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Green Cloud Computing

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Abstract: ***The cloud computing has completely changed the IT infrastructure and also the businesses associated with it. Unfortunately, the demand for cloud infrastructure is growing rapidly, so is that the energy consumption of information centers. Here is when the green cloud computing comes into play. Green cloud computing refers to the environmental benefits of switching your IT services to the cloud. it's also benefits of green cloud computing together with the uses cloud hosting services.***

Keywords: Green cloud computing, Network, Green information, technology.

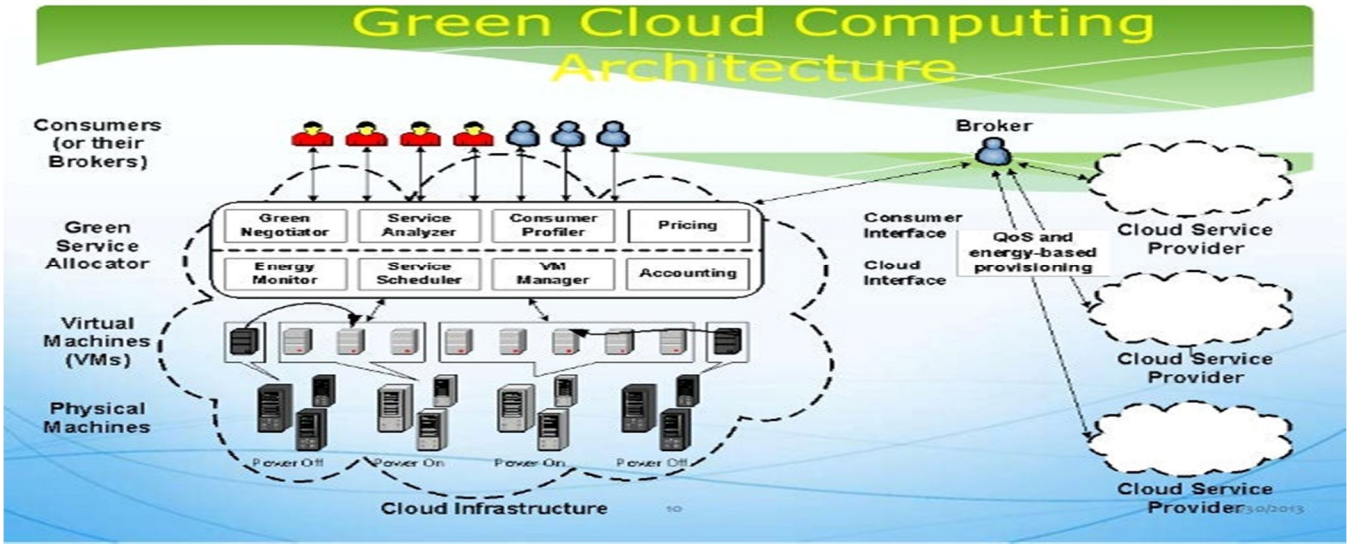
I. INTRODUCTION

The “Green Cloud Computing”, the word green with cloud computing denotes that this is environment friendly. This concept is to reduce energy consumption and reduce the waste disposed to the environment. Before the starting the concept of what is green cloud computing. As cloud computing usage increased. This increase in carbon emissions in the environment. The increase in energy consumption is due to the exponential increases of data servers and other infrastructure. The reduction in energy consumption will reduce carbon emissions in the environment. To reduce energy consumption, cloud computing is exploring energy-efficient ways of working. Green computing in cloud computing is to find and produce energy saving digital ways to reduce carbon emissions to the ecosystems.

II. WHAT IS GREEN CLOUD COMPUTING?

Green cloud computing is the coined term that means making the practices and approaches of using technological advance like computing and other IT resources sustainable for potential environmental benefits. The growing number of companies around the world makes a significant impact on the environment. This growth means for a great need to use data centers, an increase in the workers,and an influx of office materials and supplies needed on a daily bases. Green cloud computing answers theses looming environment issues by providing options that can lowers emitted carbon footprints around the world. Many companies are now leaning on the cloud services as such many technological applications and practices that can reduces environmental impacts are being developed daily. Green cloud computing makes it possible to maintain and enhance business operations and processes while looking after the environment.

