



RESEARCH ARTICLE

SUSTAINABLE COMPUTING

*¹Sagar Palao, ²Dhairya Shah and ¹Manasi Karale

¹Computer Engineering, T.E., B. Tech, Vivekanand Education Society Institute of Technology

²Information Technology, T.E., B. Tech, K.J. Somaiya Institute of Engineering and Information Technology

ARTICLE INFO

Article History:

Received 17th March, 2016

Received in revised form

17th April, 2016

Accepted 21st May, 2016

Published online 30th June, 2016

Key words:

Sustainable Computing,
Servergy,
Servergy's DNA,
Servergy's Sweet Spot,
Busy Bit,
VClass.

ABSTRACT

This document gives brief idea about Sustainable Computing, Servergy- a sustainable product & innovative Sustainable Computing product proposed by us

Copyright©2016, Sagar Palao et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Sagar Palao, Dhairya Shah, Manasi Karale, 2016. "Sustainable computing", International Journal of Current Research, 8, (06), 33273-33275.

INTRODUCTION

Sustainable Computing is a principle that embraces a range of policies, procedures, programs, and attitudes that run the length and breadth of any use of information technologies. It consists simulations for energy reductions in computer systems & validates systems on basis of performance & theoretical foundations as well as simulation tools used. Servergy - Servergy's CTS-1000 Cleantech Server®, the world's first clean and green class of PowerLinux server, reduces power, cooling, space, weight, water and carbon footprints by up to 90% or more, while increasing I/O by up to 16X or more.

Sustainability in Computing

Sustainability is - sustainable development process, which includes the four interconnected domains: ecology, economics, politics and cultures. Sustainable supercomputing has traditionally been the point of public ridicule but today, it's finally coming into vogue.

Thrust of computing was initially on faster analysis and calculation, solving of complex problems. But in the recent past topics such as achievement of energy efficiency, minimization of power consumption of e-equipment has got immense importance. Sustainable Computing thus focuses on simulations for energy reduction in smart-grids, computer systems & the precise use of Internet of Things with keeping in mind performance & validation of energy-aware simulations, theoretical foundations & tools used. A product or a technology is said to be sustainable if it consists of:

Simulation For

A sustainable product or a sustainable solution should provide a

Energy Reduction: The aim is to create and use a solution which is energy efficient. Energy efficiency and reduction targets in some key fields such as:

- Energy Efficient Hardware
- Energy Efficient Algorithm

Smart-grids: An electricity supply network that uses digital communications technology to detect and react to local

*Corresponding author: Sagar Palao,

Information Technology, T.E., B. Tech, K.J. Somaiya Institute of Engineering and Information Technology.

changes in usage. Such smart grids are the key to enable sustainable computing. There is a need for a distributed, powerful technology which can enable smart-grids to bring about sustainability.

Computer systems: Computer Systems defines the need of sustainability. It is the most rapid growing field which demands sustainability due to its need for processing heavy data. Big data, Cloud computing and many other computing needs can be made sustainable. The servergy is a best solution meeting this needs.

Internet of Things: The Internet of Things (IoT) is the network of physical objects or "things" embedded with electronics, software, sensors, and connectivity to enable objects to exchange data with the production, operator and/or other connected devices. There is a need for sustainability in this field as need of energy demands sustainability, need of computing demands sustainability, need of data storage and processing demands sustainability.

Performance and validation of energy-aware simulations

Sustainability demands energy efficiency without a degradation in the performance of the solution of the product. It appears to be impossible. But there exists a sweet spot which needs to be hit.

Theoretical foundations of energy-aware simulations

Sustainable Computing is primarily laid on theoretical foundations. Many theoretical proposals are made about sustainability in computing which needs to be met practically. One such unique solution presented is Servergy

Energy-aware simulation packages and tools play a vital role

Sustainability is added in terms of multiple ideas and generations of multiple solutions. It helps in creating a global impact in terms of sustainable solution.



Fig. 1. Example of sustainability

Servergy

Servergy- a sustainable computing server that uses 80% less power and space than conventional units with its brand promise as "Save Energy, Work Smarter". Its Cleantech Server® literally pays for itself by reducing global datacenters server energy, cooling, space, weight, water and carbon footprints up to 90% or more. For every \$1 spent, one can get up to \$5 back in 3 years or less. Servergy will be the first server maker outside IBM to use Power chips in its Cleantech Server CTS-1000, a blade server the size of a legal pad.

