Tor Browser

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What is Tor?

Tor is . . .

> "free software and an open network that helps you defend
> against traffic analysis, a form of network surveillance
> that threatens personal freedom and privacy, confidential
> business activities and relationships, and state security."

(quote from `https://www.torproject.org/`)

In short, Tor conceals the source of web traffic, along with the
content of that web traffic.

Why use Tor? (1)

Source: NSA *Tor Stinks* presentation.
`https://www.documentcloud.org/documents/801434-doc2.html`

Why Use Tor? (2)

TOP SECRET//COMINT// REL FVEY

Tor Stinks... (U)

- We will never be able to de-anonymize all Tor users all the time.
- With manual analysis we can de-anonymize a **very small fraction** of Tor users, however, **no** success de-anonymizing a user in response to a TOPI request/on demand.

Source: *ibid*

Why Use Tor? (3)

I see two ways to interpret the NSA's *Tor Stinks* presentation:

1. Tor is a good system for preserving anonymity on the web, and the NSA has trouble "breaking" it.
2. Tor is horribly broken, so the NSA wants us all to use it.

Being the optimist, I'm more inclined to side with the former.

Installing and Running Tor

▶ You can download Tor from the Tor Project's web site
`https://www.torproject.org`

▶ Tor Browser should look familiar to Firefox users – it's a
customized version of Firefox.

▶ Browse to `https://www.maxmind.com/en/geoip_demo` with
Tor. What do you see? Try again with a regular web browser,
and compare the results.

