Paper Critique – Week 2

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Exokernel: An Operating System Architecture for Application-Level Resource Management

The subject of this paper is about an operating system kernel architecture concept which separating the protection and management of machine resource. By this design, application (at user level) can use their domain-specific knowledge to optimize machine resource utilization in effective ways better than normal operating system ways. The paper's observation ("the lower the level of a primitive, the more efficiently it can be implemented, and the more latitude it grants to implementors of higher-level abstractions") also get my highly agreement.

The authors also implemented their propose solution into a prototype exokernel operation system and conducted some performance evaluation. Their implementation contains 2 main components: an operating system kernel in exokernel architecture (Aegis) and operating system library (ExOS).

Although the idea's outcome was validated tremendous, in practical it seems difficult to develop application which have to deal with all hardware management, virtualization, abstract… This architecture might be applied int domain of specific-purpose systems (embedded, low performance hardware).

Lottery Scheduling: Flexible Proportional-Share Resource Management