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INCREASE IN ENERGY EFFICIENCY AND DATA CENTER EFFICIENCY WHEN SWITCHING TO CLOUD COMPUTING

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Annotation

Currently, there is a large migration to new facilities carried out by cloud service providers, such as Google Cloud, Amazon Web Services and Microsoft Azure. Now it turns out that cloud data centers that work on a commercial basis are much more optimized by energy efficiency companies compared to data centers that work separately.

Keywords: Google Cloud, Microsoft Azure, Microsoft Office 365, energy, cloud, computing, technology, efficiency, consumption, electricity.

Introduction

Research by five researchers at Northwestern University, Santa Barbara UC and the U.S. Department of Energy, found that when calculating prepared modern data centers increased energy consumption by only 6 percent from 2010 to 2018. With that, they told us that these data centers amounted to 205 terawatt hours. Electricity, which accounts for 1% of the world's consumption. Electricity, which is as proportional as in 2010. It all depends on improving the efficiency of the data center due to the increase in energy efficiency and the transition to a cloud computing system.

Although this study contradicts some prejudices and the belief that data centers leave a carbon footprint equivalent to the airline industry.

As many experts have mentioned, the data center's power consumption should double every four years before the year, which will only lead to a triple increase in the global share of these centers in electricity consumption in ten years, but visible with new data. Of the research published this year, they are well below these indicators.

According to Jonathan Kumey, one of the researchers who conducted the study in this 2020, the data center's simple extrapolation of data leading to the use of future growth forecasts in energy consumption does not require such an approach taking into account energy efficiency.

It should not be denied that these devices, even if they consume more energy than almost a decade ago, are now making many more calculations for each watt-hour, in addition, each time taking into account a large expansive advance in processors, it works so that your energy consumption is low.

In fact, modern data center infrastructure systems, especially in terms of cooling and energy, are much more efficient than before.

That being said, the decrease in the energy consumed as a result is enough to compensate for the increase in the total power consumption of these computing devices.

This is especially true of cloud-based data centers that currently house 89% of computational copies, whereas in 2010 79% of the world's computations were in traditional data centers.

Currently, there is a large migration to new facilities carried out by cloud service providers, such as Google Cloud, Amazon Web Services and Microsoft Azure. Now it turns out that cloud data centers that work on a commercial basis are much more optimized by energy efficiency companies compared to data centers that work separately.

The publication of this new 2020 Study in the journal Science dates back to when the European Union (EU) planned to introduce energy efficiency standards to operators operating data centers in Europe. Therefore, these providers want the European Union to encourage companies to abandon their old infrastructure to move to commercial facilities.

A distinctive feature of the PaaS (platform as a service) model is the separation of software and infrastructure: the developer only needs to determine the amount of resources needed for the program and all actions to provide the requested resources, manage them. dynamic distribution, monitoring, measurement, etc.are performed.

SAAS is a direct application as a service (e.g. Zoho Office or Google Apps).

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Service computers-for example, virtual servers.

Web services are internet services optimized for working in the cloud - virtual environment (for example, Internet banking systems).

PAAS is a" platform as a service", that is, a new generation of web applications (for example, Live Mesh from Microsoft) that allows you to create a set of capabilities at the request of the user.

MSP is a managed service provider serving service providers (such as embedded antivirus scanners for mail portals). The commercial services platform is PaaS and MSP convergence (e.g. Cisco WebEx Connect).

Private cloud. A private cloud () is an infrastructure designed for use by a single organization, including multiple consumers (e.g., units of a single organization), as well as customers and contractors of that organization. A private cloud can be managed and managed by the organization itself or by a third party (or a combination thereof), and it can physically exist both within and outside the owner's jurisdiction.

Open Cloud. Public cloud is an infrastructure designed for free use by the general public. The public cloud can be owned, managed and managed by commercial, scientific and public organizations (or a combination thereof).

Hybrid cloud. A hybrid cloud is a combination of two or more different cloud infrastructures (private, public, or public) that remain a single object, but are interconnected with standardized or proprietary technologies for data and application transfer (such as short-term use of public resource clouds). for load balance between clouds).

Clan cloud or Community Cloud. A Community Cloud is a type of infrastructure designed to be used by a specific community (clan) of consumers with shared goals (e.g. mission, security requirements, policies, and compliance with various requirements). The public cloud can be owned, operated and operated in conjunction with one or more public organizations or third parties (or any combination thereof), and it can exist physically both within and outside the owner's jurisdiction.

Conclusion:

Urs Holzle, vice president of technical infrastructure at Google, says:

Google data centers save twice as much energy as these traditional business facilities. In addition, according to Holzl, Google is currently providing seven

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times more computing power than the amount of electricity that data centers consumed five years ago.

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