# A Multicast-Avoiding Privacy Extension for the Avahi Zeroconf Daemon

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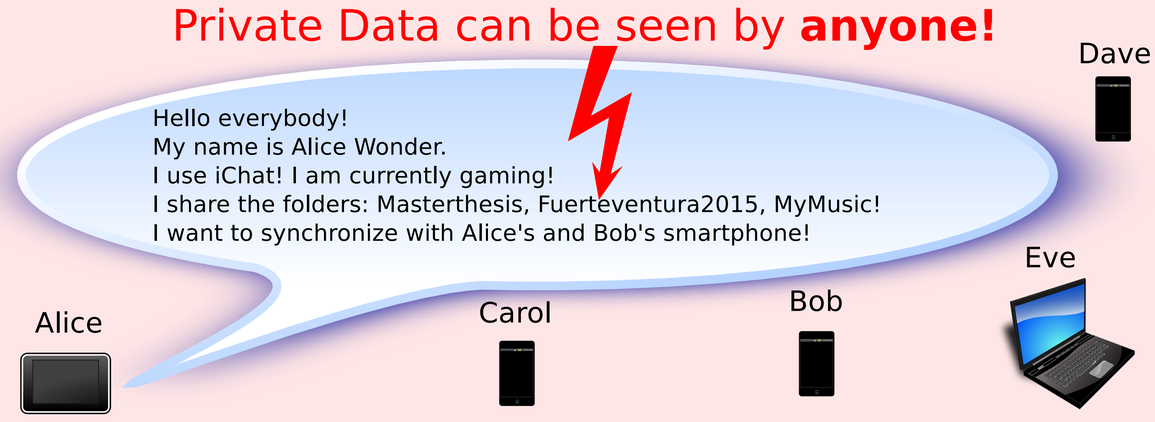
## Standard mDNS-SD

Private Data can be seen by **anyone!**




### Private information accessible by everybody

Zeroconf service discovery is very convenient
as it allows users to share services
in the local network with zero configuration overhead.

But there is a serious privacy problem:
even in untrusted networks, a lot of private information
is indiscriminately shared with everyone.

## Our Goals

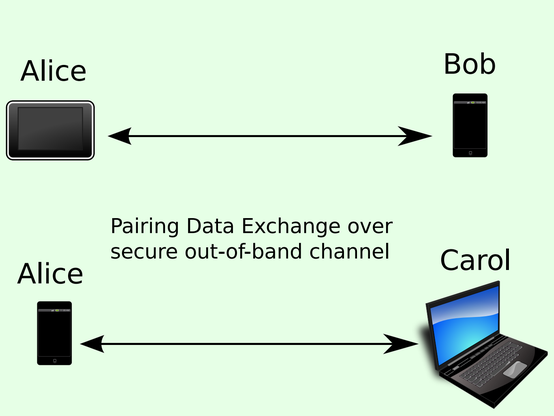
| Client Type | Public | Private |
|---|---|---|
| Standard mDNS-SD | ✓ | ✗ |
| untrusted | ✓ | ✗ |
| trusted | ✓ | ✓ |

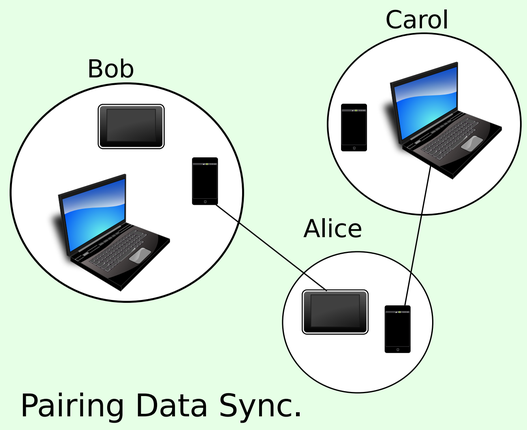
**Client access to service info**

### Transparent, tuneable and backwards compatible privacy

Publish private information only to select friends:
Using the Enhanced Service Browser the user
is able to tune privacy settings while sensible defaults
allow to get almost Zero-Configuration Privacy.
Our Privacy Extension is fully backwards compatible.