III. ARCHITECTURE OF GREEN CLOUD COMPUTING



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1) *Consumers / Brokers:* It is the submit the collect service requests from anywhere in the world to the cloud. It is very important to notice that there can be a difference between cloud consumers and users of deployed services. For instance, a consumer can be a company deploying a web application, which presents varying workload according to the number of users assessing it.
2) *Green Resource Allocator:* It is act as the interface between the cloud infrastructure and consumers. It requires the interaction to support energy efficient resource management.
3) *Virtual Machines:* It can be dynamically started and stopped on a signal physical machine to meet accepted requests, hence it providing maximum flexibility to configure various partitions of resources on the same physical machine to different specific requirements of service request.
4) *Physical Machine:* It creating virtualized resources to meet service demands by providing hardware infrastructure of underlaying physical computing servers.

IV. TECHNIQUES TO MAKE THE CLOUD "GREEN"

Revolutionize the future of green cloud computing has three techniques

A. Nano Data Centers

Nano Data Centers are more energy efficient than other conventional data centers.Nano Data Centers helps to reduce the cost of heat dissipation, they have high service proximity. They have the capacity for self adaption and scalability.

B. Dynamic Voltage Frequency Scaling

It is the method which reduces energy consumption process and power used with frequency scaling.By implementing this technique it will reduce energy consumption and leverage the utilization of the resource.

C. Virtualization

Virtualization is a technique that improves machine management and energy efficiency through sharing a single physical instance of a resource and application with multiple customers or organization the same time.In an eco friendly way virtulization maximize the number of available system resources.

V. IMPACTS OF GREEN CLOUD COMPUTING

A. Fewer Carbon Footprints Because Of Remote Workers

Cloud computing permits businesses to collect their data on the internet, which means it can be obtained by anyone given the authority, no matter the location or whatever device is being used. This opportunity given by businesses and companies the flexibility to gear their employees toward remote working. By practicing this business trend, you start to help a substantial environmental.Working remotely gives your workers the advantage of escaping the daily commute, which requires them to fuel their cars regularly. With the chance to allow your personnel to work at home or any place that would better suit their efficiency and productivity, you also help the environment by cutting down on fuel emissions.Even though you have many employees still working for you, you do not have to acquire a big space with your office. You can get a small office space which minimizes your consumption of water and electricity.

B. Saving The Environment By Being Paperless

That days are gone where you have got to print and collect all files acquired in your email or all of the reports you've got arranged for your immediate head. With the innovative characteristics of storing data within the cloud, you are doing not need large filing cabinets to gather your printed copies. By Green cloud computing companies and organizations can do with paperless.When you are connected on the net, you'll be able to see options like Google Drive, OneDrive, Dropbox, or SharePoint. These storage options gives you and your whole team to travel paperless. By using these cloud storage options offer drag and drop features for all of your documents, you'll still expect productivity within the entire group or organization even when working remotely. For emergence of Adobe Sign or DocuSign, there's no have to print any file for one signature. These technology innovations will gives you to download any files, fix your signature and send it back to whoever wants it without printing any pages and with just the employment of PC or laptop.The use of those green cloud computing tools makes it possible for organizations in several industries to cut back paper product consumption, if not eliminating it. This approach creates a big impact on the environment as you chop down the requirement to regularly purchase paper products, shred your documents, or eliminate your files.

C. Reduction of your Power Consumption to Decrease Energy Use

While the Reduction of your companies power consumption doesn't only mean turning off your computer or your workstation lights when not in use. when your company runs on-location servers then though this can make a big difference, you have to know the information about gravity of consumed power. After Switching to the cloud wecan reduce your reliant on these on-premise servers. That is you also need lower machines in your office location, thus less space, and cooling requirements, leading to a reduced power consumption rate. Savings from these freed up capital expenditures can be gives to other environment-friendly projects or business development ventures like enhancing your marketing strategy campaigns.

VI. GREEN CLOUD COMPUTING APPROACHES

A. Virtualization and use of Terminal Servers

It is the process at the same time where in multiple operating systems run on a computer system. If they have their machine that applications running appear. The use of common servers and sharing the terminal is found to save energy by 80%.

B. Power Supply and Power Management

Using green cloud computing technology energy will be used efficiently. In green cloud computing the power management using green algorithm is reducing the power consumption by computers.

VII. GOALS OF GREEN CLOUD COMPUTING

A. Reduce the use of hazardous material , it causes harm to enviroment.
B. "Green" data centers.
C. Using recycle materials.

VIII. ADVANTAGES

A. Conserving energy by green cloud computing-
B. Remote working reduces the carbon footprint in the environment.
C. Going paperless with green computing and cloud computing.
D. Reduction in e-waste generation.