Meet Alice and Bob
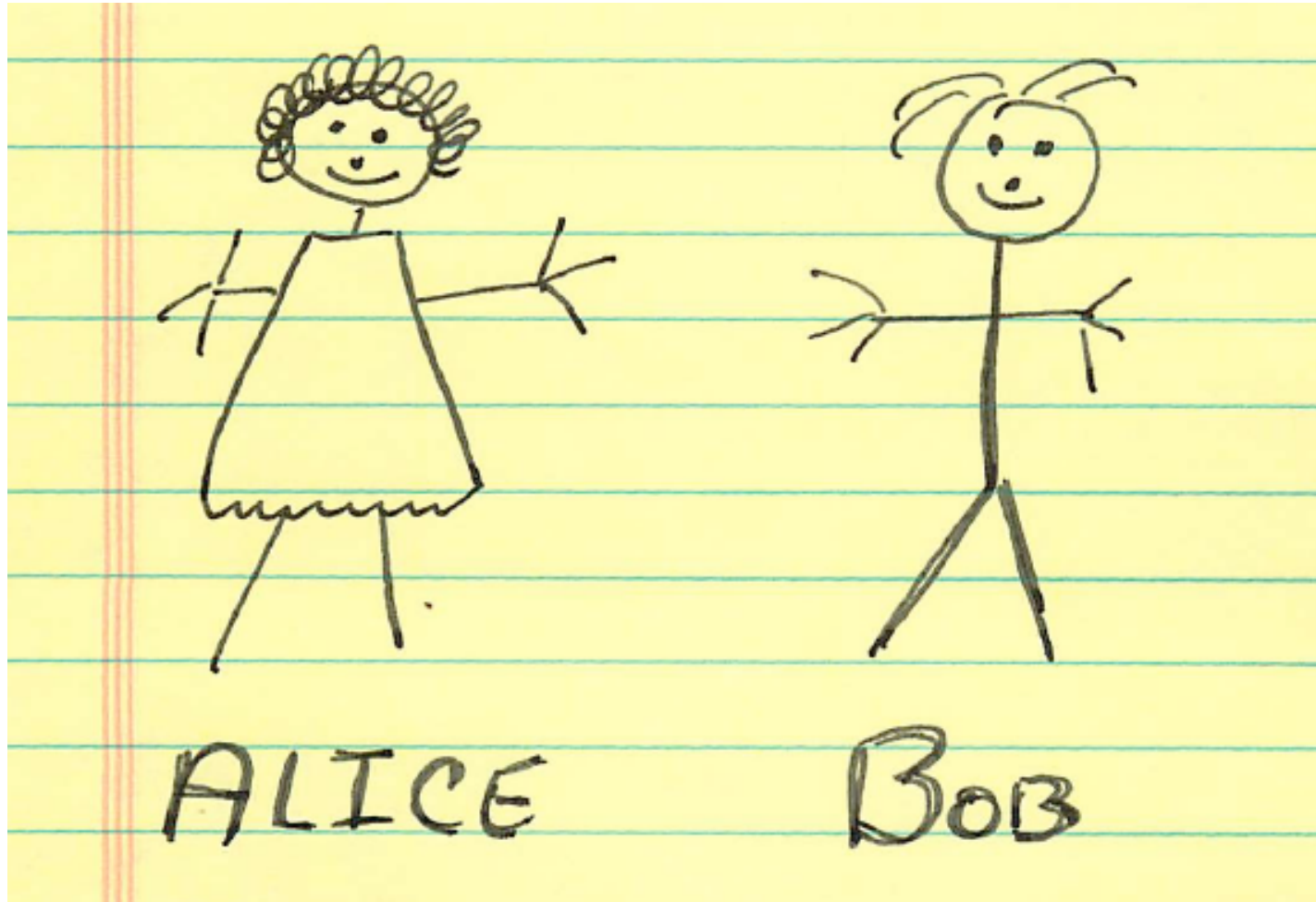
Alice's Dilemma

- Alice wants to send a letter to Bob.
- Alice doesn't want Bob to know that she sent the letter.
- So, Alice enlists the help of Tom, Dick, and Harry

What follows is a rough analogy of how Tor works.

Alice's Plan

- Alice writes a letter to Bob, *without* signing it.
- Alice puts the letter in an envelope addressed to Bob,
- and puts that in an envelope addressed to Harry,
- and puts that in an envelope addressed to Dick,
- and puts that in an envelope addressed to Tom
- Alice mails the letter to Tom

Mailing the Letter

- Alice mails the letter.
- Tom gets the letter, and mails the contents to Dick
- Dick gets the letter, and mails the contents to Harry
- Harry gets the letter, and mails the contents to Bob
- Bob reads Alice's letter
- As far as Bob can tell, the letter came from Harry. (Harry is an "exit node".)
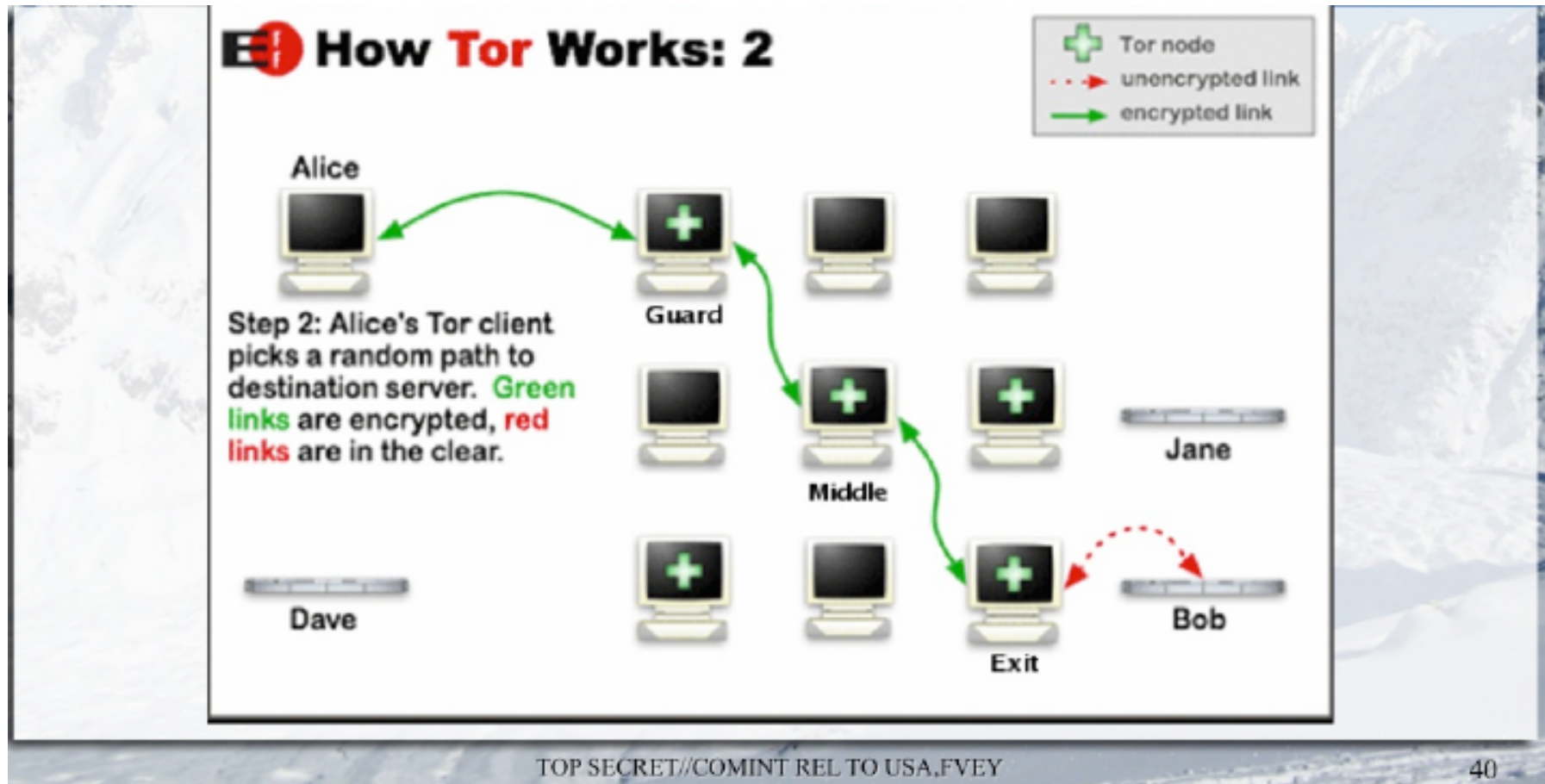

