
Ghosts in the Machine: Interfaces for Better Power Management

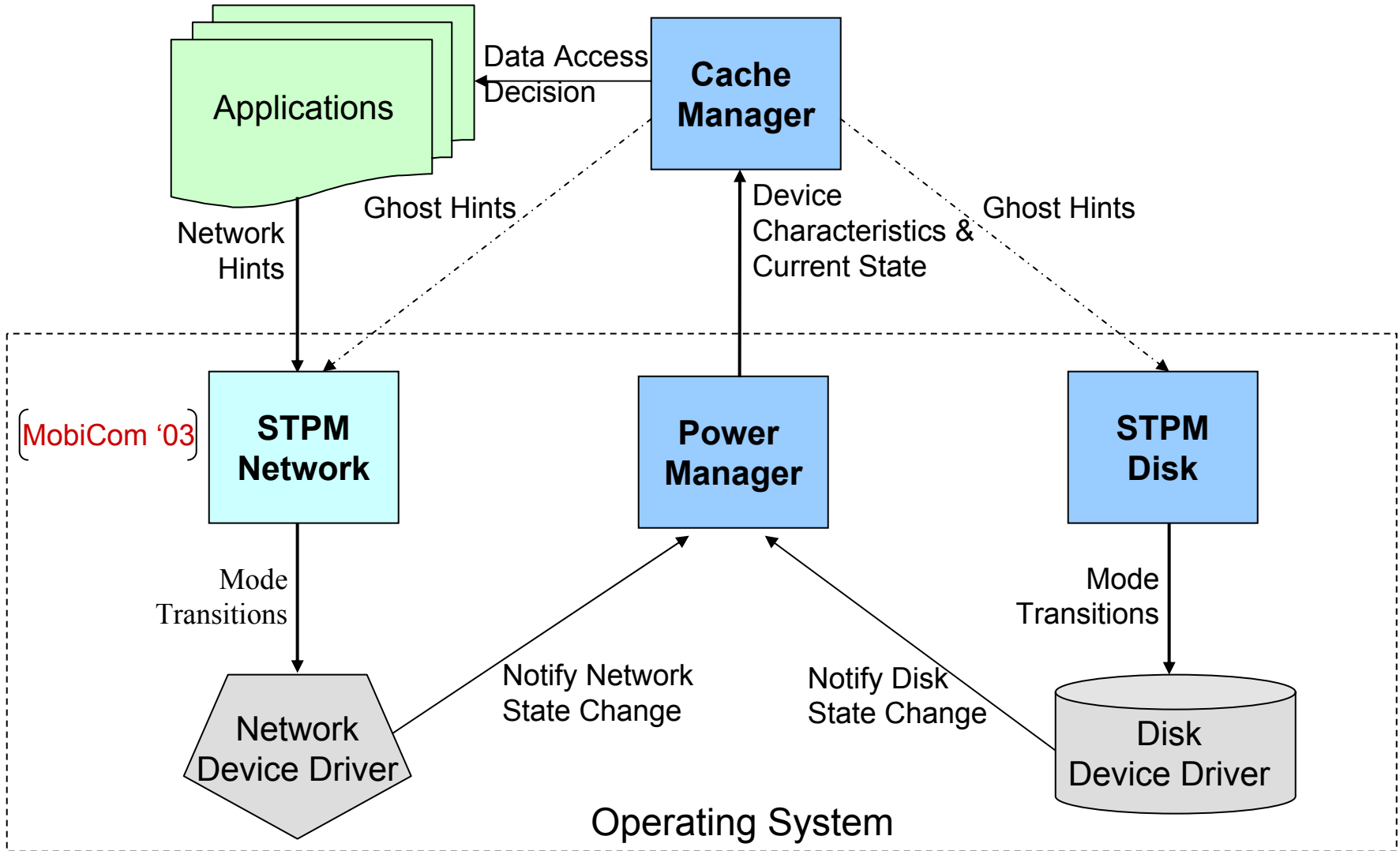
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Background, Motivation and Contributions

- Power is limiting factor in mobile computing
- Problem: Device-centric strategies do not consider the operating environment contexts, such as
 - Base power of mobile computer
 - Activity of other devices
 - Application intent
- Needed: Adaptive strategy to dynamically determine which power mode and what device to use depending on operating environment contexts
- Solution: create energy-aware adaptation architecture with
 - Power Manager, Self-Tuning Power Management, Ghost hints
- Evaluation: E-mail reader and web application (Dillo)

Energy-aware architecture



Ghost hints

- Best device may be chosen at any given moment, considerable opportunity lost because one or more devices are not in best possible power modes
- Idea: Consider ideal power mode for all devices then decide which device and power mode to switch to
- Solution: *ghost hints*
 - Exposes the missed opportunities of “accesses that might have been”
 - Calculate weighted benefit
 - After receiving few of these hints, then power manager decides to make transition

Ghost hints

