Paper summary

The paper describes the problem of scalability of the operating system for the fast-growing hardware changes in the industry. A new multi-kernel prototype is proposed called Barrelfish, which treats the machine as a distributed system of independent cores of microkernels and does explicit message passing instead of using shared memory. The underlying OS is independent of the hardware and hence can exploit features of different hardware. Also, the state in the OS is replicated, so no sharing is involved there as well.

Strengths

1. The paper acknowledges the performances of different OS's for the benchmarks are very different due to the nature of the OS and not enough for a quantitative conclusion.

2. The motivation for using a distributed, non-sharing system is justified with statistics and examples.

3. Lots of comparisons are made with popular operating systems.
4. Addressing the need to make some design changes during implementation in order to account for some performance gains.

Weaknesses

More analogies of multi-kernel to distributed systems like Hadoop would make the paper easier to follow.

The evaluation could have been better.

Diagrams could have been annotated better.

Comments for author

Overall, an excellent paper! Each core is treated as an individual microkernel here. What if exokernels or monolithic kernels were used instead?