Practical no-05

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1.What is green computing?

- Green computing **benefits the environment**. Reduced energy usage from green techniques translates into lower carbon dioxide emissions, stemming from a reduction in the fossil fuel used in power plants and transportation. Conserving resources means less energy is required to produce, use, and dispose of products.

- The term green computing came into existence with the launch of Energy Star program in 1992 by **U.S environmental protection agency**. It aims towards electricity saving and less amount of heat generated by the computers. Widespread use of computers and related IT products has a very bad effect on the environment. Efficiency in **various appliances, such as laptops, washers, dryers, and refrigerators**. Organizations use the Green Computing Lifecycle when designing and implementing green computing technologies.

Types of Green Computing

- Solar Power System. In this program we utilize the sunlight and produce the Solar Power for personal and commercial usage. ...
- Geothermal Power.

- It will **save the sufficient energy cost of cloud data centers**. It will minimize the impact of carbon dioxide emissions. It will also reduce the greenhouse effect because of much energy consumption by modern IT systems.

- Cloud computing makes an outstanding contribution to sustainability via dematerialization. This process **lets high-carbon physical products get replaced by their virtual equivalents**. When you introduce energy-efficient items instead of carbon, it makes a good impact in reducing the carbon footprint.

- It **consolidated all processing and storage requirements for a certain zone into a single data center with excellent security, decreasing data theft and loss**. Green Cloud Architecture is the result of these processes, which lead to both energy efficiency and a mindful understanding of carbon emissions.

- **Green computing is an environmentally responsible approach to reduce electronic waste and power consumption that helps in use of computing resources efficiently**. With the increase in use of computer and other electronic devices the energy consumption and carbon footprint are also increasing.

2.Some examples of green computing?

Examples include**:**

- Purchasing from Environmentally Committed Companies.
- Participating in Electronic Recycling Programs.
- Deploying Virtual Technologies.
- Limiting Printing and Recycling Paper.
- Wastewater treatment.
- Elimination of industrial emissions.
- Recycling and waste management.
- Self-sufficient buildings.
- Waste-to-Energy.
- Generation of energy from the waves.
- Vehicles that do not emit gases.
- Harnessing solar energy.

3.Steps to contribute towards green computing.

- Recognizing the need for green IT adoption is different from putting it into action. As of now, most companies, whether big or small, are still clueless on the point where to start in green computing. Innumerable amounts of studies have been conducted in making IT departments more environment-friendly. Thus, the whole IT industry is stuffed with information on green strategies, most of which may even clash with other environment-friendly initiatives. So, here comes up a 10-step guide to develop a more environment-friendly IT department in your company.

1. **Proclamation of the Green Intentions:**
    a. It is always best to begin Green IT initiatives by communicating intentions to adopt an environment-friendly IT infrastructure. The push for energy efficiency should be cascaded down to every staff, setting the stage for collaboration between various departments. Once they learn about the initiatives, they will know that everyone needs to be involved.
2. **Appointment of a Working Group for Green IT Compliance Assurance:**
    a. Once the ball is set to roll, you need to have a committee that will monitor and ensure that the company's plans are adhered to by all members of the organization. One of the most important tasks that the appointed Green IT Committee must focus on is the acquisition of energy efficient IT infrastructure. This team should make sure that the IT groundwork meets all the criteria that are set for the protection of the environment.
3. **Measurement of Current Carbon Footprints Produced by IT Components:**
    a. Where the company stands in terms of carbon footprint brought about by information technology services, is an important information to be known. Quickly establish a carbon footprint reference point. Check on the power usage in the IT center and compare it with existing power efficiency standards and metrics for industry.
4. **Planning More Centralized IT Operations:**
    a. It is relatively easy for an organization to centralize its information technology (IT) system. With server virtualization, carbon footprints can be significantly reduced.
5. **Usage of More Efficient Computer Applications:**

By using more powerful computer applications, your IT systems can better deal with inefficiencies. Besides, faster software spares the servers from regularly operating at maximum capacity, thereby consuming lesser power. If one can only increase the speed of the computer applications that is used, one can have a corresponding positive effect on the energy use and carbon emissions.

6. **Usage of More Efficient Cooling Systems:**
    a. To reduce your CRAC (Computer Room Air Conditioning) power consumption for green computing, invest in supplemental cooling systems that are placed in between the rows of servers in data center. Thus, they can minimize the number of times in a day that the bigger CRAC units are required to work on full power. Apply new Data-Centre design technology that minimizes hot-zones.
7. **Careful Weightage of Life-cycle of IT Devices and Accessories:**
    a. Consider the projected life-cycle of existing IT hardware. Can it be recycled? Will it decay in time? If not, then disposing of existing hardware can far outweigh the environmental benefits that you intend to achieve by buying newer more power-efficient computer hardware.
8. **Business Performance Enhancement through Green IT Policies:**
    a. Make sure that the drive for a green IT fits in your overall business operation. Better yet, ensure that environment-friendly IT and the business goals complement each other. By doing so, you will be able to achieve both green policies and bottom line goals.

9. **Work with Everyone Involved in IT Process Life-cycle:**
    a. Now that you have taken the steps to ensure that company uses green IT, you need to get everyone involved in the initiative. The human resources department can support initiatives by regularly posting announcements and notices that touch on the subject of environment-friendly computing.
10. **Result Monitoring and Continuous IT Optimization:**
    a. Lastly, you should always check the results of green IT initiatives. Compare this data with the benchmarks and metrics that is set for the company. A good example is checking total power consumption for each month. If it has significantly dropped, then one can say that we have effectively reduced your organization's carbon footprint.
    b. By using more powerful computer applications, your IT systems can better deal with inefficiencies. Besides, faster software spares the servers from regularly operating at maximum capacity, thereby consuming lesser power. If one can only increase the speed of the computer applications that is used, one can have a corresponding positive effect on the energy use and carbon emissions.