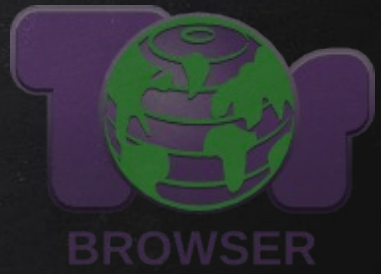
TOR-Browser



- Modified version of Firefox ESR.
- Uses the TOR network by default.
- Disables insecure features/plugins .
- Disables features/plugins that could deanonymize you.
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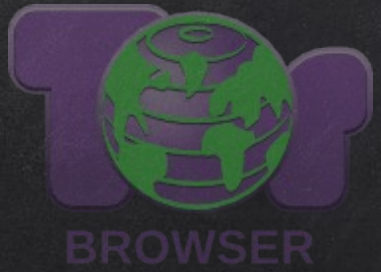
- Disables scripts (using noscript plugin).

Note:

With TOR Browser only traffic sent via the browser is routed through the TOR network.

TOR-Browser



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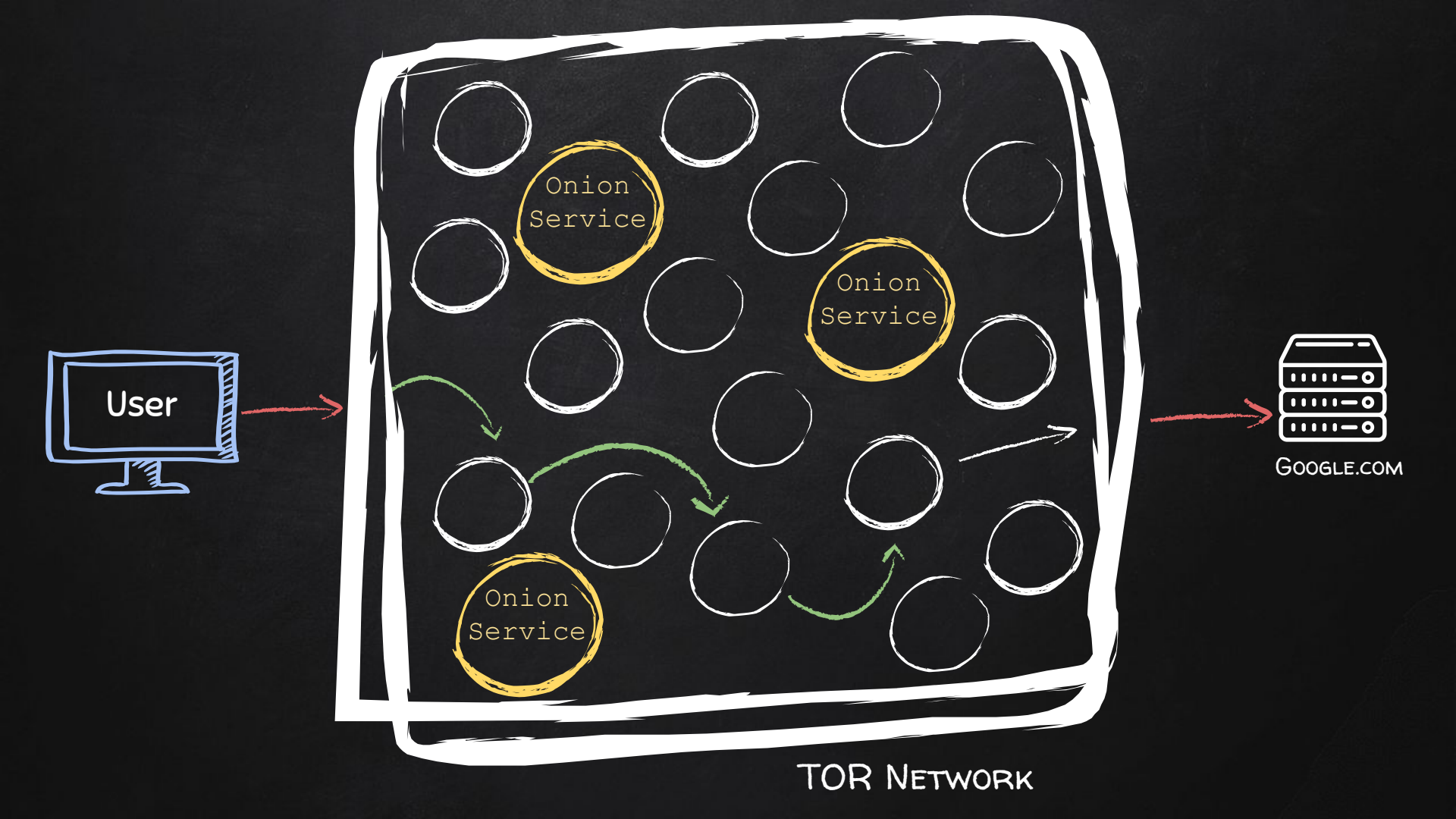
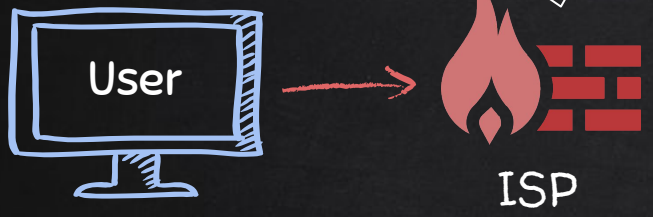
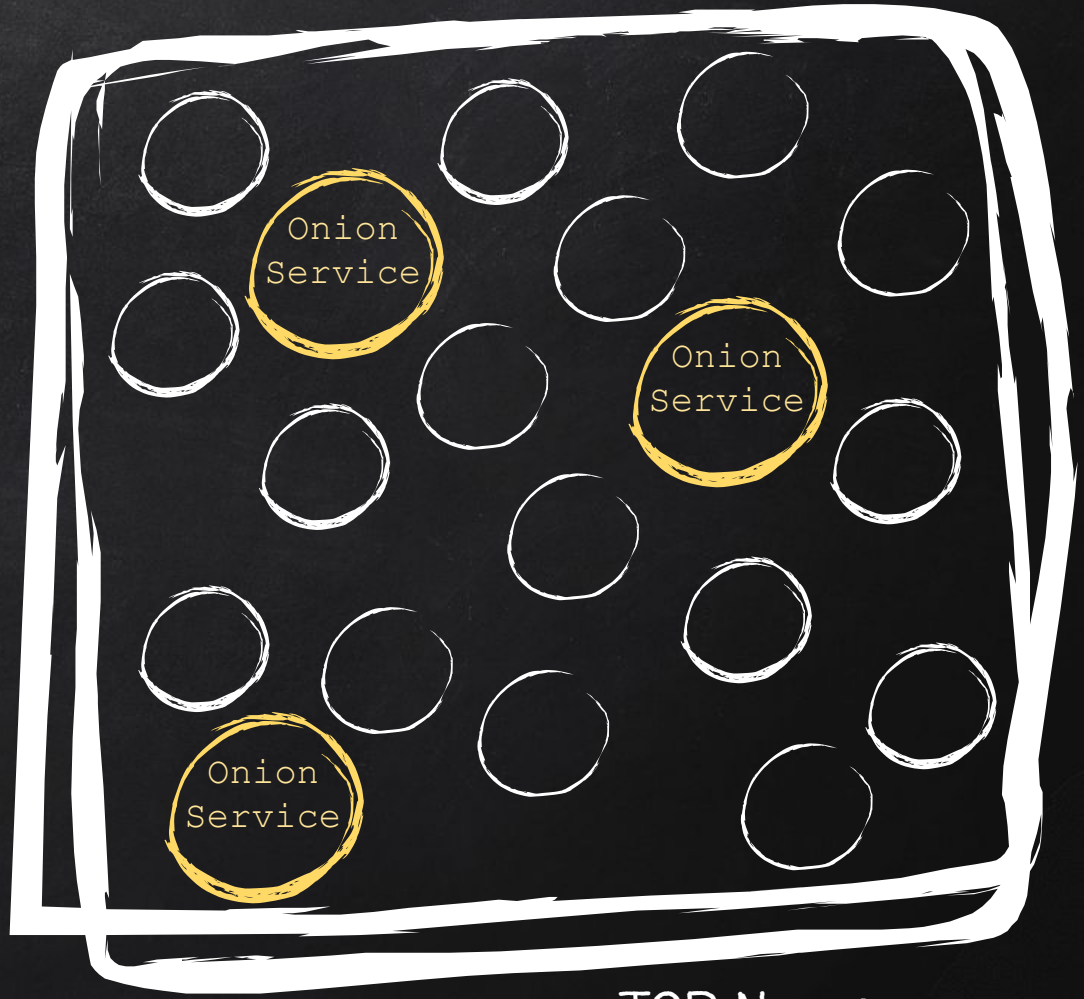

