AIS_Hackathon – Day 2

RFCs & Code Equivalent

RFC4213

Reference: https://tools.ietf.org/html/rfc4213

Participants:

Mohamed Aliouat (DragonFlyBSD) – In progress

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Changes in RFC 4213

- Removed automatic tunneling
- Removed use of IPv4-compatible IPv6 addresses

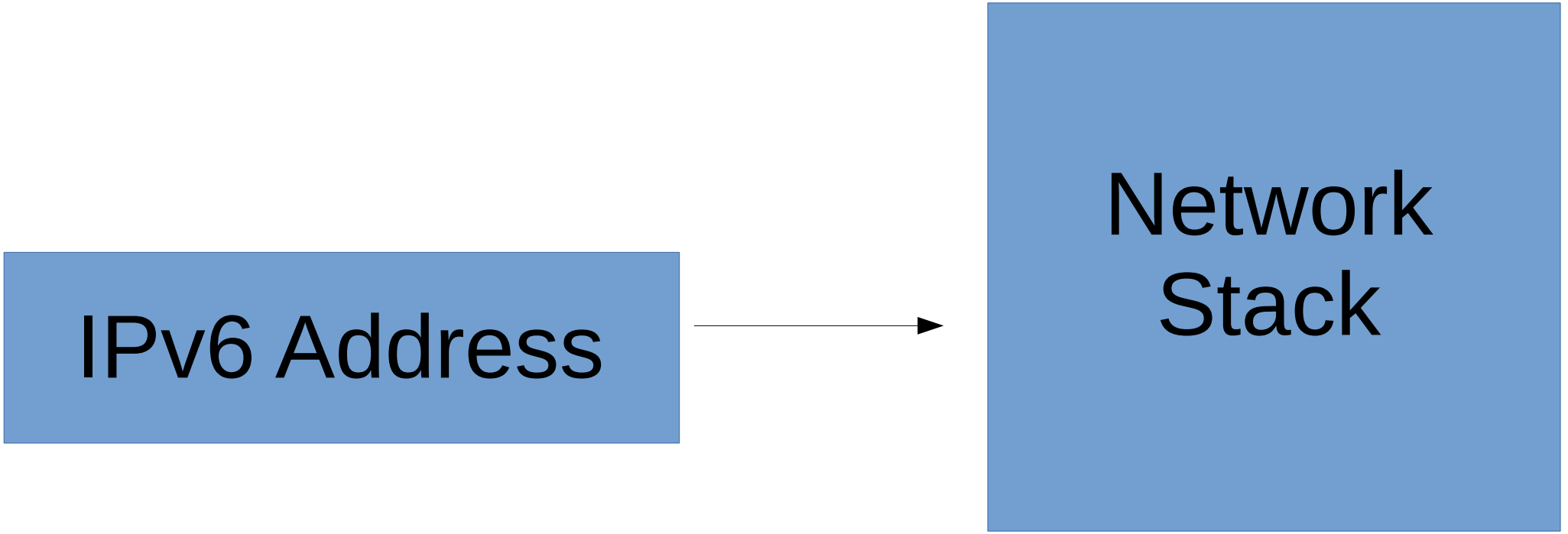
Why?

