### Introduction

- **Power-aware computing** is becoming increasingly important as energy consumption becomes a key concern in the computing industry.
- **Energy optimization** can lead to significant cost savings and environmental benefits.
- **PowerPack** framework is introduced to address these issues.

### The PowerPack Framework

- **Components** include:
  - **Power Management Interface** for controlling power distribution.
  - **Power Analyzer** for monitoring and analyzing power consumption.
  - **Power Profiler** for profiling power usage in applications.
  - **Power-Saving Utilities** for implementing power-saving techniques.

### Results I: Distributed Application Power-performance

- **NAS PB power profiles** are often regular.
- **Power-performance tradeoffs** exist in distributed systems.

### Results II: Optimizing for Energy and Performance

- **Energy performance tradeoffs** are studied using PowerPack and nine DVS strategies applied to parallel scientific applications.
- **Dynamic Voltage Scaling Strategies** are evaluated for achieving energy efficiency.

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**Our Approach**
- 1. **Framework for profile control, rescue and optimize distributed power-performance.
- 2. Power-performance tradeoffs of scientific workloads on several distributed systems.

**Our Contributions**
- 1. **Portable framework** to profile/control, analyze and optimize distributed power-performance.
- 2. **Energy-performance tradeoff studies** of scientific workloads on several distributed systems.