Zeroconf as simple name resolution for LAN

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About Me

- I’ve worked with open source for more than 15 years.
  - Samba Users Group Japan
    - Staff,postmaster,etc.
  - Writing about Samba and/or OpenLDAP
  - Consulting about open source software

Question

Do you know Zeroconf?

Do you use Zeroconf?

About This Session

- When installing a Linux server (e.g. openSUSE), its address is assigned by DHCP.
- However, since its IP address is not displayed, you can’t access it from other hosts.
- So, I will explain how to access a it easily by name under DHCP environment with Zeroconf.

Problems after machine installation

- We usually don’t specify an IP address during installing openSUSE or Windows server
  - It is basic to get IP address and other network parameters by DHCP
- What is the assigned IP address?
  - You can’t access from remote hosts without it
- But, I know its host name
- Can I access it by the name?
- It saves your time.

How to access a server by name

- /etc/hosts
  - It is necessary to know the IP address in advance
- Samba (NetBIOS)
  - Setting Samba up is required
- DNS
  - Although it can cooperate with DHCP, it is necessary to prepare a DNS server.

Is there a more convenient way?

How to access by name easily

- Zeroconf
  - Automatic resolution and automatic distribution of computer host names (name resolution)
  - network device information provider e.g. printer (service discovery)
  - Link local address(es) assignment to network devices (address selection)

Name resolution by Avahi daemon

- There is no software named Zeroconf
- There is no protocol named Zeroconf
- Name resolution
  - mDNS(multicast DNS) = Bonjour (in Mac OS)
  - LLMNR(Link-local Multicast Name Resolution)
- For openSUSE
  - Use Avahi Daemon.