User
Onion Service
Onion Service
Onion Service
Google.com
TOR Network

1. Block ALL tor relays.





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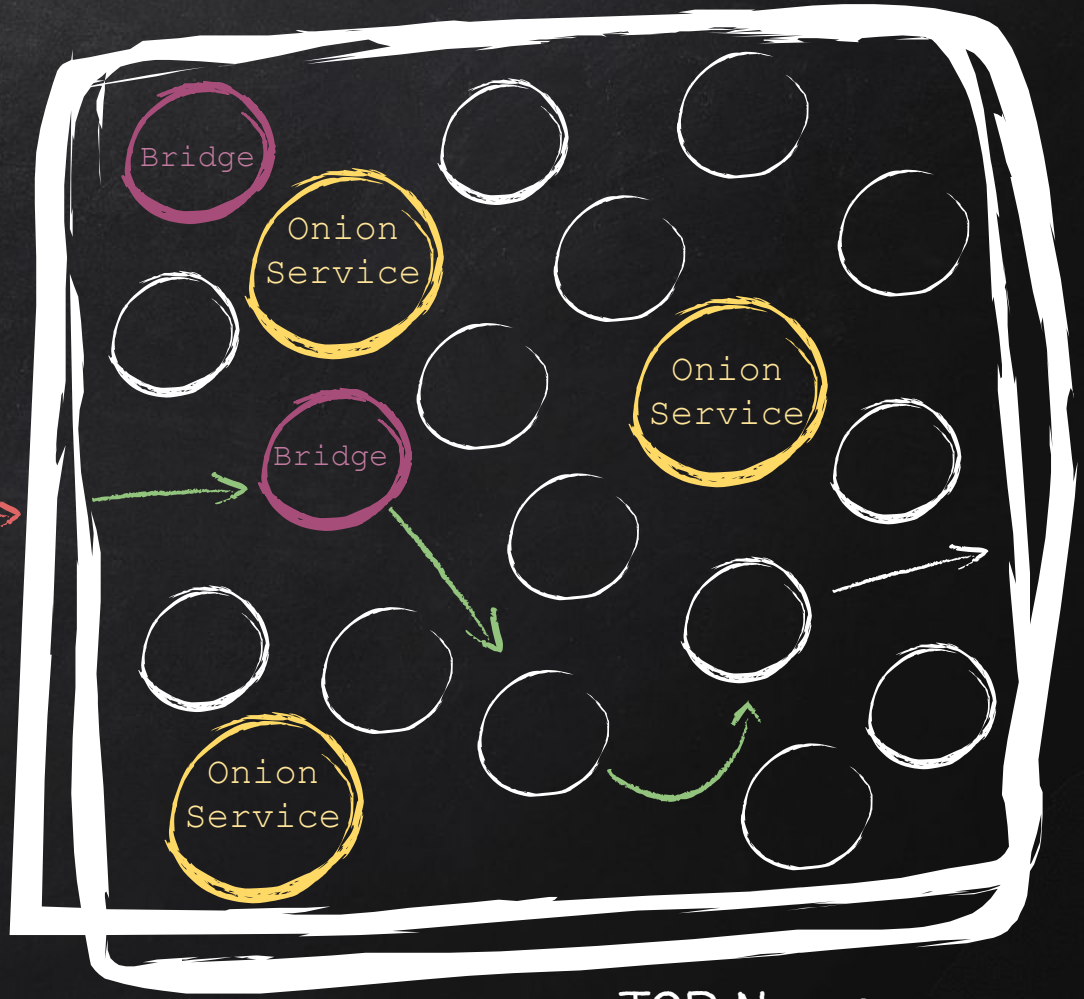
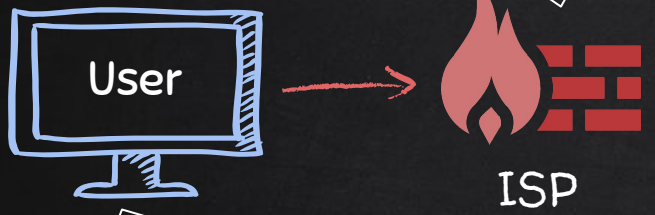


