

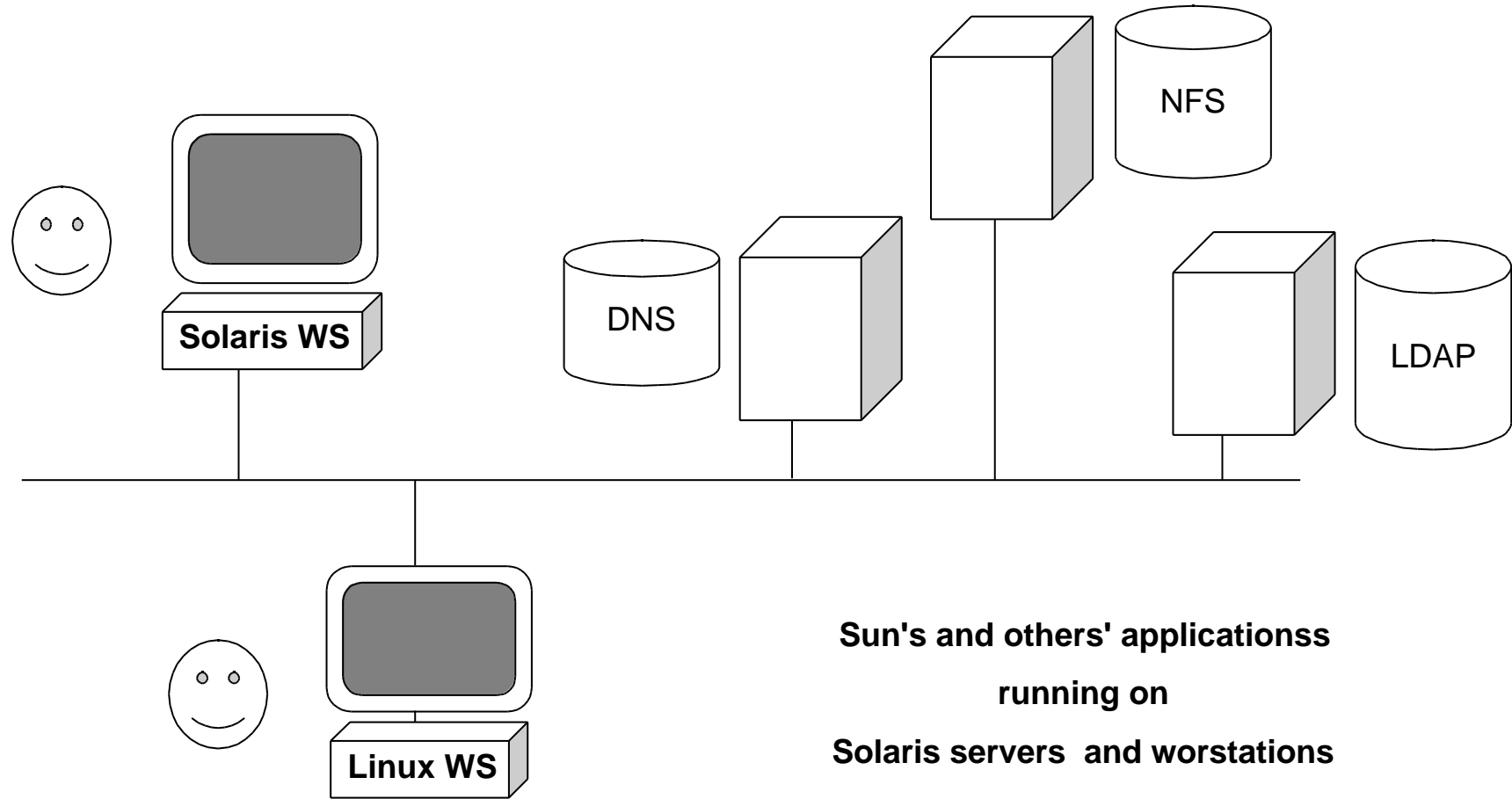
Sun & IPv6

A presentation for Sunet
2004-9-28

kjell.hogstrom@sun.com
bertil.lindblad@sun.com

Sun Microsystems AB

"Sun in the IPv6 world"



**Sun's and others' applications
running on
Solaris servers and workstations**

Sun early engagement in IPv6

- **Bob Hinden, working with SIPP, IETF driver of IPv6**
 - **presented in Sweden**
- **Erik Nordmark, IETF Area director**
 - **several IPv6 presentations @ Internet-dagarna**
- **IPv6-related info available on <http://playground.sun.com> from early days onwards**
- **Erik Nordmark currently involved in IETF work on scalable site multi-homing (how to handle sites using multiple ISPs)**

Customer cases so far ...

