NRL’s IPv6 Implementation (4.4-Lite BSD)

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Implementation Status

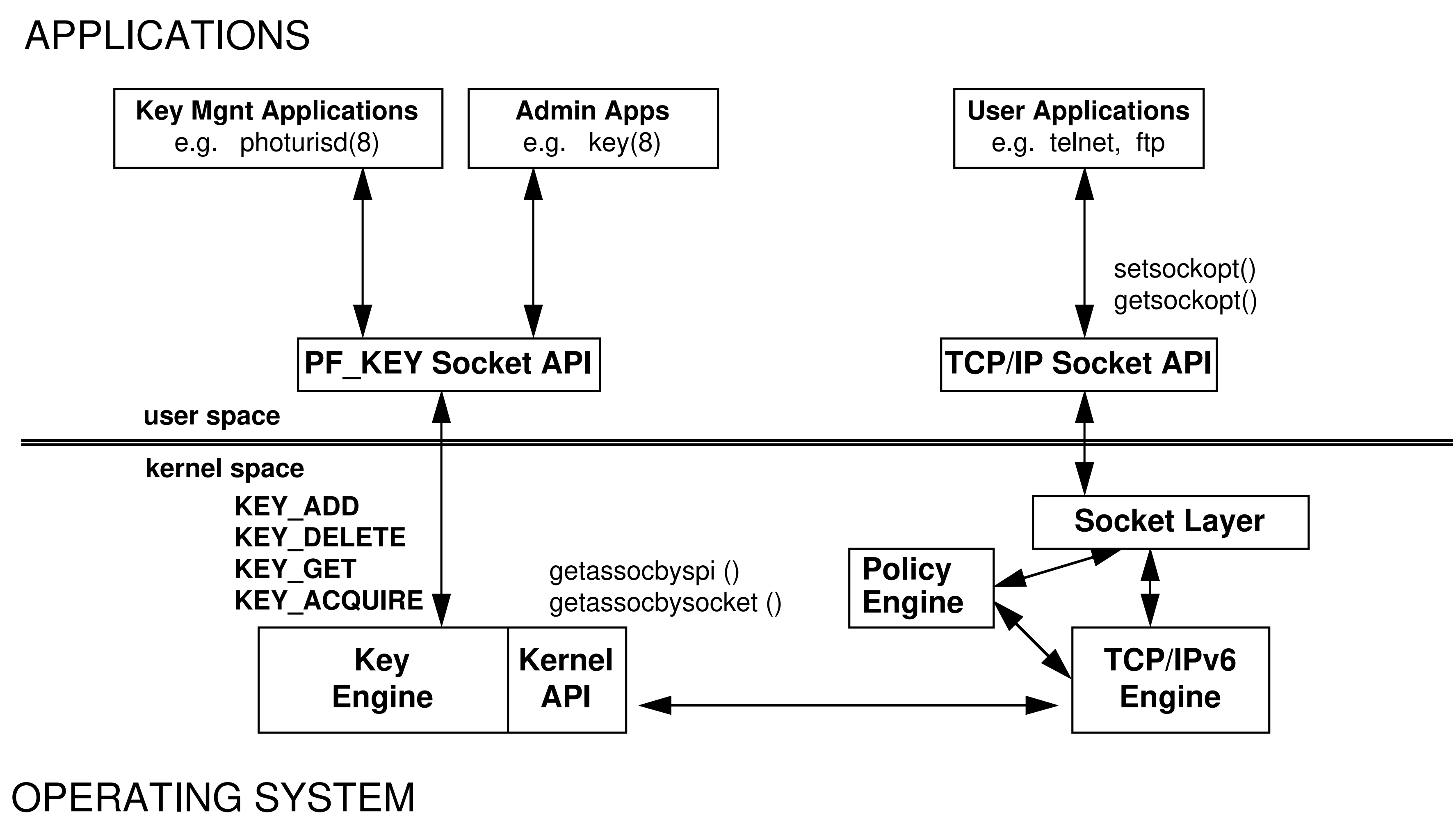
- TCP, UDP, and ICMPv6 are done.
- telnet(d), tftp(d), ifconfig, netstat, route, tcpdump are done.
- Neighbor Discovery is nearly done (pending spec updates), including multihoming.
- Addr conf is in progress. DAD works.
- Security (both AH and ESP) works.
- Source code is freely distributed thru MIT.

Preliminary Performance

- Following numbers derived from ttcp(8) between a Pentium 90 and a i486 DX4-100.
- IPv6 has not been optimized, IPv4 has been.
- Cryptographic algorithms are portable and unoptimized.

TCP/IPv4	~900 KB/sec
TCP/IPv6	~850 KB/sec
TCP/AH/IPv6	~430 KB/sec
TCP/ESP/IPv6	~212 KB/sec

Key Engine & *PF_KEY*



Lessons Learned

- Fragmentation forces out-of-order header processing.
- Unified PCBs are better than separate PCBs.
- Using host routes makes Path MTU easier.
- Where others use interfaces, we used routes.
- In our code TCP is less tightly coupled to IP.
- Security only impacts applications that use it.
- PF_KEY permits application layer key mgmt.