

Outline - Energy Management

- ECOSystem: Managing Energy as a First Class Operating System Resource
- Every Joule is Precious: The case for revisiting operating system design for energy efficiency



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CSE 542: Operating Systems

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Energy Management Systems

- Manage energy for the device/component
 - Disk, wireless device
- Cooperative application/OS mechanism
 - Odyssey
- Have the OS manage energy as a resource
 - ECOSystem



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ECOSystem

- Utilize resource containers to charge applications with energy consumption across subsystems (file, network devices etc.)
- Allocate currency similar to lottery scheduling
- Modify kernel to charge applications with energy costs
 - Spinning up disks is charged to all processes that utilized this spin-up operation



Discussion

- In a denial of service attack, why should the application pay for the attack?
- If the application knew that there would a disk spinup just for itself, maybe it would've changed/delayed its disk request.

