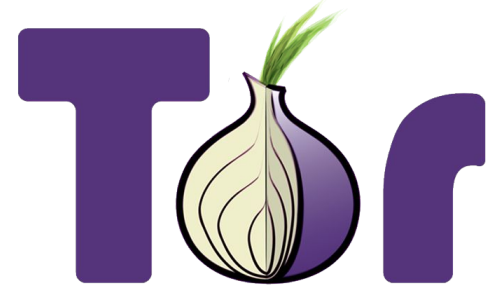# The Onion Router

The inner and outer layers

High Availability
Load Balancing
Web Scale
Security **made easy**

Who I am?

Fernando F. Mancera

➡ Computer Science student at the University of Seville.
➡ Currently working at Zevenet.
➡ Tor Project contributor.
➡ Netfilter contributor.
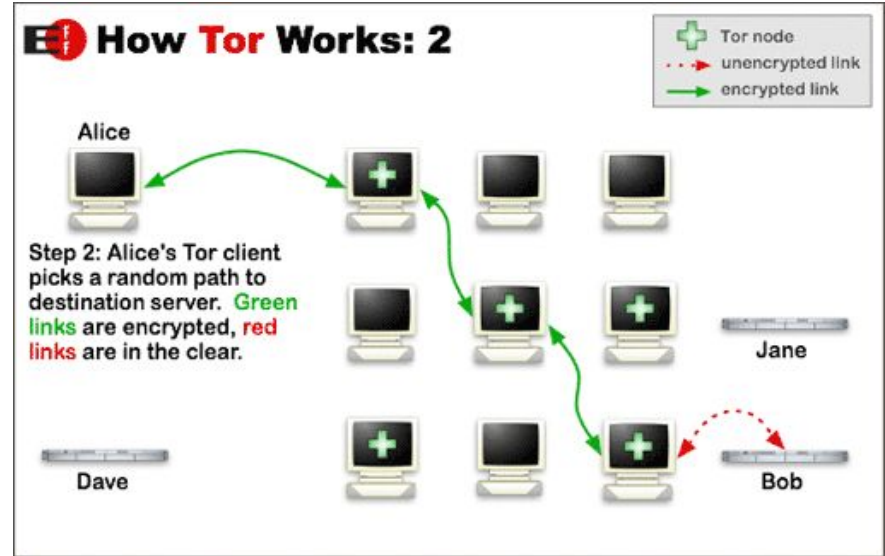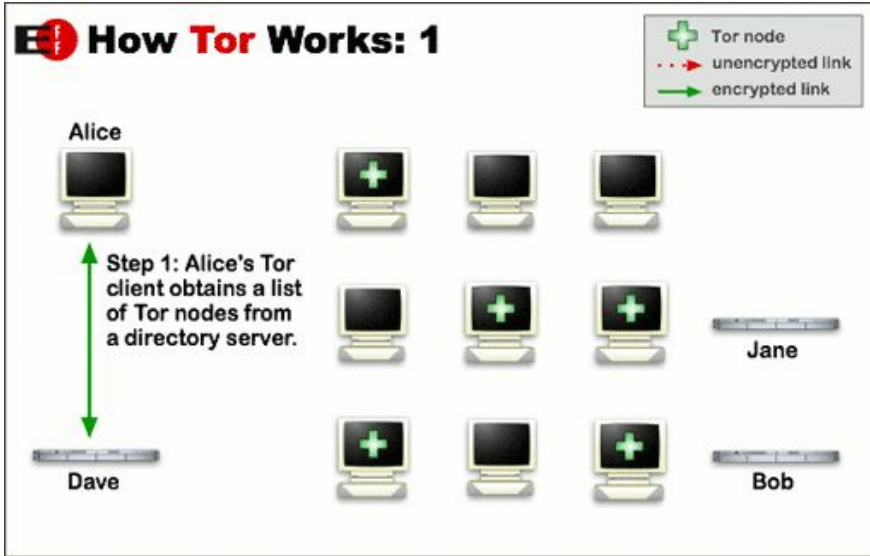➡ Privacy and free software advocate.

ZEVENET

Little brief

What is Tor?

★ Free software
★ Privacy and anonymity
★ Non-profit
★ Open and distributed network
★ Different applications
  ○ Tor Browser:
    ■ Web browser
    ■ Privacy by default
    ■ Uses the Tor network
  ○ Orbot
  ○ Onion services
    ■ Bidirectional anonymity

Open Observatory of Network Interference
ooni

TOR BROWSER

How Tor works?

