Green Computing and Its Importance

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ABSTRACT

This paper will give a brief knowledge about the green computing and its uses and different ways the green computing can be used now days and how can we use it. The advantages and disadvantages and what does it mean and how it can be useful in future for the people and how is useful for us and what is it exactly. The green computingpractices include implementation of energy-efficient central processing units (CPUs), peripherals as well as reduced resource consumption and disposal of electronic waste (e-waste) andservers[1].Rather than viewing the environmentally sustainabledata center as a product feature checklist for a onetime win, serious IT architects are adopting a more comprehensive sustainability plan in their data center system design [2]. The new technology from the industry continues to drive efficiency into the IT infrastructure; environmental systemic quality metrics need to be built into at every part of the IT architectural process, and an ongoing architectural need is required at all levels of the infrastructure, beyond a typical product procurement strategy.

INTRODUCTION

As we know the computer is taking over the world even different industries where computer is a basic need even in our own homes we require computer and that is used in day to day life. So we introduce a concept of Green computing is a challenge for all companies these days. Basically green computing is one thing which means to be environment friendly in a way that can reduce the harmful or dangerous material and maximize the products life and even it use for the customers without harming the environment. As green refer to the environment and we go with its flow without harming it. The product should be recyclable and can be used worldwide and without harming environment. The material in factory that is not useful or waste can also be used in this so that more products are recycled and used without giving harm to environment.Many corporate IT departments have green computing initiatives to reduce the environmental impact of their IT operations [1].Even later energy star logo on monitor came to promote and recognize the energy efficiency.

DISCUSSION

Green computing is a step taken to save the environment and be environment friendly and so that we can minimize loss to our environment and can use this green computing as an important thing, such as energy efficiency central processing units (CPUs),peripherals and servers.   In addition green technology aims to reduce resource consumption and improve the disposal of electronic waste (e-waste)Green computing was a big step and first the energy star that was introduced by U.S environmental protection agency. A labeling was voluntary to promote and recognize energy effiency in monitors, climate control equipment, and other technologies. , the Swedish organization TCO Development launched the TCOCertification program to promote low magnetic and electrical emissions   from CRT-based computerdisplays; this program was later expanded to include criteria on energy consumption, ergonomics, and the use of hazardous materials in construction [1].Green computing or green IT, refers to environmentally sustainable computing or IT. It is the study and practice of designing, manufacturing, using, and disposing of ICT — efficiently and effectively with minimal or no impact on the environment. Green IT also strives to achieve economic viability and improved system performance and use, while abiding by our social and ethical responsibilities. Thus, green IT includes the dimensions of environmental sustainability, the economics of energy efficiency, and the total cost of ownership, which includes the cost of disposal and recycling. [13]

Government agencies are encourage green computing and the energy at program which was revised for the computer equipment in

October 2006 and it included stricter effiency requirements in addition.

Green technology cost-reduction and operational benefits: reduce   the carbon emissions and taming energy efficiency is no longer just an option. It is now an inevitable future of the 21st century business landscape.

INDUSTRY USE OF GREEN COMPUTING AND ITS USEFULNESS:

- **CSCI (climate savers computing initiative):** This is an effort that is used to reduce electric power consumption of pcs in both states in active and inactive. This provides the catalog to green product for its members. The WWF (world wildlife fund) is member of computing initiative.
- **Green electronics council offers electronic product environmental assessment tool (EPEAT):** To assist in the purchase of green computing system.
- **Green grid:** Advancing energy efficiency in data centers and business computing ecosystems. Founded in February 2007 by companies- AMD, DELL, HP, IBM, APC, INTEL, RACKABLE, MICROSOFT.
- **Green comm challenge:** it is an organization which promotes the energy conservation technology development and its practices.
- **(TPC) Transaction processing performance council:**Energy specific arguments and by allowing optional publication of energy metrics alongside performance results.
- **SPEC power:** It is used to measure the power consumption in relation

performance of satveer for server-class computers. [3]

IMPOVISING THE ENERGY EFFENCY:

Different means can be used to improvise the energy effiency.

- Some companies use green energy such as wind energy and solar energy and they have the renewable energy certifications. Even the company has reduced its carbon emission.
- Reduce energy consumption with hot and cold aisles. These efficiency tips aim to help you to reduce the energy consumption with in data center.
- Maid 2.0 and disk spin down reduce energy cost.
- Power management technology for the green data center.
- Green data center guide for managers.

Environmental Monitoring: Leaders cannot manage what they cannot measure. Therefore, an organization needs good environmental measurement solutions. They need to use environmental monitoring to measure consumption and output, andto develop actionable metrics and forecasting.The following technologyexists for

Measuring energy consumption and thermal output for data center elements [2]:

- Circuit meters (data center zone area or group of racks)
- Power strip meters (group of systems or rack)
- Plug meters (one physical system)
- Base board controller energy consumption metering (one physical system)
- External thermal sensor metering (predefined floor or rack area)
- Internal server thermal metering (one physical system).