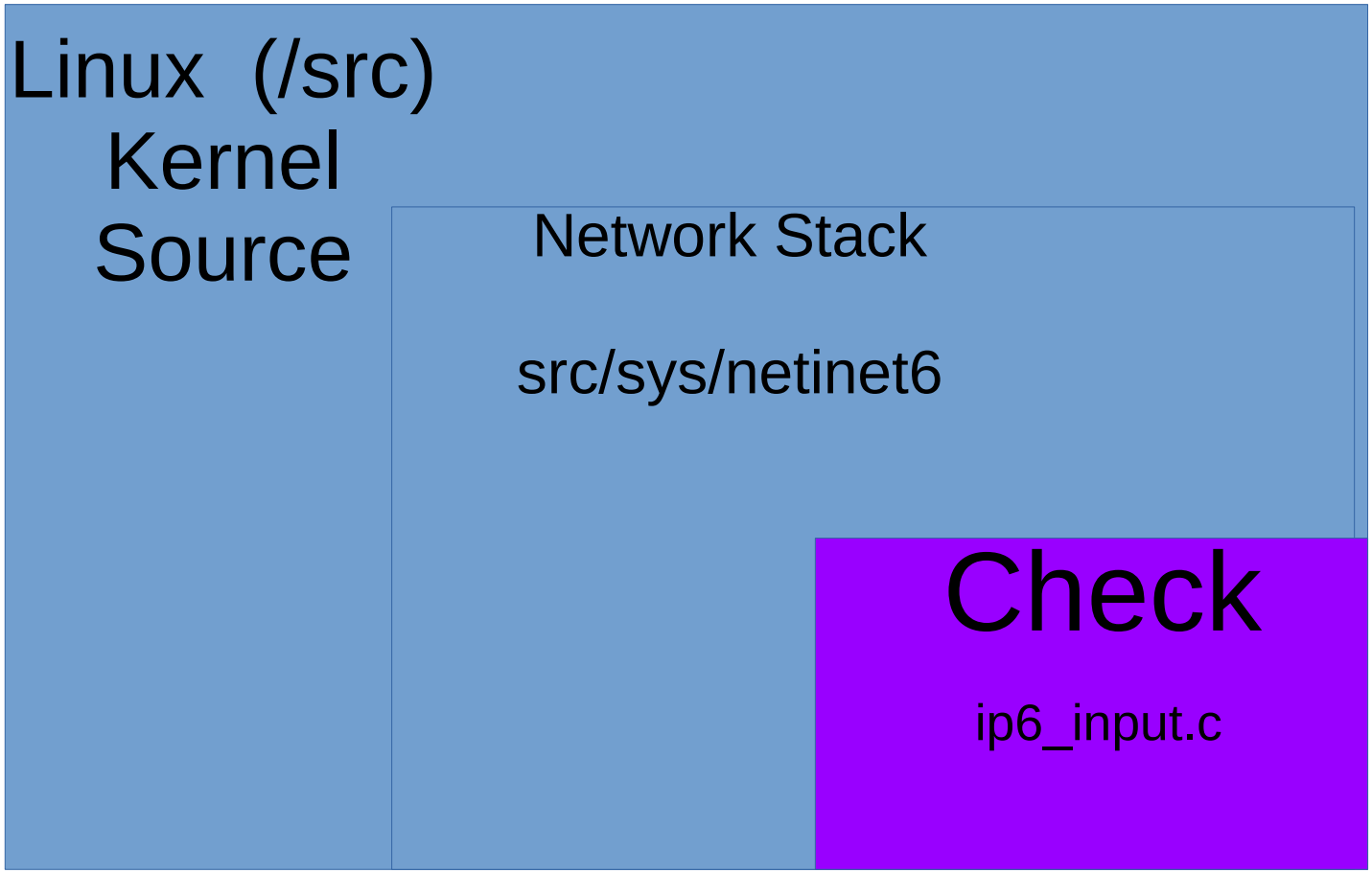
- IPv4-compatible IPv6 addresses are no longer in use