Alice wants to surf on the internet safe.

The green path is encrypted; the red one is not safe. Please, use HTTPS.

It is not just encryption, it is anonymity!

- Tor uses encryption to hide the data sent but encryption cannot protect you from some kinds of attacks or techniques.

- Tor hides your location, personal data, network metadata..
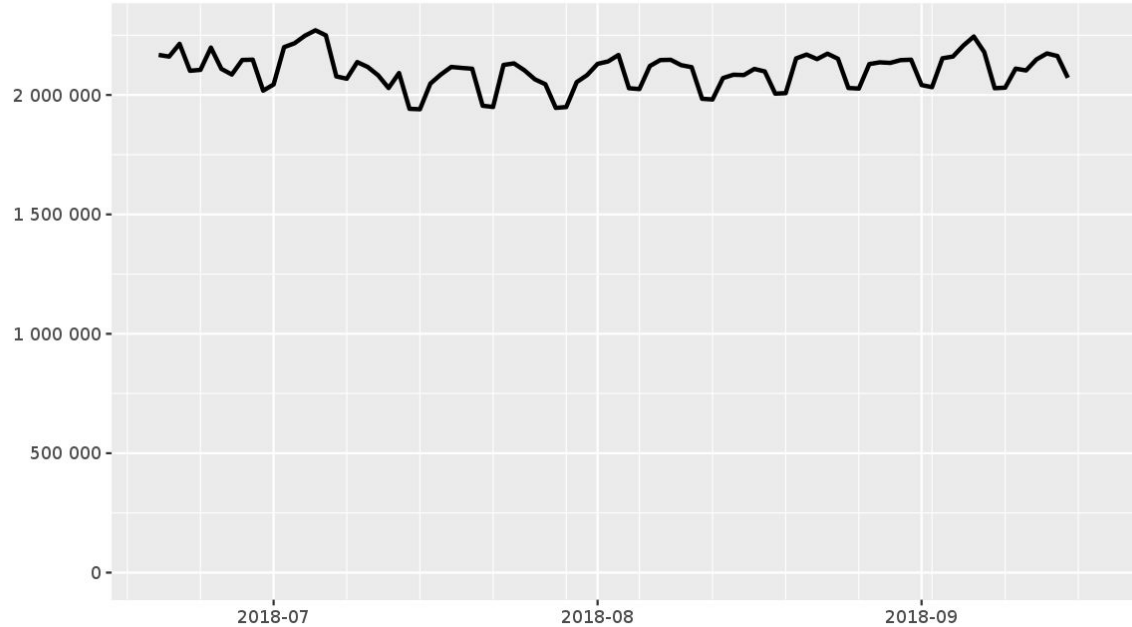
ANONYMITY

Tor Traffic (I)

Directly connecting users

The Tor Project - https://metrics.torproject.org/

Tor Traffic (II)

