Progress Reports of MP-safe Networking in NetBSD

Ryota Ozaki
from IIJ SEIL team

AsiaBSDCon 2017
March 12, 2017
Network Components at a Glance

- **Device drivers:** vioif, vmx, wm, ixg, ixv, etc.
- **Layer 2:** Ethernet, bridge, ATM, FDDI, Firewire, IEEE 802.11, etc.
- **Layer 3:** IPv4/ICMP/ARP, IPv6/ICMPv6/ND, MPLS, etc.
- **Layer 4+:** TCP, UDP, DCCP, SCTP, socket, PCB, etc.
- **Pseudo I/Fs:** gif, l2tp, ppoe, tun, ppp, agr, carp, gre, tap, vlan, etc.
- **Packet filters:** npf, ipf, pf
- **Others:** ifnet, bpf, pfif, ipsec, altq, NFS, CIFS, opencrypto, etc.
MP-safe Network Components

- **Device drivers:** vioif, vmx, wm, ixg, ixv, etc.
- **Layer 2:** Ethernet, bridge, ATM, FDDI, Firewire, IEEE 802.11, etc.
- **Layer 3:** IPv4/ICMP/ARP, IPv6/ICMPv6/ND, MPLS, etc.
- **Layer 4+:** TCP, UDP, DCCP, SCTP, socket, PCB, etc.
- **Pseudo I/Fs:** gif, l2tp, ppoe, tun, ppp, agr, carp, gre, tap, vlan, etc.
- **Packet filters:** npf, ipf, pf
- **Others:** ifnet, bpf, pfif, ipsec, altq, NFS, CIFS, opencrypto, etc.
MP-safe Network Components

- **Device drivers:** vioif, vmx, wm, ixg, ixv, etc.
- **Layer 2:** Ethernet, bridge, ATM, FDDI, Firewire, IEEE 802.11, etc.
- **Layer 3:** IPv4/ICMP/ARP, IPv6/ICMPv6/ND, MPLS, etc.
- **Layer 4+:** TCP, UDP, DCCP, SCTP, socket, PCB, etc.
- **Pseudo I/Fs:** gif, l2tp, pppoe, tun, ppp, agr, carp, gre, tap, vlan, etc.
- **Packet filters:** npf, ipf, pf
- **Others:** ifnet, bpf, pfil, ipsec, altq, NFS, CIFS, opencrypto, etc.

See `src/doc/TODO.smpnet` for the complete lists.
How to try

● Disabled by default in -current yet
  ○ The big lock(s) remain

● Enabled by `NET_MPSAFE` kernel option

● Recommended setups
  ○ Router
    ■ IPv4/IPv6 forwarding
    ■ npf
  ○ Intel 1/10 Gbps NICs

● Have fun
  ○ ...at your own risk