1. Block ALL tor relays.

2. Use DPI (Deep Packet Filtering) to identify and block TOR traffic.



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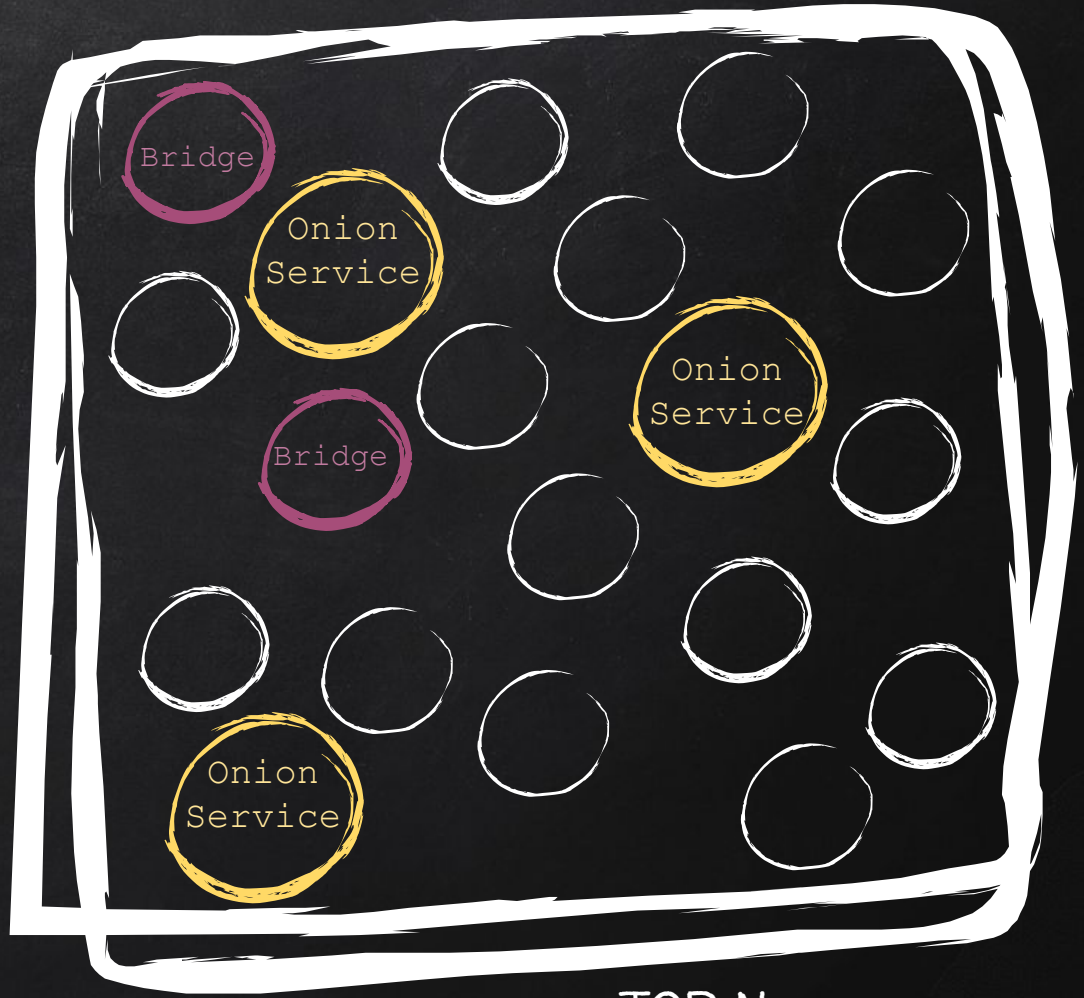