... are few in Sweden

Sun participated in basic IPv6 testing back in 1999 (one problem found, but quickly fixed)

Questions from Ericsson

IPv6 support in Solaris

- **Introduced as experimental add-on to Solaris 7 FCS**
- **Included in Solaris 8 and later**
- **Solaris 8**
 - **dual protocol stack**
 - **a few utilities converted to IPv6**
- **Solaris 9 extended functionality**
 - **IPv6 on ATM/pvc, PPP**
 - **X11**
 - **IPv4 and IPv6 tunnels over IPv6**
- **Will of course be there in upcoming Solaris 10**

IPv6/Solaris 10 - IPsec

Solaris 10: "IPv6 support is mandatory for core & kernel Solaris"

Solaris 10 further IPv6 support planned

- **support for recent IPv6-related RFC-s**
- **improved configurability of address selections IPv6/IPv4, which IPv6 address?**

IPsec

- **Solaris 8: IPsec included for IPv4, but IPv4 only**
- **IPsec on IPv6 added in Solaris 9**
- **IKE added in Solaris 9, but IPv4 only**
- **IKE IPv6 added in Solaris 10**

Dual stack solution

- IPv6 enabled at Solaris installation or later by creating */etc/hostname6.interface*
- */etc/inet/ipnodes* file for IPv6 and IPv4 address info
- Corresponding "tables" in NIS, NIS+, LDAP
- IPv6 routing configured by */etc/inet/ndpd.conf*

IPv6 extensions added to

- netstat
- snoop
- ping
- route
- traceroute

Bundled server sw

Solaris comes with the following standard clients/servers:

- **telnet / telnetd**
- **ftp / ftpd**

These two had IPv6 support added from the beginning

- **DNS**
- **sendmail**

These two are moved towards standard versions available on the Internet

BIND 8 bundled with Solaris 9, versions evolving with time (patches)

BIND 9 supported with Solaris 10

IPv6 support as per "standard versions"

Firewalling

Sunscreen became a bundled product with Solaris 8 (lite version) and Solaris 9 (full version)

Sunscreen only handles IPv4, and never will be capable of IPv6, as Sunscreen is EOL with Solaris 9

Replacement is ipfilter, version 4.0.33, included with Solaris 10

Sun server software

iPlanet / Sun ONE / Java ES server software family

- **LDAP directory server**
- **Webserver**
- **Application server**
- **Messaging server**
- **Calendar server**
- **Access management (identity server)**
- **Portal server with secure remote access**

The last two require web-container to run

IPv6 support is mostly there

**Two dedicated webservers integrated into messaging and calendar server
are IPv4 only**

**LDAP client for IPv6 requires "advanced" Idapsearch & co, bundled with the
directory server or its SDK**

Developing apps

Socket code written in C:

- Get the socket scrubber (was on playground.sun.com, now at <http://www.sun.com/software/solaris/ipv6/...>)
- Parses source code, flags old-style socket code needing changes

Java developers:

- Get IPv6 support automatically, if using sufficiently new version of Java SDK
- normally uses host fqdns, not bothering about addresses which are left to DNS ;-)

Code scrubbing sample

Doing `ipv6socket_scrub -f ../Pwnrq-d` creates results files in `/tmp/ipv6.dir/Pwnrq-d/results/ipv6.primary.results`, and more

A snippet:

This file contains the results of searching through

`../Pwnrq-d`

for patterns found in `/tmp/ipv6.dir/Pwnrq-d/config/primary_strings`

minus patterns found in `/tmp/ipv6.dir/Pwnrq-d/config/ignore_strings`

`../Pwnrq-d/RCS/inet_pton_ipv4.c,v`

```
41:int          inet_pton(const char *, struct in_addr *);
```

```
47:  if (family == AF_INET) {
```

```
48:      struct in_addr in_val;
```

```
49:      in_addr_t netnr;
```

```
54:      netnr = inet_addr(strptr);
```

```
56:      memcpy(addrptr, &netnr, sizeof(struct in_addr));
```

`ipv6.primary.results` similarly dives into include files