ALICE ⟹ Tom ⟹ Dick ⟹ HARRY ⟹ BOB

Tor's Version of the chain letter
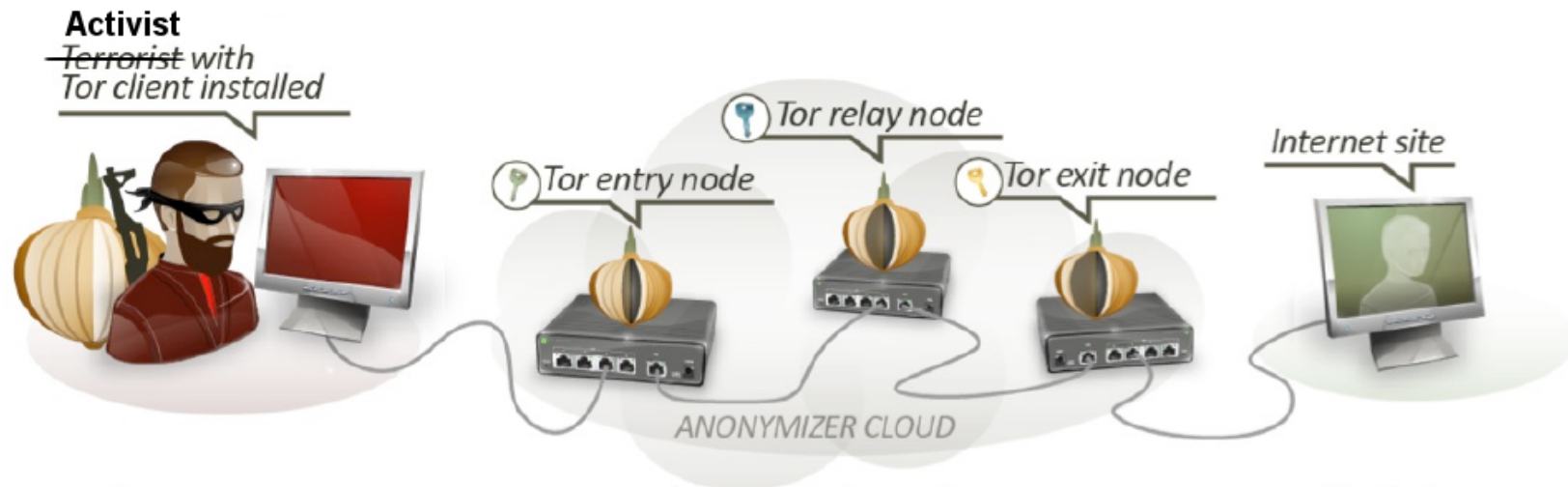
Source: My EFF-inspired tweaks to a *Tor Stinks* graphic.

