**Debate: Microservices and Microkernels**

Read Appendix A: the Tanenbaum-Torvalds debate in DiBona & Ockman (1999) then read Fritzsch et al (2019).

The forum has a message that says: “Torvalds has been proven wrong and it only took nearly thirty years. Microservices and microkernels are the future. “

* On the forum post a message either agreeing or disagreeing with the above and give a justification (ideally with an academic reference) supporting your view.

Andrew Tanenbaum, the founder of the microkernel architecture, and Linus Torvalds, the creator of Linux, started the ‘Tanenbaum-Torvalds’ debate focusing on the Linux-based kernel and more broadly regarding the kernel-related architecture (DiBona et al., 1999). Tanenbaum argued in 1992 that microkernels are better than monolithic ones, and that Linux would have been replaced (DiBona et al., 1999).

The kernel is a fundamental component of the operating system (OS); in fact, the kernel controls the OS, including both its operations and the hardware on which they run (Zellweger et al., 2014; Fritzsch et al., 2019). In a monolithic kernel, user- and kernel-related services share the same address location; conversely, in a microkernel, they occupy different locations (Zellweger et al., 2014; Fritzsch et al., 2019). Thus, monolithic kernels are harder to update or extend than microkernels, with the latter providing a way to isolate and resolve failures instead of impacting the entire system as in monolithic kernels (Zellweger et al., 2014; Fritzsch et al., 2019). Nevertheless, developing a microkernel requires writing and maintaining more lines of code (Zellweger et al., 2014; Fritzsch et al., 2019).

I agree with the assertion above and, in fact, microservices enable software services to be decoupled from one another, more maintainable and are easier and faster to deploy (Zellweger et al., 2014; Fritzsch et al., 2019; Li et al., 2022). Thus, microservices leverage modular, reusable, testable and secure components that enable continuous integration and continuous delivery, as well as they add value to users faster (Zellweger et al., 2014; Fritzsch et al., 2019; Li et al., 2022). Differently from small monolithic applications, microservices enable to create large-scale secure applications, making them the preferred choice of software architecture in industry nowadays and in future (Zellweger et al., 2014; Fritzsch et al., 2019; Li et al., 2022).

**References**

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Zellweger, G., Gerber, S., Kourtis, K., & Roscoe, T. (2014) Decoupling cores, kernels, and operating systems. In *11th USENIX Symposium on Operating Systems Design and Implementation (OSDI 14)* (pp. 17-31).