Number of relays
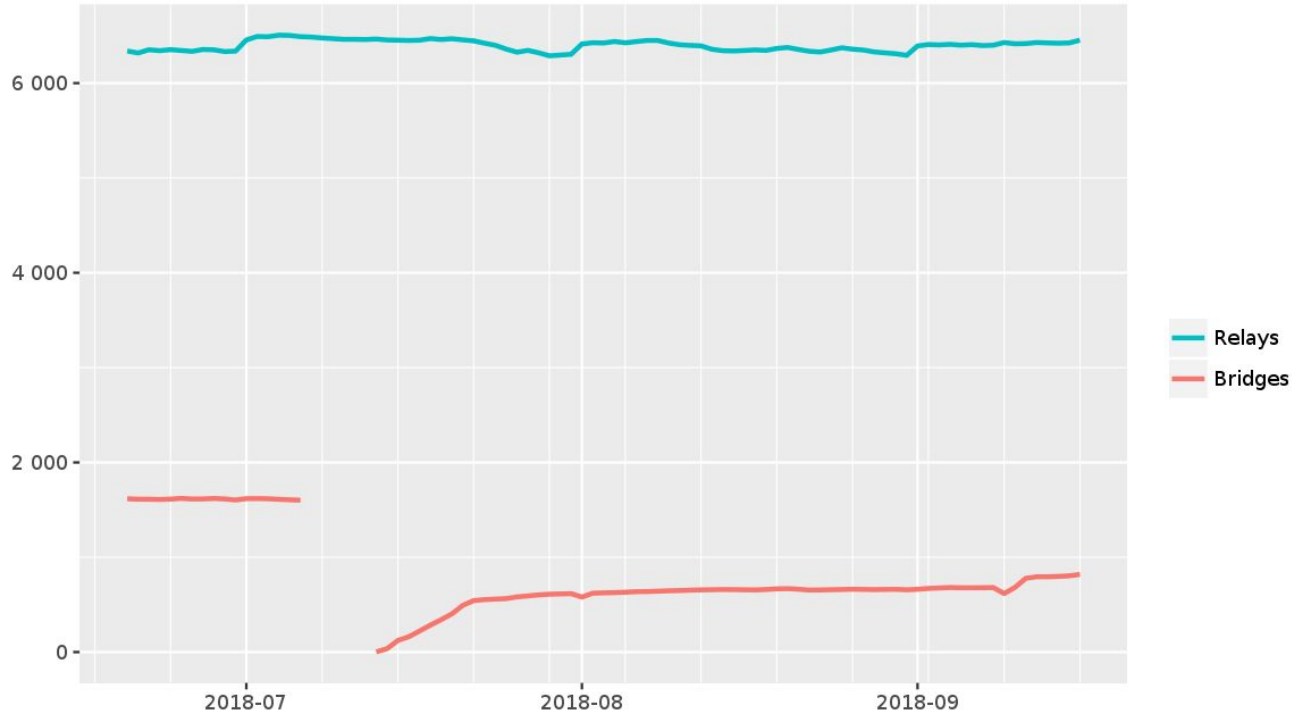
The Tor Project - https://metrics.torproject.org/
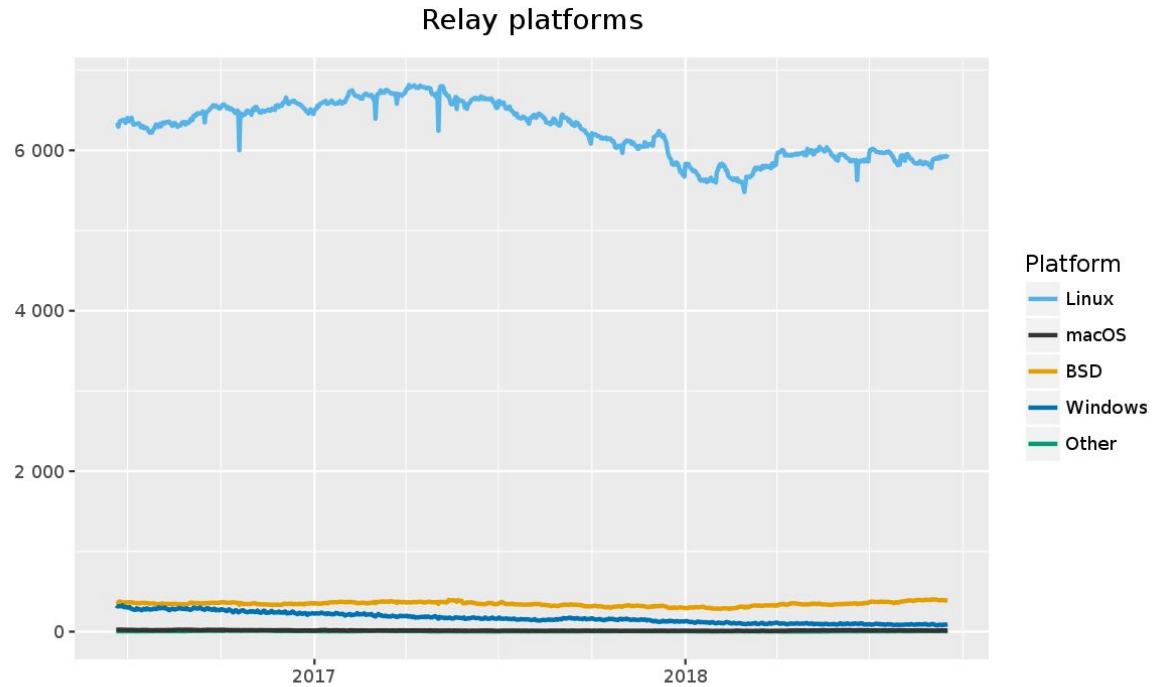
Tor Traffic (III)