GLOBAL IMPACT:

As we cannot live without the pcs. It's our basic need and its ecofriendly and it enable us to small budget.

Ncomputing system that were used in ratio of 6 Ncomputing devices to each pc:

- Energy use would decline by over 143 billion kilowatt hours per years
- CO_2 emission would decrease by 114 million metric tons.
- E-waste would be reduced by 7.9 million metric tons.
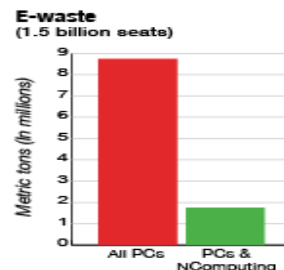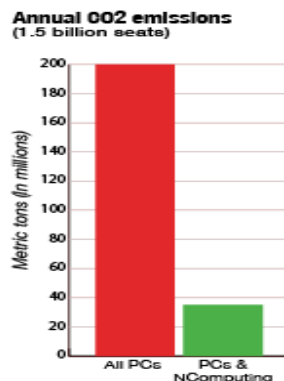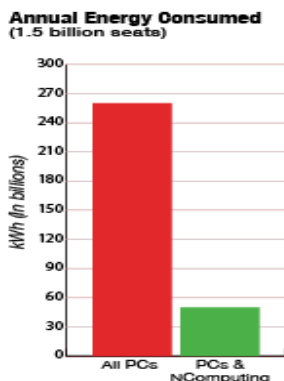
[3]

OPEN RESEARCH CHALLENGES:

Energy is the most important and valuable resource that is available worldwide. Most power is consumed by the computer and computer infrastructure. Basically, high performance parallel and distributed computing system, including data centers, supercomputers, clusters, real time system.

There are some researches in green computing:

- **New optimization technique performance-Energy-Temperature aware computing:**
  Due to more increase in computing and energy consumption also lead to risk in saving the energy effiency.
- **Information resource tier optimization:**
  They develop important data base management system in the global computation world.
- **Reduce architectural complexity:**
  The research area is open to reduce the number of tiers and component dependency to reduce maximum system use. Intel's core 2 duo is a mechanism which uses power to run only those components which are necessary at any computation
- **New high-efficiency data center design:**Bigger data centers can be made much more energy efficient than smaller data centers. Standards are emerging for measuring this, such as the concept of Power Usage Effectiveness (PUE). PUE is defined as the ratio of total facility power divided by IT equipment power.
- **Developing Green Maturity Model:** Full equipment life cycle is the main area for green maturity model, with energy reduction as the best measure of ―greenness. The need **of maturity models** for equipment's, IT organizations, computing techniques is an issue which has been addressed by some researchers but is limited to specific areas. Green maturity model for virtualization.
- **Wireless Sensor Network for Data Center Cooling:** data center cooling is a major issue as far as power consumption is concerned. Data centers are backbone of any computing organization and must be reliable and available at every point of time. Measuring the data center effectiveness and maintaining the baseline is an issue. Wireless sensors could play a big role for managing data centers power management.
- **Green Software's:** Recently, green software movement has become a research subject for most of the software developers companies because of need for sustainable development.

CONCLUSION

The green computing is really important field that has come out and is really useful also. Green computing will change the later scenario and new technology will be developed and every research in this field will give a new technology to people and new way to think for IT industries and this

will bring in new things.A green roof can be a good location for a break area for employees. These are but a few small ideas you can use to make your business more Green which is good for the Environment and the stock-holders. Let's start working on it and embrace the future.

REFERANCES

[1]. Green, P. J., & Sibson, R. (1978). Computing Dirichlet tessellations in the plane. *The Computer Journal*, *21*(2), 168-173.

[2]. Cole, T. J., & Green, P. J. (1992). Smoothing reference centile curves: the LMS method and penalized likelihood. *Statistics in medicine*, *11*(10), 1305-1319.

[3]. Harmon, R. R., & Auseklis, N. (2009, August). Sustainable IT services: Assessing the impact of green computing practices. In *Management of Engineering & Technology, 2009. PICMET 2009. Portland International Conference on* (pp. 1707-1717). IEEE.

[4]. Ludwig, J. A. (1988). *Statistical ecology: a primer in methods and computing* (Vol. 1). John Wiley & Sons.

[5]. Harmon, R., Demirkan, H., Auseklis, N., & Reinoso, M. (2010, January). From green computing to sustainable IT: Developing a sustainable service orientation. In *System Sciences (HICSS), 2010 43rd Hawaii International Conference on* (pp. 1-10). IEEE.