ILNP – Identifier Locator Network Protocol
FreeBSD 14.0 demo

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https://ilnp.cs.st-andrews.ac.uk/

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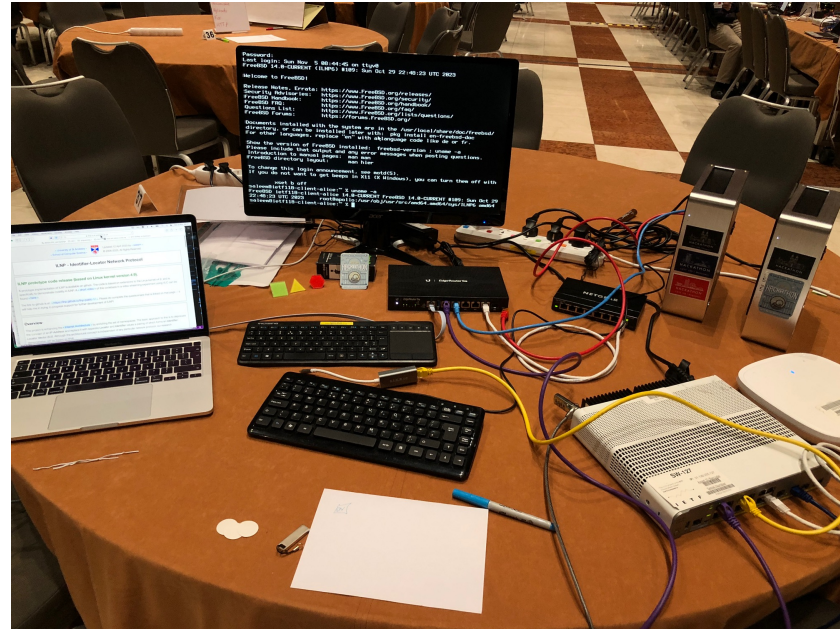
ILNP – The story so far …

- RFCs 6740 – 6748 (Experimental)

- Ongoing research and development:
  - University of St Andrews

- IETF104/Prague – Linux 4.9 kernel

IETF118/Prague

- Team:
  - Gregor Haywood (BSD dev, remote)
  - Saleem Bhatti (Project lead, Prague)
  - Ryo Yanagida (Demo, Prague)
- Aim: test ILNP basic connectivity between Prague and Scotland.

Experiments

- (ILNP uses IPv6 Destination Options.)

- ping

- rsync

- ssh

- Privacy ephemeral node identifiers (NID)

Results and Conclusion

- ping ☺
- rsync ☺
- ssh ☺
- Ephemeral (NIDs) ☺
- Conclusion

Wireshark window showing ilnp-ietf118-ping.pcap:

Filter: `ipv6.addr != 2001:67c:1230:601::eee && ipv6.dstopts.nxt==58`

No.	Time	Source	Destination
18	2.212552	2001:67c:1232:eee1:7c8c:7fdb:49f6:c8…	2001:630:35:0:138:251:30:221
19	2.249081	2001:630:35:0:138:251:30:221	2001:67c:1232:eee1:7c8c:7fdb:49f6:c8a5
31	3.265702	2001:67c:1232:eee1:7c8c:7fdb:49f6:c8…	2001:630:35:0:138:251:30:221

```
> Frame 18: 78 bytes on wire (624 bits), 78 bytes captured (624 bits)
> Ethernet II, Src: Ubiquiti_b6:f2:b0 (18:e8:29:b6:f2:b0), Dst: ICANNIAN_00:02:3d (00:00:5e:00:02:3d)
v Internet Protocol Version 6, Src: 2001:67c:1232:eee1:7c8c:7fdb:49f6:c8a5, Dst: 2001:630:35:0:138:251:30:22
     0110 .... = Version: 6
  > .... 0000 0000 .... .... .... .... .... = Traffic Class: 0x00 (DSCP: CS0, ECN: Not-ECT)
     .... 0000 0000 0000 0000 0000 = Flow Label: 0x00000
     Payload Length: 24
     Next Header: Destination Options for IPv6 (60)
     Hop Limit: 63
     Source Address: 2001:67c:1232:eee1:7c8c:7fdb:49f6:c8a5
     Destination Address: 2001:630:35:0:138:251:30:221
  v Destination Options for IPv6
        Next Header: ICMPv6 (58)
        Length: 0
        [Length: 8 bytes]
     v ILNP Nonce
        > Type: ILNP Nonce (0x8b)
          Length: 4
          ILNP Nonce: 094748c9
> Internet Control Message Protocol v6
```

Option type (ipv6.opt.type), 1 byte   Packets: 6286 · Displayed: 60 (1.0%)   Profile: Default