

THINK GREEN! Energy Efficient Cloud for HPC

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1. INTRODUCTION

Today large, complex simulations and heavy workloads can run in the cloud with High Performance Computing (HPC) products and services. In the past decade adaptation of Cloud for HPC has increased significantly, so energy consumption has also increased due to the exponential rise of Cloud data centers and other infrastructure. This has led to two big problems:

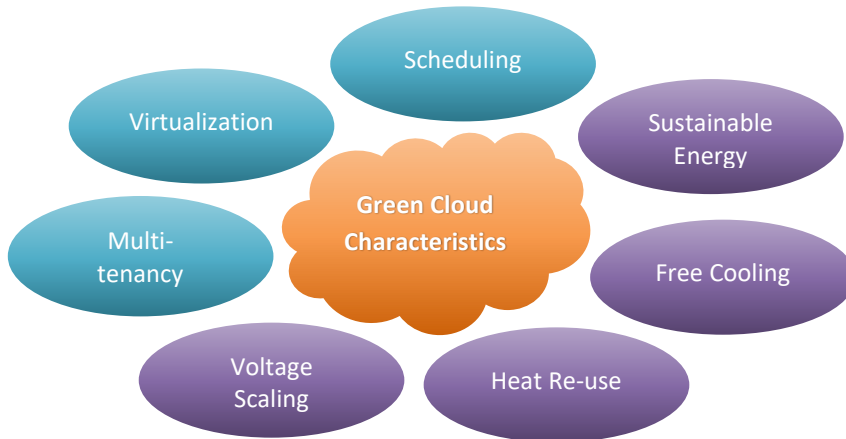
- 1) It has resulted in substantial rise in carbon emissions in the environment.
- 2) Cloud infrastructure may be utilizing high amount of energy and this may cost a fortune to the Cloud providers.

These problems have made it necessary to follow energy efficient solutions for Cloud infrastructure for HPC environments, which will help to reduce energy consumption. Such solutions would be beneficial for both the environment and cloud infrastructure.

The poster will give information about the Energy Efficient Cloud Approaches which can help to achieve the goal of going green for Cloud Infrastructure for HPC.

2. Energy Efficient Cloud Characteristics

Figure shows various characteristics for Energy Efficient Cloud



3. Energy Efficient Cloud Approaches for HPC

The poster will cover various approaches to achieve energy efficient cloud, like:

- 1) Renewable Energy and Power Consumption
- 2) Efficient Cooling System
- 3) Energy Efficient Storage
- 4) Server Virtualization and Scheduling Workloads
- 5) Monitoring/Metering of Cloud Infrastructure

4. Case Study: UCAD Green Data Centre Approach for Developing Countries

The poster will also cover a case study for University of Dakar, Senegal, Africa showing how utilizing Energy Efficient Approaches helped them to bring down energy consumption by 94% for each rack in the data center.

REFERENCES

- [1] <https://ijesc.org/upload/7cdf6f6917828848f439dc14271e22a2.Advancing%20Towards%20a%20Better%20Future%20Green%20Cloud%20Computing.pdf>