How Tor Works

Source: NSA *Advanced Open Source Multi-Hop* presentation
https://www.documentcloud.org/documents/801435-doc3.html

How Tor Works (3)

Here's what Alice's "Letter" looks like:
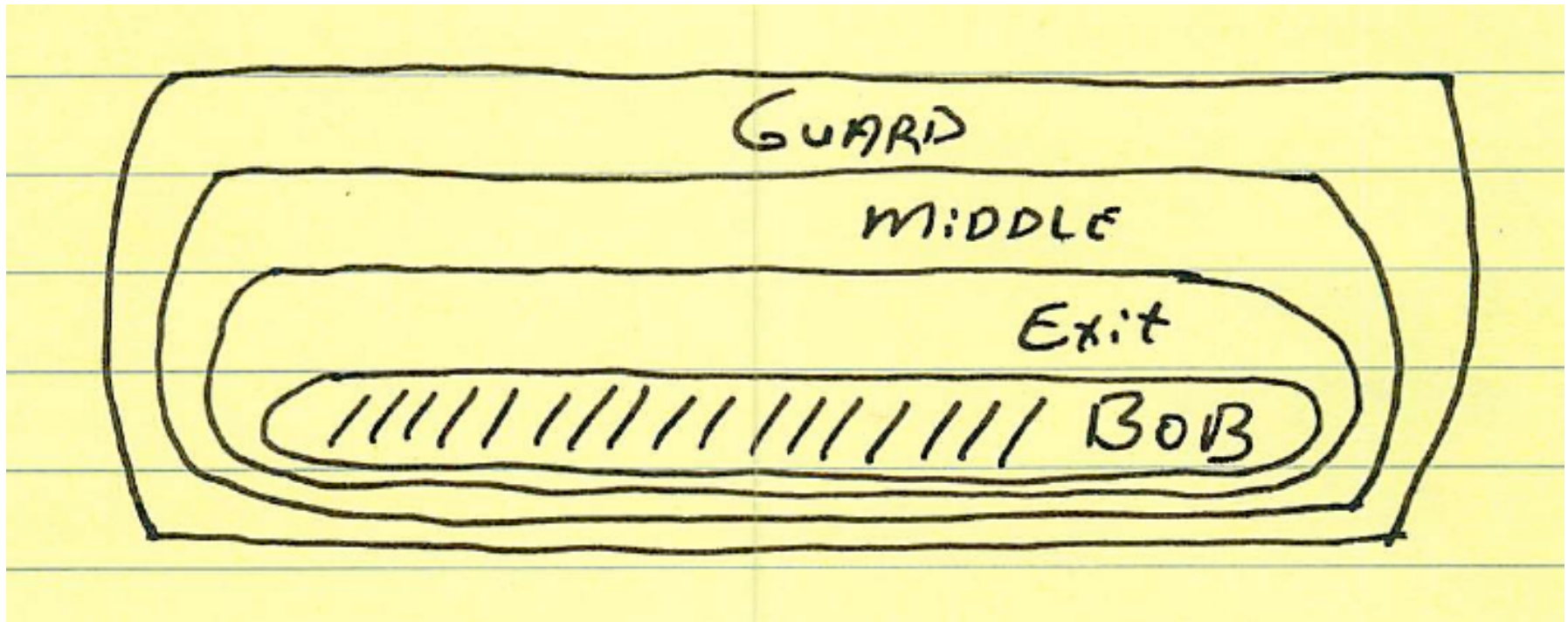
These layers of encryption constitute an *onion*.

Tor Caveats

- Tor is slower than using an ordinary web browser.
- Web sites that rely heavily on Geolocation (e.g., Google) might get confused about your "unusual location".
- You may need to change your browsing habits (see `https://www.torproject.org/download/ download-easy.html#warning` for elaboration).

Tor Wrap Up

▶ Using Tor is just as easy as using any other web browser.

▶ Tor protects you from surveillance by proxying web traffic through a network of Tor nodes.

▶ The network of Tor nodes conceals your location; encryption protects the content of your traffic.