



# HUSARNET

#### Privacy-preserving internet-enabled robots



## loT is useful

Problem: internet connected robots and IoT uses client-server architecture

- Users can be spied by manufacturer
- Devices can be remotely disabled (see Google Nest)
- Devices need internet access to function, LAN doesn't suffice



#### Solution: overlay networks

- Central server only helps establish connections over the internet
- LAN connections may be established without it



#### Husarnet security model

- node identity is hash of its (Curve25519) public key
- node identity is also its global IPv6 address (fc94::/16 network)
- connection is authenticated by this identifier



fc94:9f5d:7b5b:9963:97a5:1e56:cb71:2c74

	OpenVPN	ZeroTier One	Husarnet
Peer-to-peer	Νο	Yes	Yes
License	GPLv2	GPLv3	MIT (will be released Feb/Mar)
Works without internet	-	Νο	Yes
Works on embedded devices	Νο	No (>4MB memory footprint)	Yes (currently ESP32)
Perfect Forward Secrecy	Yes	Νο	Yes
Ethernet bridging	Yes	Yes	No

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## **ROS: Robot Operating System**

# **History Rogs**

- provides transparent communication between nodes of a robot
- native multi device operation
- ready-made nodes for navigation, mapping etc
- visualization tools
- easily integrated with Husarnet



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