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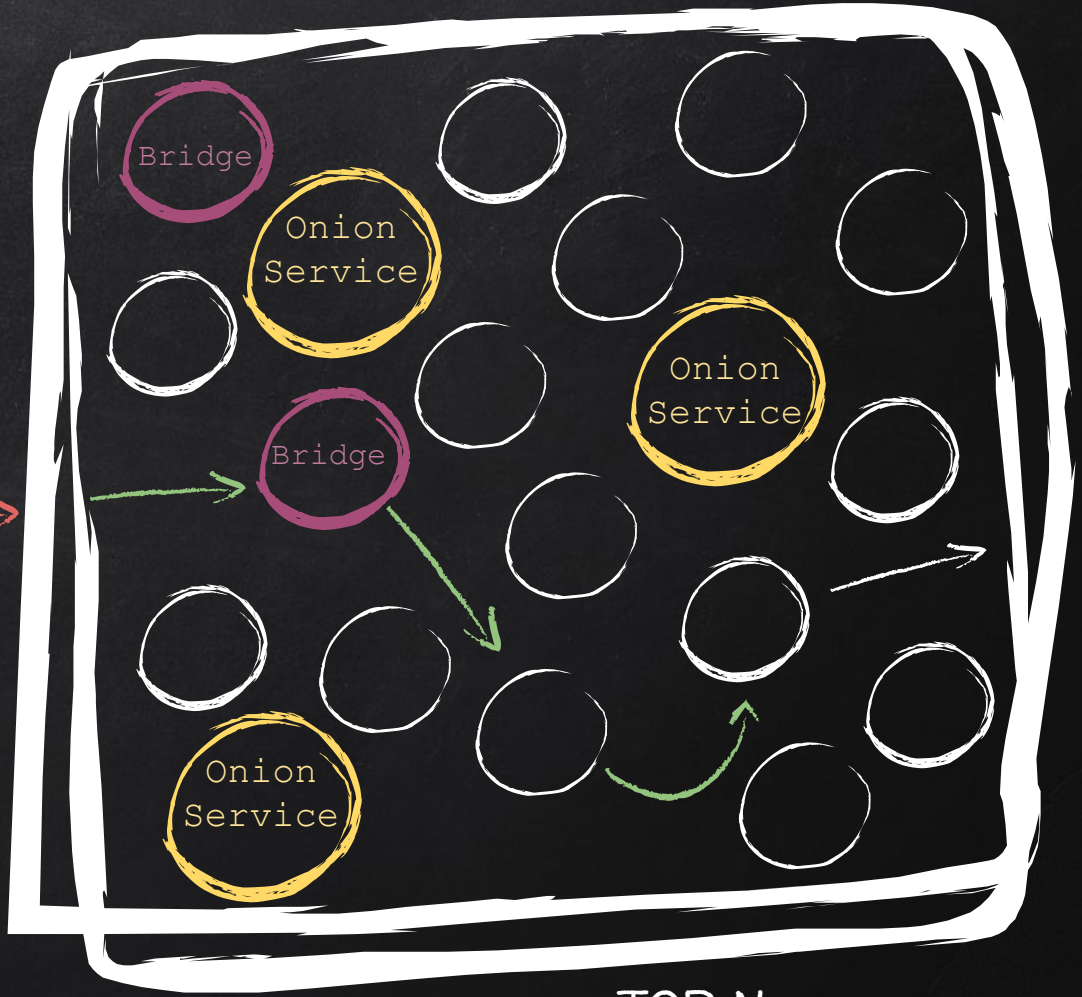
1. Use unpublished relays (bridges).
2. Use pluggable transports to obfuscate traffic.



