

COEP Hackathon 2019

Title: Sustainable College Labs

Save Power, Save Money & Sustain

Background

Generally, most of the organization contain the computer labs which includes 100's of computers and most of the time computers are in idle state and power is ON or log Off. So, it is very important to understand the usage pattern of labs to save the power which has huge impact on CO2 emission and cost.

Problem Statement

Design a system to monitor and visualize lab computers and analyze how much money can be saved while protecting our environment.

Lab admin should be able to

- register all Lab and computer details and collect all computer data
- view below computer parameters for all/selected lab against time:
(date-time, type/model of computer, CPU/memory/network utilization, disk i/o, shutdown, power ON/idle, sleep/log off/hibernate mode)
- get summarized report of following parameters for all labs:
 - TOTAL POWER SAVING
 - ANNUAL COST REDUCTION
- predict usage pattern based on historical data
- maintain the obtained result (for instance total power wastage) from the collected data and discard the history say more than 1 year periodically in background
- send warning notification to user to shut down the system in future

Hint:

- ✓ Use predefined power consumption and cost value from available data on Internet in case of sleep/idle for the specific type/model of computer
- ✓ Check following parameters to identify the usage of the system
 - processes
 - disk i/o
 - CPU/memory/network utilization
 - sleep/log off/hibernate mode

Try to use open-source tool for monitoring, analyzing to make your system more robust, scalable and maintainable.

LAB-1: [Computers, ...] <<---- [Data collector and Analyze]-|

LAB-2: [Computers, ...] <<---- [Data collector and Analyze]- |----> [Visualization/Analysis tool]

LAB-3: [Computers, ...] <<---- [Data collector and Analyze]- |