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European Union

Addressing Model in DHT based Networks

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Peer-to-Peer Network

- ▶ Peers are equally privileged, equipotent participants in the application
- ▶ Distributed Hash Table can be used for address discovery
Key = hash (data) Lookup (key) → IP address

DHT Overlay

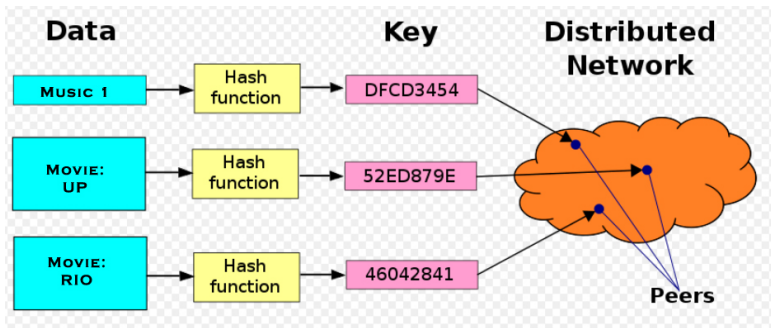


Figure: Distributed Hash Table

DHT Overlay

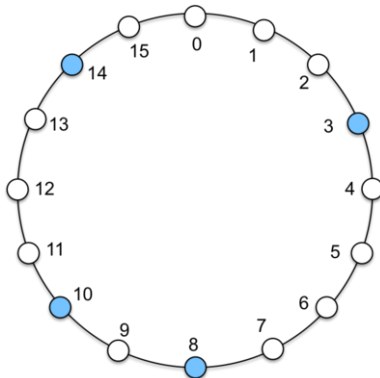


Figure: Structured P2P (DHT)

DHT Overlay

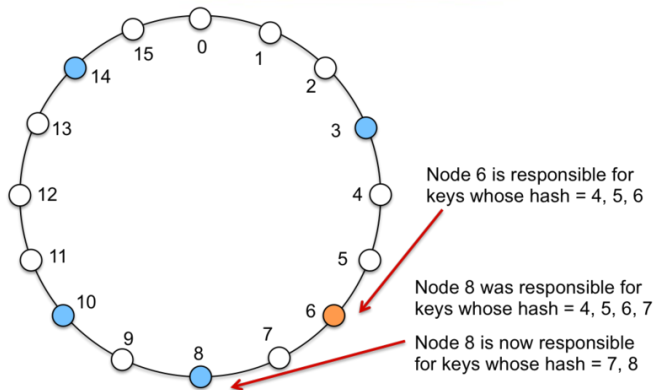
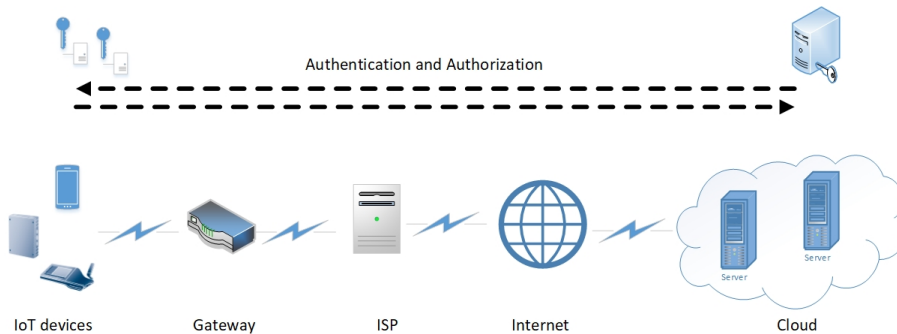


Figure: Structured P2P (DHT)

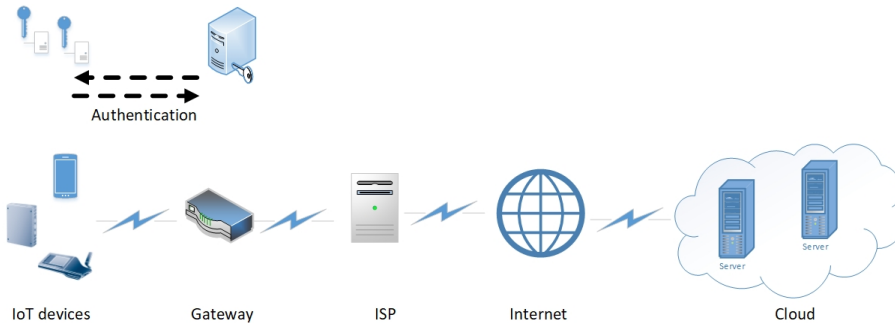
Fog-Computing

- ▶ Fog computing, refers to extending cloud computing to the edge of an enterprise's network
- ▶ Data can be processed more efficiently and securely than if it needed to be sent to the cloud for processing.