VPN – Virtual Private Network


User
Google.com


User
VPN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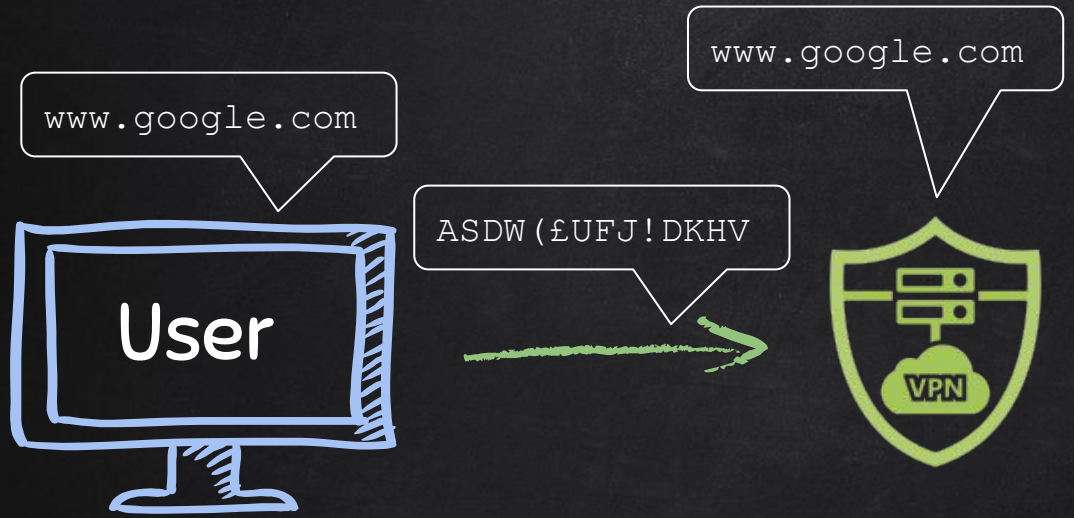
User
www.google.com
VPN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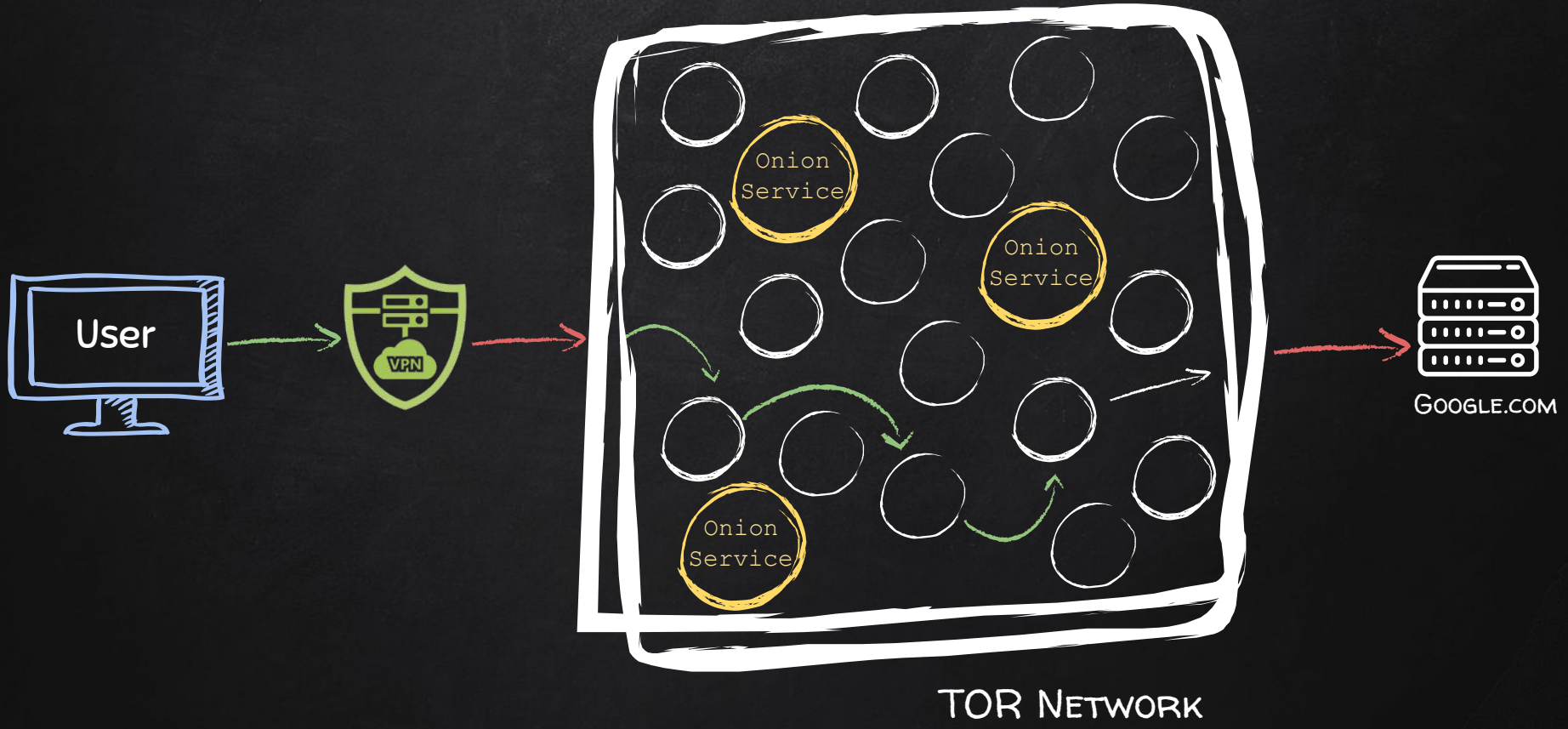
User
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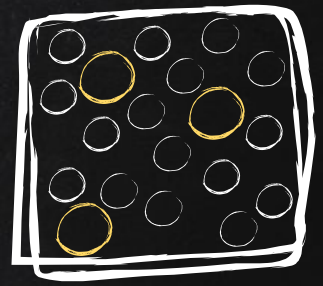
TOR Network

TOR Network



Internet

Benefits:

- Extra layer of encryption.
- More privacy & anonymity.
- Bypass censorship.