Relay platforms

Platform
- Linux
- macOS
- BSD
- Windows
- Other

The Tor Project - https://metrics.torproject.org/

How Onion Services work? (I)
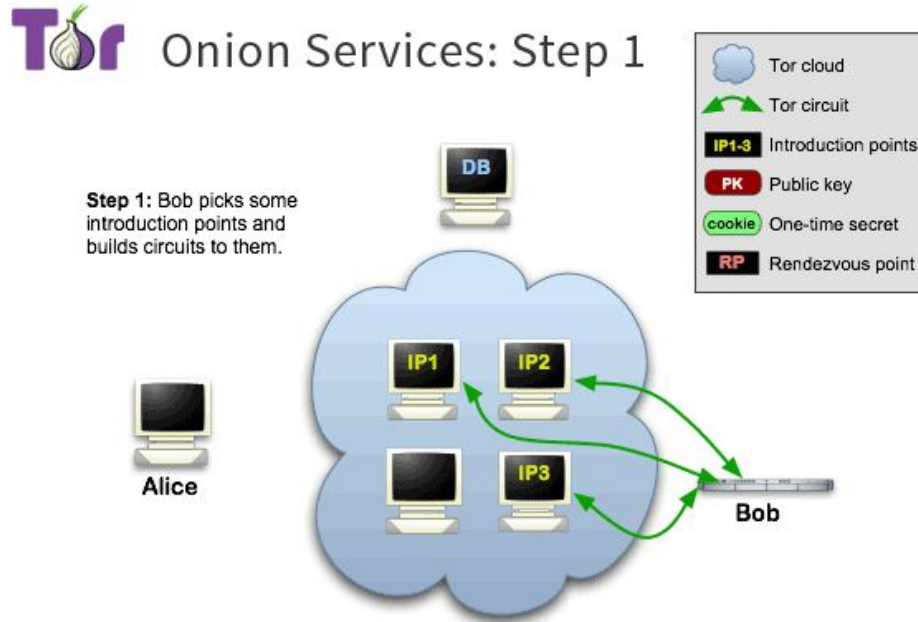
Alice wants to use Bob's service. Both want to be safe :-)

How Onion Services work? (II)
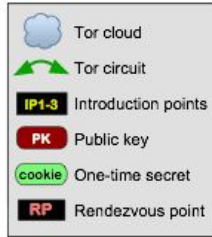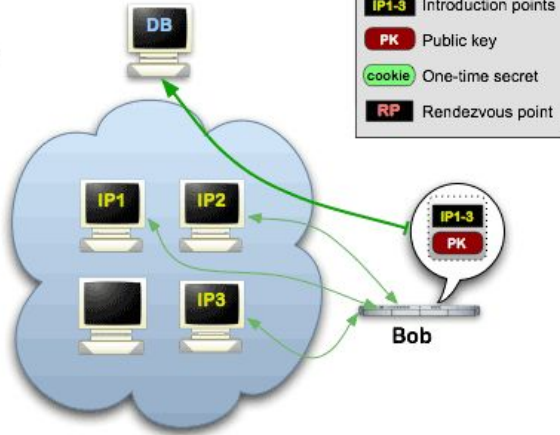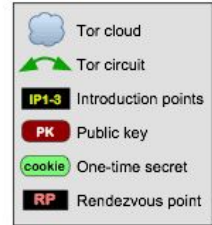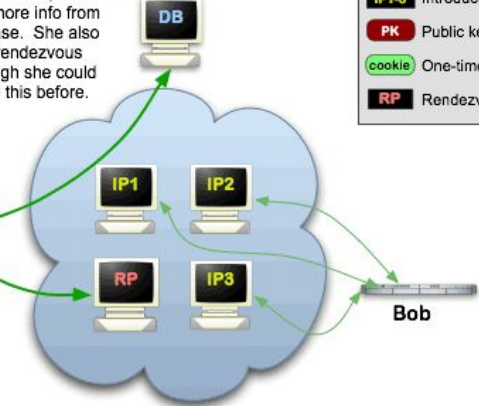
Bob builds a descriptor and upload it.

Alice fetches the descriptor and builds a rendezvous point.