## Our Privacy Extension

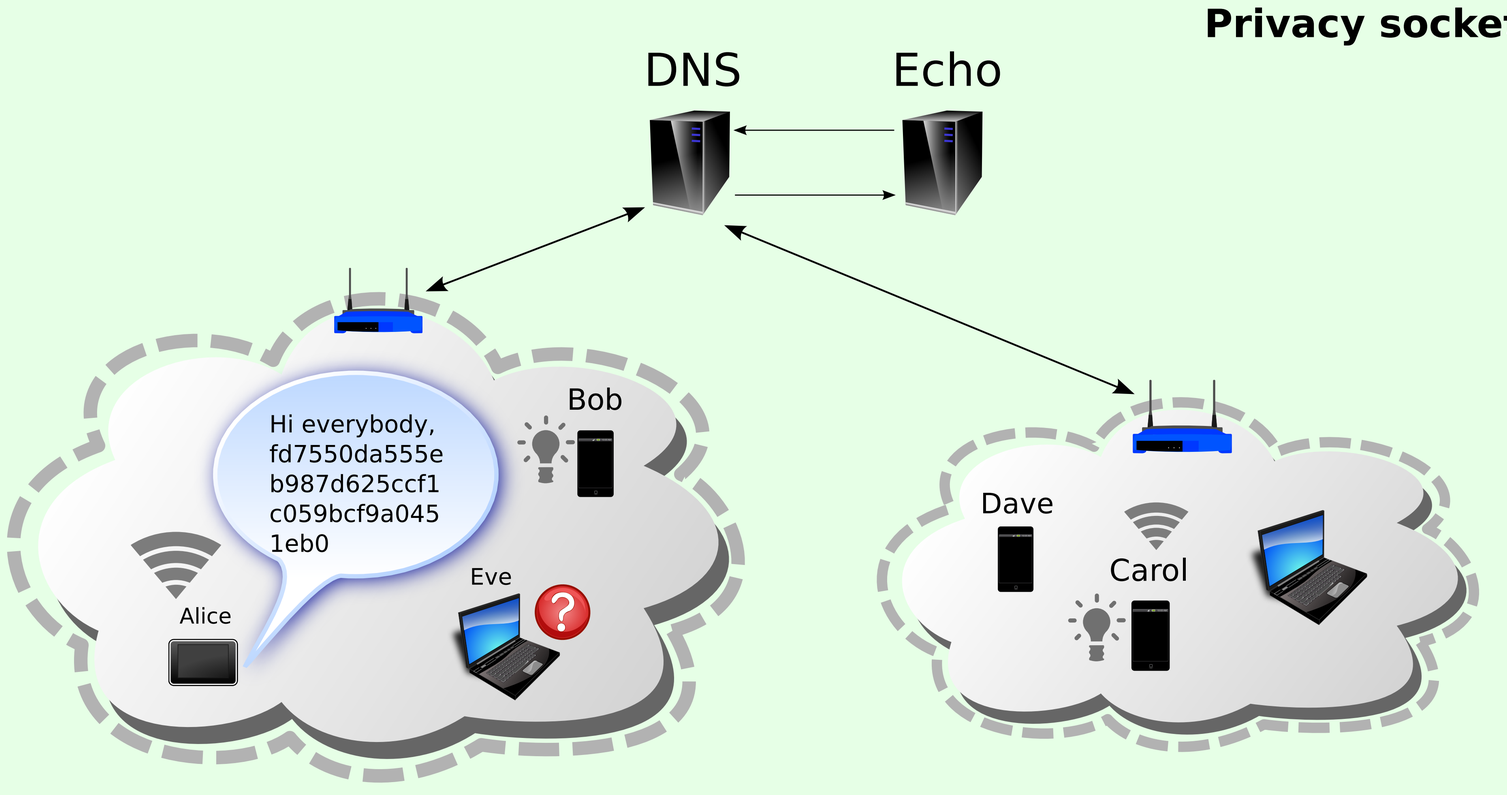



### Pairing: Once per pair of users

To be able to privately offer and request services,
users have to exchange pairing data only *once*.
Pairing data can be synchronized among
devices belonging to the same user.

### Privacy socket distribution: When entering a network

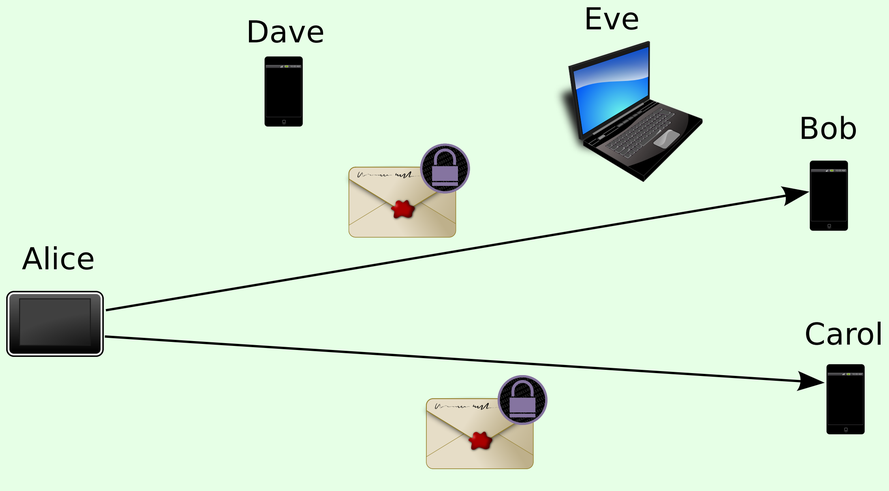



When entering a new network, a user
privately announces a private socket to her friends,
on which she answers encrypted service requests.
This socket can be distributed using either

1) encrypted multicast or

2) our Stateless DNS technique avoiding
multicast altogether.

Stateless DNS uses the local organization's
unmodified caching name server to allow hosts
to store key-value pairs, without having to register.




### Privacy preserving service discovery

Now it is possible to offer and request services directly
by sending the corresponding queries and answers
via encrypted unicast to the privacy sockets of friends.

This also saves orders of magnitude in bandwidth
on wireless networks.