User
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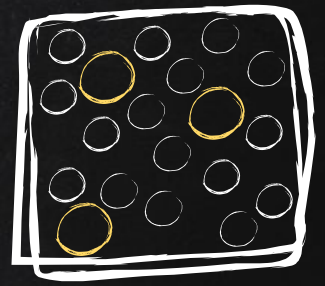
Onion Service
Onion Service
TOR Network

Worst Case Scenario

Pluggable transports & Bridges	VPN
Connecting to TOR	Connecting to a VPN.

TOR Network



Internet

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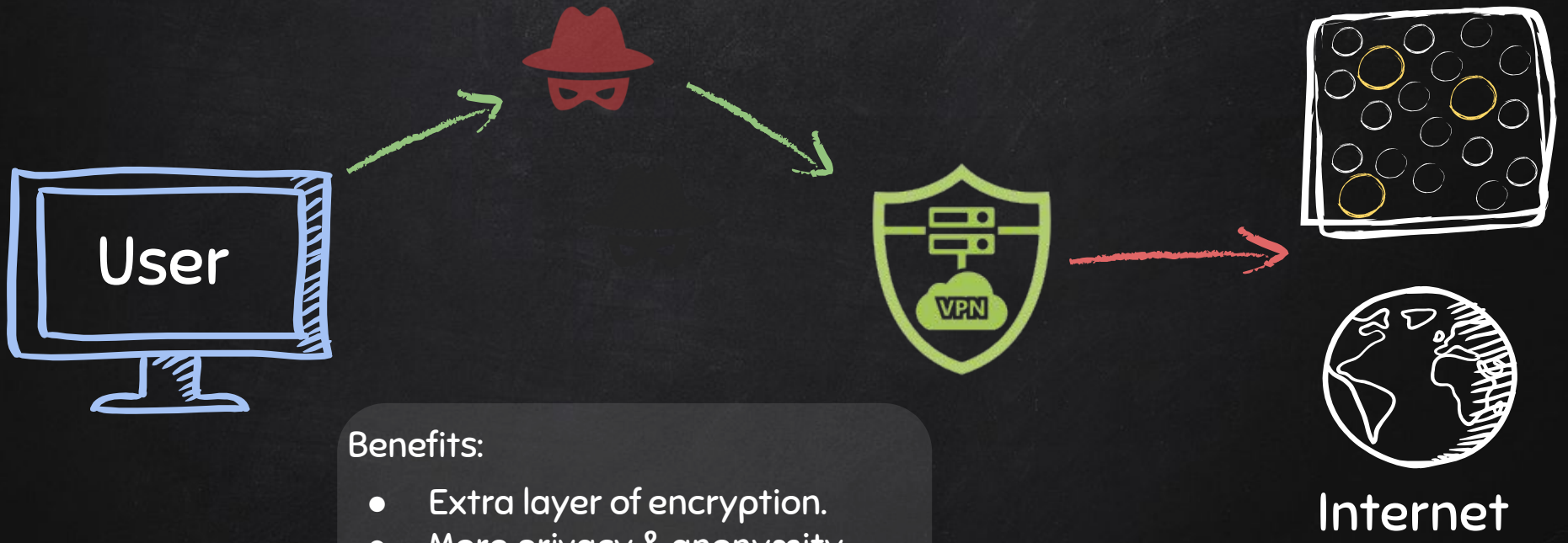

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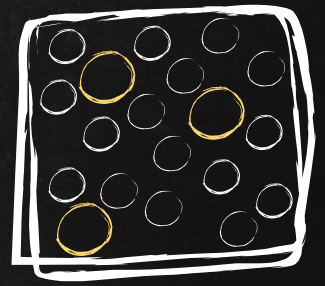
Notes:

- Use reputable VPN.

TOR Network



Internet

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- Use reputable VPN.
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Notes:

- Use reputable VPN.
- Avoid free providers.
- Make sure they keep no logs.
- Use HTTPS everywhere.
- Optional – pay with crypto.


