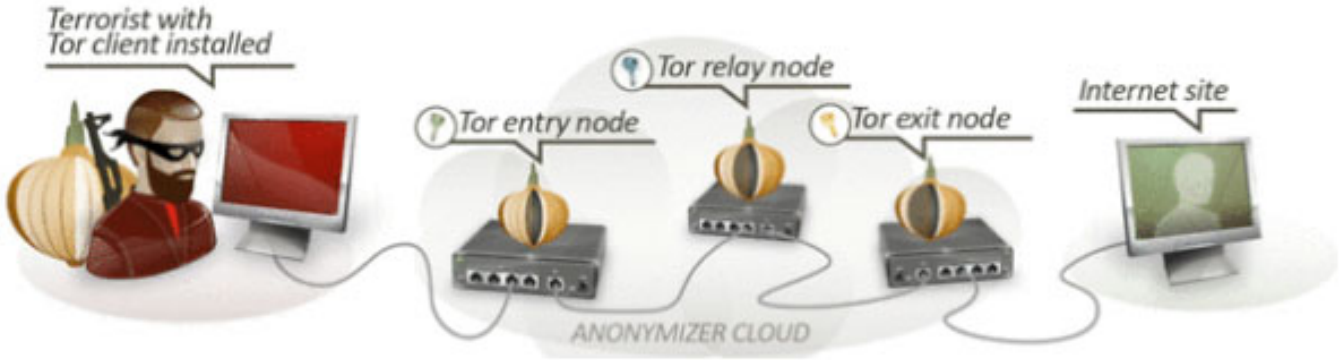
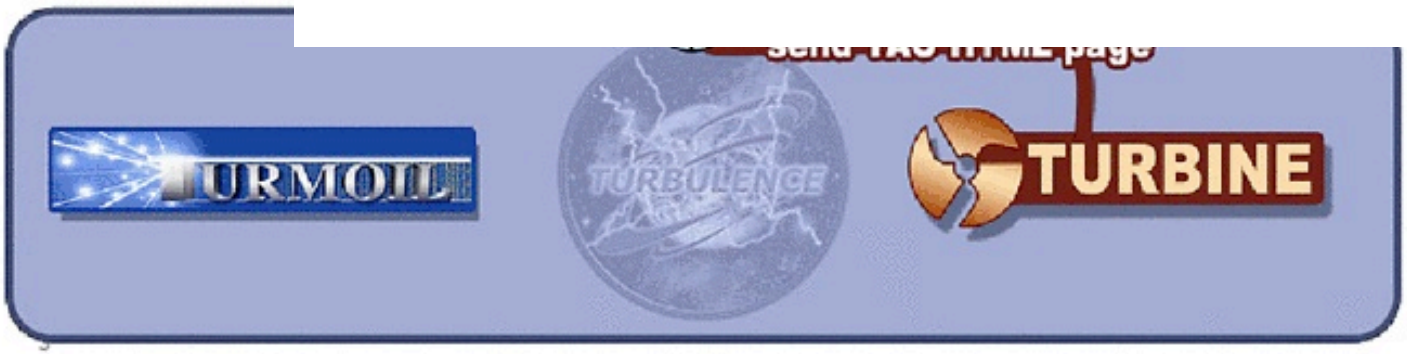
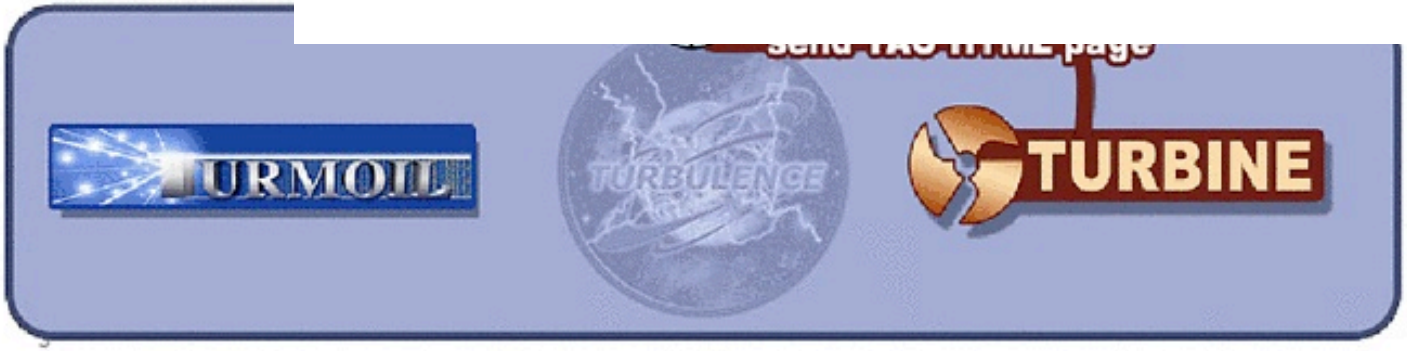
TOP SECRET//COMINT// REL FVEY

