Desktop Virtualization

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What is Desktop Virtualization?

Desktop virtualization is a software-based technique that enables users to access their data and programs as well as connect to remote devices without the need for specialized hardware (Rupesh, Arun & Verma 2021). The primary goal of desktop virtualization technology is to lower the expense associated with the user's need for regular computer maintenance and upgrades. The user's computer system can virtually connect to a sizable, centralized server across a network using desktop virtualization technology. Moreover, it enables access to virtual CPUs or RAMs, allowing one to upgrade existing Computers with new features. Desktop virtualization may be accomplished in two ways, which we refer to as local desktop virtualization and remote desktop virtualization, respectively, depending on whether the operating system is running locally or remotely. Using hardware virtualization, the operating system runs on local devices in local desktop virtualization, and all client device actions are carried out locally. The operating system and applications are executed on the client's thin devices, like as laptops and smartphones, within the data center in Remote Desktop Virtualization. The client and server, also known as data centers, are connected to one another over the internet.

Benefits of Desktop Virtualization

Rapid Deployment and Cost Savings

All system installation, commissioning, management, maintenance, and upgrade will be completed on the server side, and the control center centrally manages hundreds or thousands of virtual desktops, daily operation will be completed by maintaining only a "basic mirror", and the clients' states can be real-time controlled, centralized regulated, solved the problem in terminal maintenance of the traditional desktop deployment. At the same time, virtualized cloud desktop

architectures are more convenient for dynamic expansion and can reduce investment costs in the long run (Matthew 2013).

Data Security

The back-end server has the capability of multi-policy data backup, and the cloud desktop uses centralized management, making fault recovery faster. Also, the cloud terminal uses an ARM or X86 architectural design without a standard operating system, which can significantly lower the danger of virus transmission. Centralized virus prevention is carried out at the backend at the same time.

Agility and scalability

When additional VMs or apps are required, they can be deployed quickly and easily, and they can also be deleted quickly if no longer required.

Support for a broad variety of device types

A wide range of devices, including laptops, desktops, thin clients, zero clients, tablets, and even some mobile phones, may access virtual desktops remotely. Regardless of the underlying operating system on the end user device, virtual desktops may be used to give workstation-like experiences and access to the entire desktop anywhere, anytime.

<center>**Challenges of Desktop Virtualization**</center>

Network Bandwidth

Desktop virtualization requires a robust and reliable network connection to ensure smooth and uninterrupted access to the virtual desktops. This can be a challenge for organizations with limited bandwidth or unreliable network connectivity.

Performance

Desktop virtualization can be resource-intensive, and users may experience latency, reduced responsiveness, and degraded performance (Jim 2011).

User experience

Users may find the experience of using a virtual desktop different from that of a traditional physical desktop, and it may take time for them to adapt to the new environment. Additionally, some applications may not perform as well in a virtualized environment, leading to frustration and decreased productivity (Jim (2011).

Conclusion

Desktop virtualization offers several advantages over traditional desktop environments, such as increased security, centralized management, flexibility, etc. However, there are also several drawbacks associated with desktop virtualization, such as performance issues, network bandwidth requirements, cost, and user experience issues. Organizations need to carefully weigh the pros and cons of desktop virtualization to determine if it is the right choice for them. Overall, desktop virtualization can be an effective solution for organizations looking to improve their IT infrastructure, but it is not without its challenges.

References

Rupesh Kumar, Arun Kumar & H.N. Verma (2021). An analysis of Approaches for Desktop Virtualization and Challenges. *International Journal of Scientific Research in Science and Technology.*

https://ijsrcseit.com/paper/CSEIT2174133.pdf

Metzler, Jim (2011). Virtualization: benefits, challenges, and solutions. *Riverbed Technology, San Francisco.* https://whitepaper.silicon.co.uk/wp-content/uploads/2014/04/virtualization_b_5yj2uibxkq1geph.pdf

Hodgman, Matthew R (2013). Desktop virtualization: Applications and considerations.

Contemporary Issues in Education Research.

https://clutejournals.com/index.php/CIER/article/view/7611