IX. APPLICATIONS

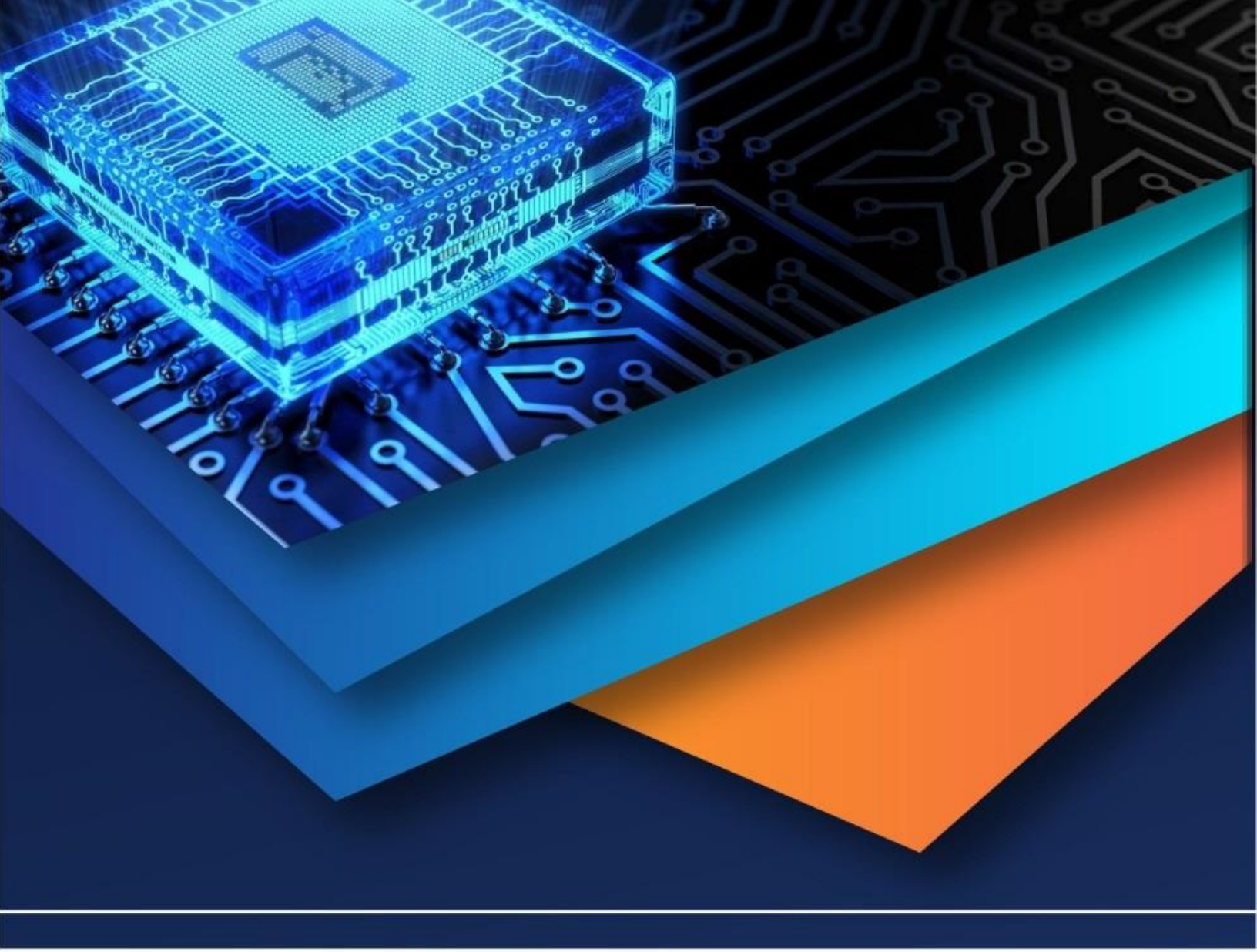
A. Management of energy in Data Centers
B. Green Wireless Network
C. Green Parallel Computing with Big Data Network
D. Green computing with an algorithm

X. CONCLUSIONS

The aim of the green cloud architecture is to lower data center power usage. The key advantage is green cloud computing architecture is that it ensures real-time performance while lowering the IDC's energy usage (internet data center). Since 1992 started the concept of "going green" has been around . This concept is changing and evolving, yet it is critical for reducing carbon emissions in the environment. The idea is intended to save both money and the environment. The risk to human life posed by e-waste disposal is also predicted to decrease significantly. The cloud computing and green computing will help enterprises to reduce carbon emissions while also providing a productive work environment. Today, green cloud computing and environmental sustainability are critical.

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