Servergy's Sweet Spot

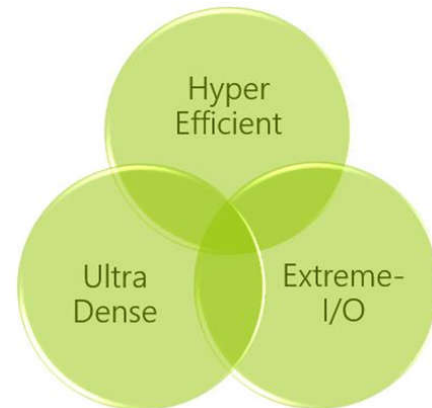


Fig. 2. Servergy's sweet spot

Servergy is primarily based on the roots of 3 concepts:

Hyper Efficiency: Servergy is a hyper efficient product. Its key feature being sustainable does not create any impact on its efficiency and effectiveness. Servergy's computing facility out beats any other server specifically by IBM. The server has an eight-core Power processor running at 1.5GHz, but it was not clear if the server was based on IBM's new Power8 processor, which is being licensed to third parties. The server has PCI-Express 2.0 ports, which points to processors being based on older Power7 or Power6 chip designs, as Power8 has moved over to PCI-Express 3.0 as its standard interconnect technology.

Ultra Dense: Servergy catches up to majority of features to bundle up with its hardware & power-efficient software solutions, this perfect combination brings out the ultra-efficiency in terms of performance.

Extreme I/O: Servergy's one of the main concerned areas is about the I/O systems used & optimizing them for efficiency & performance. Thus, I/O devices are searched for compatibility to enhance performance.

Servergy's DNA

Servergy as a sustainable product proposes its DNA as:

3Fs: Culture of sustainability innovation engineering = Form + Function + Footprint

Table 1. Comparison between Best Cloud Storage options till date and Busy Bit

Features	Best Cloud Storage Options till date		
	DropBox	Google Drive	BusyBit
Platform Compatibility	Windows, Android, Linux BlackBerry Mac OS,IOS	Same	Same
Free Basic Account	2 GB With referrals upto 18 GB 50 GB with purchase of certain phones & tablets	15 GB	100 GB
Modes & Features	Online, Offline Editing Modes	Online & Selective Sync	Online, Offline, IaaS PaaS SaaS
Security	AES 256-Bit encryption, two factor authentication	128 bit encryption	AES 256-Bit encryption, multiple factor authentication Encryption at each step
Corporate Features	None	None	Granular data access & business level control Zero Knowledge Policy

4Ss: Culture of Speed + Simplicity + Self-confidence + Servant Leadership

4Ps: Culture of Philosophy + Products + Philanthropy

Key Points defining Serveryg

Saves Space: 16X compute density vs. traditional server technology.

Improve Throughput: 16X I/O bandwidth density.

Hyper Efficient: New SOC technology reduces power, space, cooling, water, carbon footprint up to 80% or more.

Pays for itself: For every 1\$ spent return up to 5\$ in 3years or less.

Highly scalable: Cloud, Big Data, Caching, Distributed Storage solutions.

Proven Architecture: Based on mature, scalable and data center proven Power Architecture.

Busy bit

We have proposed Busy Bit as our innovative solution to cloud storage options. Busy Bit covers & provides more than the latest cloud storage options have to offer. Features of Busy Bit in comparison to other cloud storage options are as follows:

Also we offer student registered with us, VClass an innovative way to learn concepts with Lynax technique wherein theoretical concepts are explained using practical approaches & real-life examples.

Conclusion

Sustainable supercomputing has traditionally been the point of public ridicule but today, it's finally coming into vogue. Thrust of computing was initially on faster analysis and calculation, solving of complex problems. But in the recent past topics such as achievement of energy efficiency, minimization of power consumption of equipments has got immense importance. BusyBit is an innovative sustainable cloud product providing users with cloud storage, global access & security options along with various other features.

REFERENCES

- <http://stc-sustainable-computing.ieee.net/news>
<https://www.power.org/media-coverage/serveryg-nominated-for-sustainable-brands-2014-innovation-open-award/>
<https://www.power.org/article/serveryg-now-the-first-company-outside-ibm-to-build-power-server/>
<https://www.power.org/article/serveryg-launches-cleantech-server-line/>
<https://www.power.org/article/serveryg-now-the-first-company-outside-ibm-to-build-power-server/>
 Bill Mapp on Serveryg: <https://www.youtube.com/watch?v=cCcIdt8E6iI&feature=youtu.be>