User
VPN
Google.com

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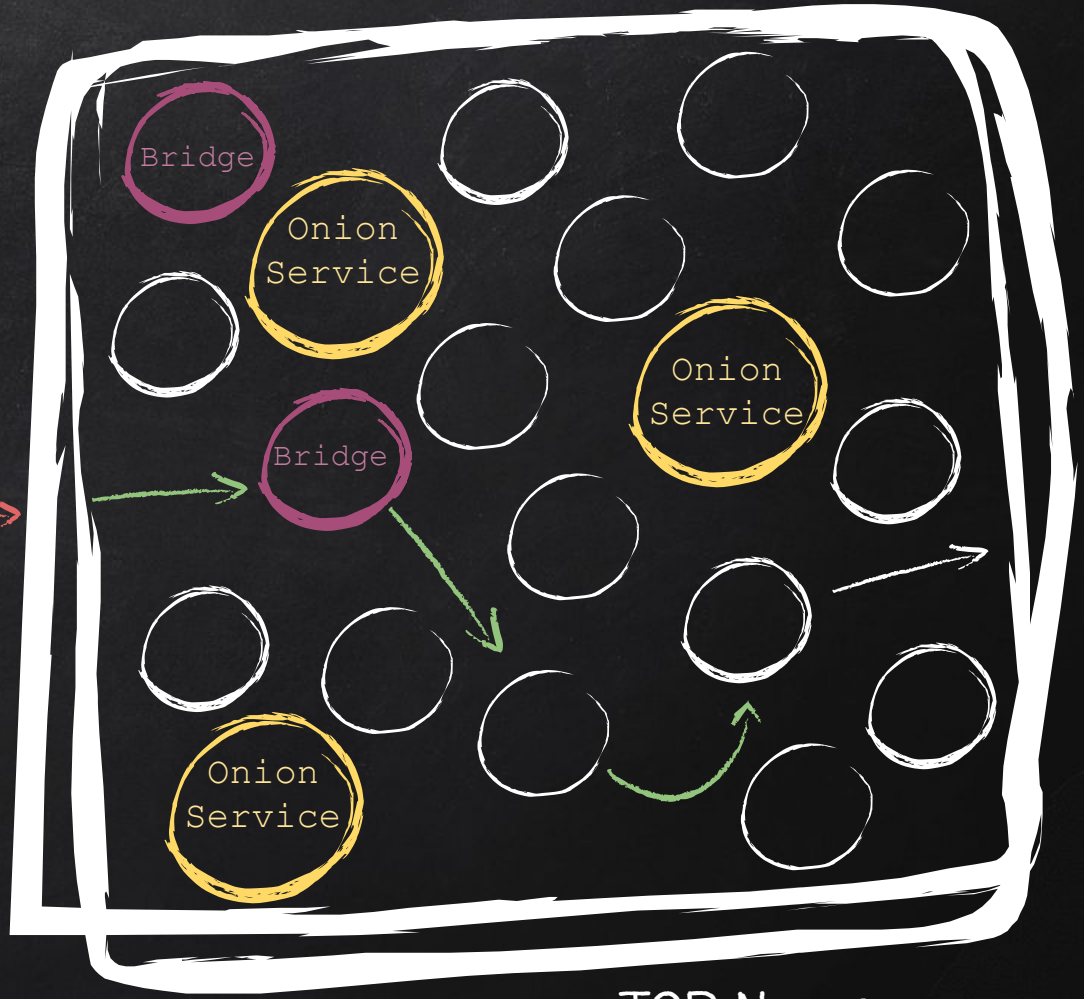
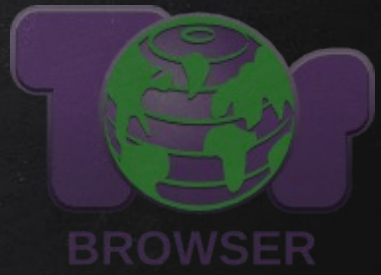



ISP
User
Internet


ISP
User
Internet

Information Theory



$$\Delta S = - \log_2 Pr(X=x)$$

- The amount of info a fact gives about an entity is measured in bits.
- Entropy (S) measures information in bits.
- ΔS measures how many bits of information the fact X reveals about a target.
- Population of earth at the time of recording this lecture is 7714576923.
- Therefore we need Log2(1 / 7714576923) = 32.8 bits of information to deduce the identity of a person!