How Onion Services work? (III)
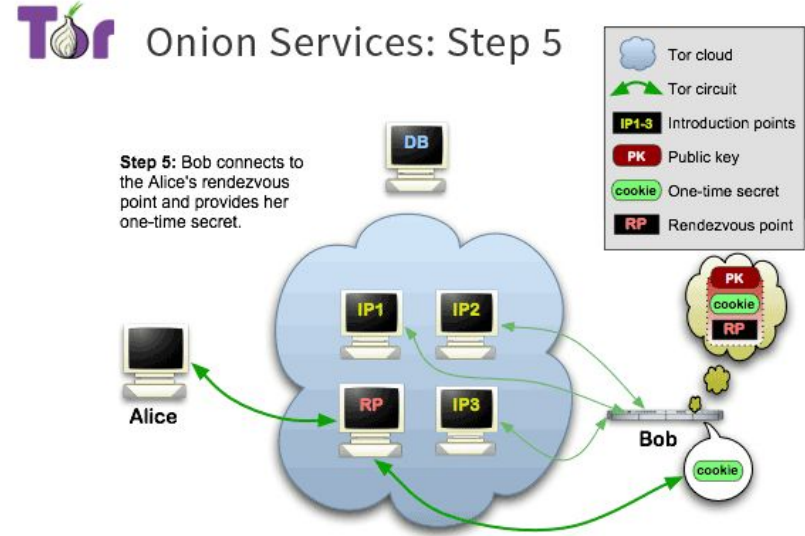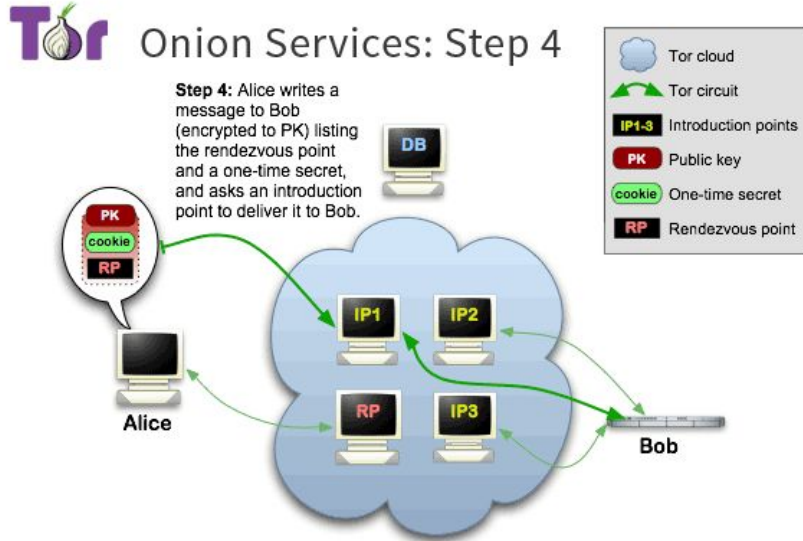
Alice send an introduce message to Bob indicating how to reach rendezvous point.

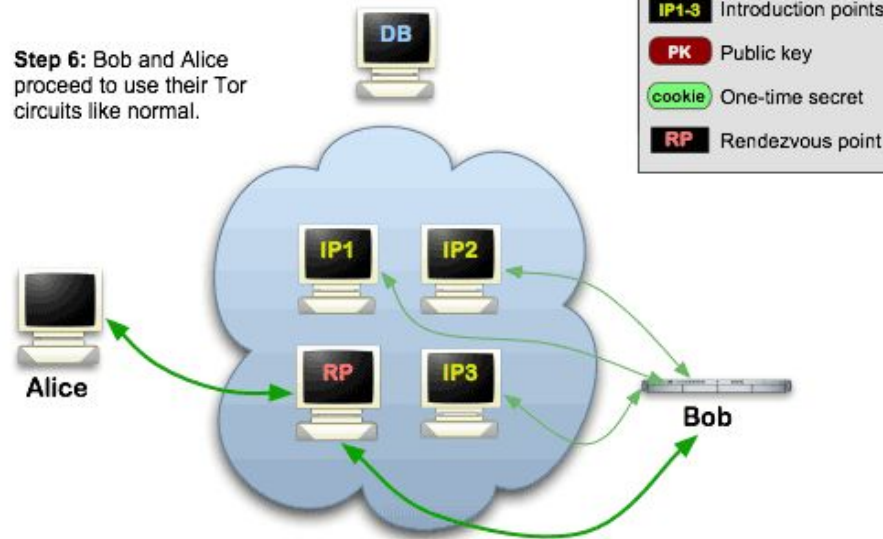# How Onion Services work? (IV)