- Used during the transition from IPv4 to IPv6

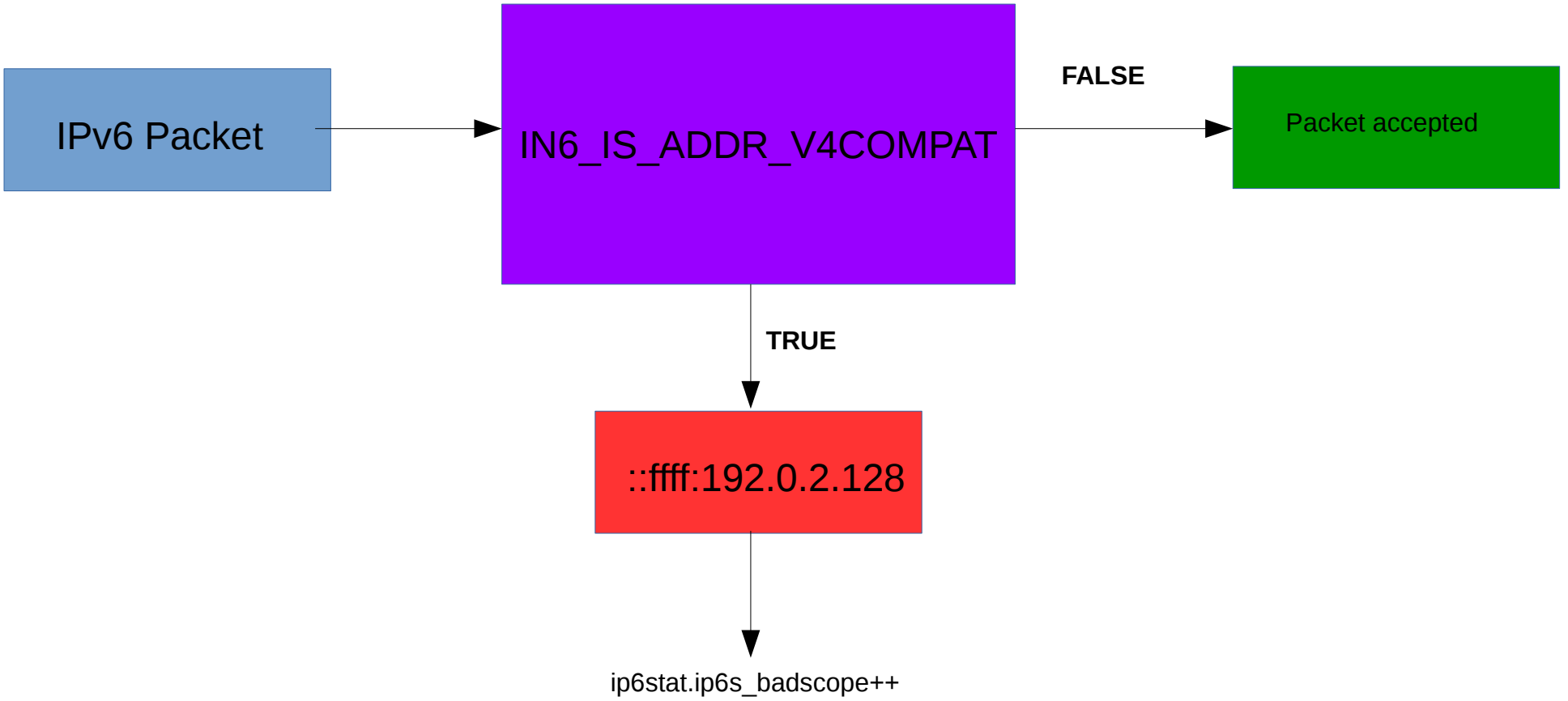
IPv4 compatible IPv6 add

- ::ffff:192.0.2.128 --> 192.0.2.128


IPv6 Address
Network Stack


Linux (/src)
Kernel
Source
Network Stack
src/sys/netinet6
Check
ip6_input.c

ip6_input.c


IPv6 Packet
IN6_IS_ADDR_V4COMPAT
FALSE
Packet accepted
TRUE
::ffff:192.0.2.128
ip6stat.ip6s_badscope++

Change - /sys/netinet6/ip6_input.c

```
-#if 0
+
        /*
         * Reject packets with IPv4 compatible addresses (auto tunnel).
         *
-        * The code forbids auto tunnel relay case in RFC1933 (the check is
-        * stronger than RFC1933).  We may want to re-enable it if mech-xx
-        * is revised to forbid relaying case.
+        * The code forbids automatic tunneling as per RFC4213.
         */
        if (IN6_IS_ADDR_V4COMPAT(&ip6->ip6_src) ||
            IN6_IS_ADDR_V4COMPAT(&ip6->ip6_dst)) {
                ip6stat.ip6s_badscope++;
                goto bad;
        }
-#endif
```

Compile kernel

- Compilation Successful!

- RFC 4213 Compliant FreeBSD Kernel

Summary

- - → Packet arrives at network stack
- --> Check is done in ip6_input.c
- --> API : IN6_IS_ADDR_V4COMPAT
- Returns true if address is IPv4 compatible IPv6 add otherwise false
- --> The check is done on both src and dst of packet structure
- --> if true, packet dropped silently + increment stack counters

In Progress:
Working on RFC 8021

Reference: https://tools.ietf.org/html/rfc8021