Example

192.168.3.42 - Tera Term VT

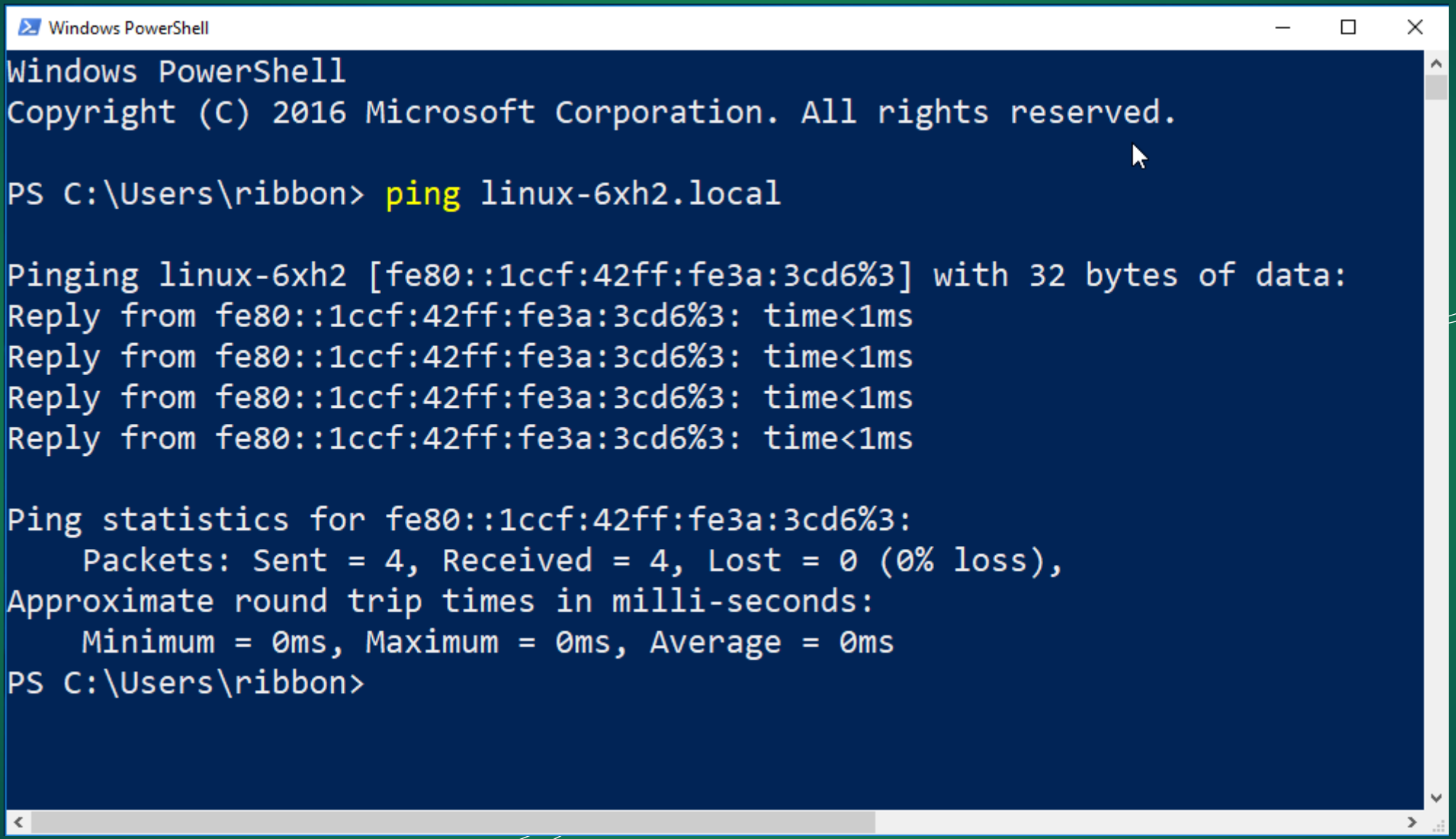
File Edit Setup Control Window Help

```
ribbon@leapsv:~> ping linux-6xh2.local
PING linux-6xh2.local (192.168.3.208) 56(84) bytes of data.
64 bytes from 192.168.3.208: icmp_seq=1 ttl=64 time=0.432 ms
64 bytes from 192.168.3.208: icmp_seq=2 ttl=64 time=0.538 ms
64 bytes from 192.168.3.208: icmp_seq=3 ttl=64 time=0.429 ms
64 bytes from 192.168.3.208: icmp_seq=4 ttl=64 time=0.434 ms
64 bytes from 192.168.3.208: icmp_seq=5 ttl=64 time=0.383 ms
^C
--- linux-6xh2.local ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4007ms
rtt min/avg/max/mdev = 0.383/0.443/0.538/0.052 ms
ribbon@leapsv:~>
```

LLMNR

- Avahi does not support LLMNR
- xllmnrd
  https://www.vx68k.org/xllmnrd
- No problem
- Access via IPv6

Example


Windows PowerShell
Windows PowerShell
Copyright (C) 2016 Microsoft Corporation. All rights reserved.
PS C:\Users\ribbon> ping linux-6xh2.local
Pinging linux-6xh2 [fe80::1ccf:42ff:fe3a:3cd6%3] with 32 bytes of data:
Reply from fe80::1ccf:42ff:fe3a:3cd6%3: time<1ms
Reply from fe80::1ccf:42ff:fe3a:3cd6%3: time<1ms
Reply from fe80::1ccf:42ff:fe3a:3cd6%3: time<1ms
Reply from fe80::1ccf:42ff:fe3a:3cd6%3: time<1ms
Ping statistics for fe80::1ccf:42ff:fe3a:3cd6%3:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
PS C:\Users\ribbon>

mDNS (for Windows)

- Bonjour Print Service for Windows
  - Download from Apple's page

Conclusion

- There are several ways to access hosts by name
- With Zeroconf (Avahi), it’s easy to access
- When accessing them from a Windows host,
  - Use LLMNR daemon into it
  - or
  - Use Bonjour for Windows
  - case by case which is easier

Thank You!
ご清聴ありがとうございました
Danke schön.
谢谢。
謝謝。
감사합니다.
Terima kasih.