Analytics: Circuit Reconstruction (S//SI)





(S//SI)



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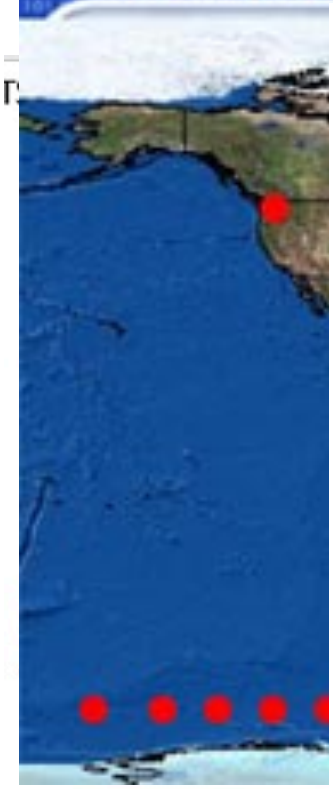
TOP SECRET//COMINT//REL TO USA, AUS, CAN, GBR, NZL

Where is X-KEYSCORE?



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Gmail facebook Hotmail Google YAHOO! skype paltalk.com YouTube AOL mail

(TS//SI//NF) FAA702 Operations

Two Types of Collection

PRISM

Upstream

- Collection of communications on fiber cables and infrastructure as data flows past.

(FAIRVIEW, STORMBREW, BLARNEY, OAKSTAR)

You Should Use Both

PRISM

- Collection directly from the servers of these U.S. Service Providers: Microsoft, Yahoo, Google Facebook, PalTalk, AOL, Skype, YouTube Apple.

TOP SECRET//SI//ORCON//NOFORN

Speaking of supportive culture …

- RFC 7258: “Pervasive monitoring is an attack”
- RFC 7435 on “Opportunistic Security:” use encryption whenever possible even if not perfect.
- IAB Statement on Confidentiality: encrypt everything!
- New work
  - Best choice cryptographic ciphers and modes
  - Encryption for DNS requests
  - Encryption for TCP
- Increased use of Crypto Forum Research Group (CFRG)
  - Need crypto algorithms everyone can trust.
- Refactored IAB Privacy and Security Program
  - Pervasive monitoring threat model

References

- A Privacy Mechanism for the Session Initiation Protocol (SIP) (RFC 3323). http://tools.ietf.org/html/rfc3323
- Guidelines for Writing RFC Text on Security Considerations (RFC 3552). http://tools.ietf.org/html/rfc3552
- IAB and IESG Statement on Cryptographic Technology and the Internet (RFC 1984). http://tools.ietf.org/html/rfc1984
- IETF Policy on Wiretapping (RFC 2804). http://tools.ietf.org/html/rfc2804
- Instructions to RFC Authors (RFC 1543). http://tools.ietf.org/html/rfc1543
- Opportunistic Security: Some Protection Most of the Time (RFC 7435). http://tools.ietf.org/html/rfc7435
- Pervasive Monitoring Is an Attack (RFC 7258). http://tools.ietf.org/html/rfc7258
- Privacy Considerations for Internet Protocols (RFC 6973). http://tools.ietf.org/html/rfc6973
- Privacy Extensions for Stateless Address Autoconfiguration in IPv6 (RFC 3041). http://tools.ietf.org/html/rfc3041
- Privacy Extensions for Stateless Address Autoconfiguration in IPv6 (RFC 4941). http://tools.ietf.org/html/rfc4941
- Private Extensions to the Session Initiation Protocol (SIP) for Asserted Identity within Trusted Networks (RFC 3325). http://tools.ietf.org/html/rfc3325
- Simple Network Management Protocol (RFC 1157). http://tools.ietf.org/html/rfc1157

Thank you

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