Cloud based authentication



DHT based authentication



DHT Overlay for Resource Discovery

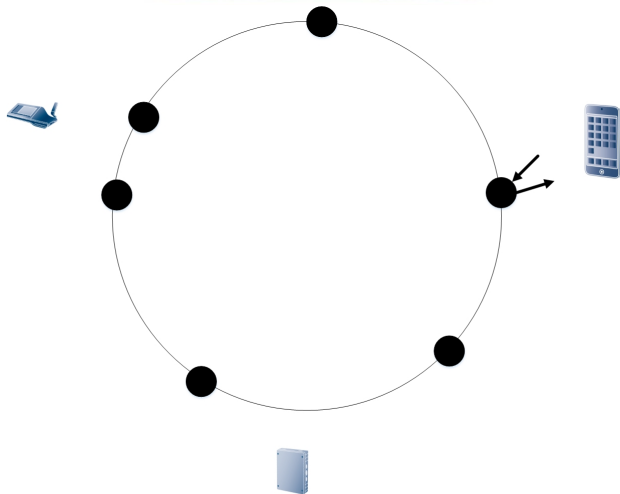
- ▶ (Tag, address) pair
- ▶ IoT gateway as peers in p2p network
- ▶ multi-parameter discovery
- ▶ Private Resource Discovery
- ▶ Forward and backward secrecy of data

Tag Generation

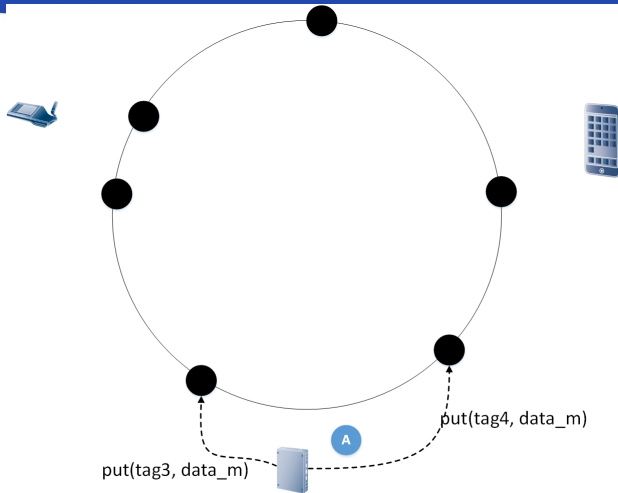
Table: set of pairs for temperature sensor in DHT overlay

Tag	H(Tag)	Tag pair
building d	ba7..984	$\langle \text{ba7..984}, \{ \text{resource}_{uri} \} \rangle$
hmp7	1ad..8e8	$\langle \text{1ad..8e8}, \{ \text{resource}_{uri} \} \rangle$
room v	665..fd3	$\langle \text{665..fd3}, \{ \text{resource}_{uri} \} \rangle$
temperature	d96..664	$\langle \text{d96..664}, \{ \text{resource}_{uri} \} \rangle$

Private resources

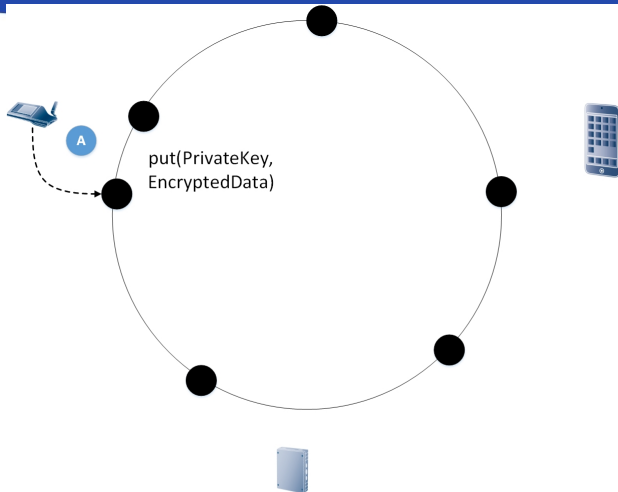


Private resources



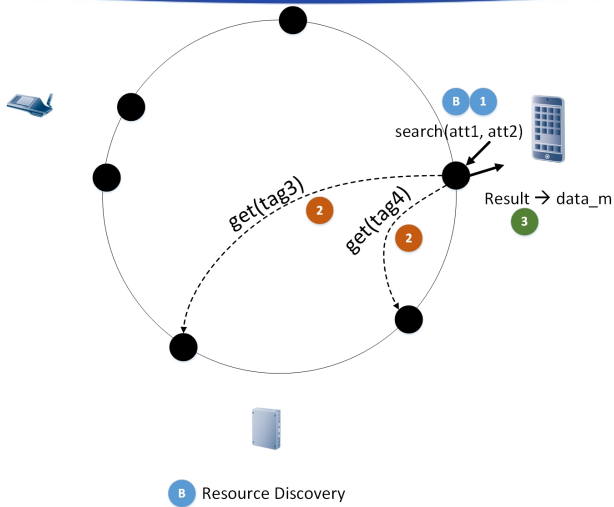
A Resource Registration

Private resources



A Resource Registration

Private resources



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