HOW TO...

RECEIVE REBATES FOR SERVER VIRTUALIZATION AND RELOCATION

SUSTAINABILITY OPPORTUNITY

Stanford uses approximately 6,000 servers for administrative and research computing. It takes a lot of energy to run and cool these servers, even if they don't take up much building space. A study conducted by Stanford's Sustainable IT Working Group found one server room to be less than 3% of the building's footprint, but consume 41% of the building's energy. Through virtualizing and/or relocating servers, the energy consumption of computing equipment can be drastically reduced.

Relocating Servers

The energy required to run and cool servers is highly dependent on the type of facility hosting the server. A server located in a server closet on campus requires a lot more energy to support than a server located in one of Stanford's data centers because the data centers are designed and maintained specifically for computing equipment. The same study found that the daily energy cost to host a server at on Stanford's campus ranges from $3.21 to $6.55 per kW of IT load, depending on where it is located. Hence, relocating servers to a data center will often cut their energy consumption in half. Relocating servers also frees up precious building space for academic use and decreases risk of disruption and loss of research.

Virtualizing Servers

Server energy consumption can also be reduced through virtualization, which divides one server into multiple isolated virtual environments and allows for computing resources to be consolidated into fewer servers. A virtualized environment also provides better hardware utilization, flexibility and recoverability.

Rebates

Stanford's Energy Retrofit Program (ERP) provides rebates for virtualizing servers and/or relocating them to a more efficient location (most often, one of Stanford's data centers). Rebates are reserved for projects that need additional funding to be fully implemented—if the project will be implemented regardless of ERP funding, it unlikely to be eligible for a rebate. Servers must be originally (i.e., before virtualization or relocation) housed in a building that purchases electricity from Stanford Utilities to be eligible for a rebate. The rebate can be up to three years worth of energy savings, capped at 100% of the project cost.

Above- By separating hot and cold aisles and deploying outside air and chilled water for cooling, Stanford's Research Computing Facility is one of the most energy efficient locations to house servers supporting campus research.

HERE'S HOW:

To receive a rebate for server relocation

1. Determine to which data center the servers will be relocated.

    - If they are used for research computing, they will likely be relocated to the Stanford Research Computing Facility (SRCF) at SLAC.

    - If they are used for administrative computing, they will be relocated to Forsythe Hall.

2. Contact the data center to discuss hosting options, transportation, and cost.

    - SRCF contact: Phil Reese, preese@stanford.edu, (650) 723-4328. More information here: https://doresearch.stanford.edu/research-scholarship/computing-support-research

    - Forsythe contact: Lucrecia Kim-Boswell, lkimbosw@stanford.edu, (650) 725-9414. More information here: https://uit.stanford.edu/service/serverhosting/servicedescription

3. Fill out the server relocation rebate application.

4. An energy engineer will conduct a site visit of the current location of the servers to determine the quantity and types of servers and categorize the room's cooling system (i.e. its assumed Power Usage Effectiveness—PUE). This information will be used to calculate a maximum rebate amount.

5. Once servers have been relocated and the room has been retrofitted for its new use, submit a list of project costs. If the total project cost is less than the maximum rebate amount, the rebate will be capped at the cost of the project.

6. The rebate will be transferred using your specified PTA number.

To receive a rebate for server virtualization:

1. Fill out the server virtualization rebate application.

2. An energy engineer will review the form to confirm that the project qualifies and estimate the rebate amount.

3. Virtualize servers. VMware software is available for virtualization: https://sustainable.stanford.edu/campus-action/energy/sustainability-information-technology/vmware

4. Contact Stanford's Surplus Property Sales (Alex Perez, Alex.Perez@stanford.edu, 650-723-3001) to pick up decommissioned servers. Submit proof of removal.

5. The rebate will be transferred using your specified PTA number.

SUSTAINABLE **STANFORD**