Executive Summary: Green Data Center Hardware

Improving technology and the need for greater efficiency has driven the IT world to create technological resources that can utilize its full capacity while maintaining quality efficiency. With the increasing usage of the internet and other electronic resources, large companies that maintain these resources require the most up to date technology in order to run efficiently. Google and Facebook are two of the largest organizations that operate on the internet and maintain electronic resources that a significant number of people around the world regularly use on an everyday basis. To meet the demand of consumer usage and the need for green-technology, Google and Facebook operate large data centers that are sustainable and utilize 100% renewable energy.

“Greening” a data center doesn’t have to mean buying expensive hardware to reduce power consumption. Facebook’s new data center in Sweden is a great example on how we can use simple geographic factors to go green. Given that Sweden has an established Hydro-electricity plant, any data center in that area would be able to utilise the 100% renewable energy source. Facebook’s ingenious idea of using the naturally occurring cold nordic air to keep their servers cool and the heat from the servers to keep the office warm. Facebook was also able to reduce the number of redundant back-up generators by 70% due to the reliability of the hydro plant in Sweden. This way, not only is Facebook saving cost but also maintaining the cleanliness of the environment.

In order to saving energy but also maintain the quality efficiency, a company could achieve the goal in different ways. Google runs the greatest data centers in the world. One way they saving energy is by keeping the temperature on the server floor at eighty degrees Fahrenheit. So they do not need many energy-intensive AC working in the center. Google’s server support many product at the same time by using “the cloud”, so they can do more works with fewer servers and less energy. They use 50% less than they typical data center. From 2007, Google started to recycle servers to avoid buying the replacement machines. They always try to reuse what they have, for the equipment that will not be used anymore, Google erase any data components and resell them. In this way, Google recycle 100% electronic equipment that leaves the data center. They encourage all suppliers to produce components that operate efficiently at all time. Google always buy the green power from the wind farm near the data center whenever they can. They use renewable energy to power over 34% of their operation.

Though both these companies data centers have been the cream of the crop among all data centers, these green initiatives need to be replicated in more data centers. As more services are put up in the web, more data centers are built to deliver those services. When it comes to building data centers, the interests of IT corporations are usually conflicted between maintaining low cost or to be environmentally friendly because most situations are not as ideal as Facebook’s data center in Luela, Sweden. As hydro-plants are scarce and other renewable sources, such as wind and solar, are unreliable, IT corporations are limited to what utility companies have to offer; which is typically coal.

Since IT corporations require data centers to be distributed in different geographic locations, one or two “green” data centers will not be enough to reach the goal of “greening” data centers. Instead of relying only on power sources and clever use of geographic locations, data centers should look to reducing power based on the designs of their servers and their data centers.