Technology Assessment

Automation and flexible management of the workplace with VDI

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IDC'S PERSPECTIVE

This document outlines the main challenges companies face during the workplace transformation process, as well as the advantages and disadvantages of desktop virtualization, which has emerged as one of the most interesting solutions to contend with those challenges. This document also presents an explanation on how VirtualCable and its product, UDS Enterprise, help corporations efficiently address those difficulties.

Nowadays, much pressure is put on companies to increase productivity while offering more agility, both in their relationship with the client as in their internal processes. There is a clear trend towards an increased adoption of workplace virtualization technologies. These provide multiple advantages to corporations. For instance, the quick deployment, updating and support of existing and new desktops and the wide catalogue of programs and applications at the disposal of the user regardless of the operating system. This leads to significant time and effort saving when changing to new platforms or versions of applications.

Accordingly, many corporations are carrying out workplace transformation processes using the VDI technology (Virtual Desktop Infrastructure). VDI is the practice for hosting an operating system for computers and mobile devices in a virtual machine carried out from a centralized server.

Implementing a workplace virtualization project is beyond a mere technological provision or a punctual action. This procedure involves a careful analysis of the initial investment in both hardware and software, operative cost savings and the identification of the dependencies of this kind of solution in the other platforms, working methods and user devices.

Equally important are the considerations on security and the compliance with regulations. Centralization of data, applications and operational systems provide a competitive advantage with regard to the data protection regulation, minimizing as well the complexity, cost and attack surface area of the organization while offering greater user-friendliness and a swift application of updates and security patches.

VirtualCable, thanks to its UDS Enterprise solution, provides the answer to the management needs of the lifecycle of virtual desktops and the access of remote and local users to desktop virtualization platforms and other remote desktop resources, such as applications, hosted in the data center or in cloud environments.

CURRENT NEEDS AT THE WORKPLACE

Just like current businesses face a transformation process, so does the user workplace since it needs more specialized tools according to the user role within the company. Different needs arise from corporations which plan or already are involved in the workplace transformation process:

Consolidating the workplace management: The costs of workplace maintenance demand technological resources from the support center as well as lost working time of the affected workers. Attending local users, remote offices users or even teleworkers can lead to considerable costs which not every company can meet. In order to address these issues, one of the main objectives is to be able to combine in only one point all work stations and to resolve most of the incidents from that point.

Efficient management of the lifecycle of the workplace: The workplace deployment, updating and renovation process needs to be quick and swift. The higher the number of users, the bigger the amount of settings options and user requests, causing the deployment costs for applications to increase linearly. Additionally, corporations evolve while incorporating applications which need new platform requirements, rendering the current workplaces obsolete.

Mobile and ubiquitous access: Mobile technology provides corporations with a unique opportunity. The development of mobile devices - tablets, laptops and smart phones - has led to the increase of the need for access to corporate networks anywhere, any time and using any device. This has caused a much more rapid synergy in businesses. Now it is possible to save time in decision-making processes, to provide customers with more efficient services as well as more productivity and, therefore, to increase competitiveness.

Security, contingency and high availability: Companies need to be capable of assuring service availability, which means that the user community can access the systems and its applications during the established hours. They should be also capable of continuing operations without losing any data in emergency situations such as fires, earthquakes or attacks. Loss of information stored in a computer can have serious consequences for a company. Companies should be able to count on solutions which protect their data in case of theft or computer malfunctioning.

Controlling the cost of hardware: Corporations need to provide the user with new equipments which have different settings and outputs for each work role, controlling the purchase price and the provision of those equipments. Being able to save money in those case where users do not need advanced equipments means allocating more budget to those who need it, increasing in this way average productivity.

Promote BYOD policies: BYOD or Bring Your Own Device is a corporate policy which allows workers to use their own devices at their workplace and to access the company's resources such as e-mails, data bases and files in servers, as well as personal data and applications. Corporations want to establish those preferences without multiplying management and maintenance needs.

Those changes lead to a demand for an organizational transformation deriving from the problematic of the traditional physical work station. Desktop virtualization solutions can help solving such issues. Whether these projects are successful or not, does not only depend on the technology itself, but in the way it is used. The advantages and disadvantages of desktop virtualization, as well as the aspects to consider when choosing a VDI solution, are detailed below.

DESKTOP VIRTUALIZATION ADAPTING THE WORKPLACE TO THE CURRENT NEEDS

Desktop virtualization is one of the most interesting options for corporations which need to address the mentioned workplace challenges.

Advantages of the VDI systems:

- **Dynamism and efficiency:** Deployment, support and updates are managed from a single console, only once, minimizing the time of implementation to just a few minutes. The management of any remote desktop service hosted on the data center, cloud servers or hyperconverged platforms is done easily and centrally, assigning specific licenses for each user role (administrator, operator, final user, etc.) The need for personnel on-site is, therefore, minimized. Administrators can implement policies of use that were not implemented before because they were considered to be too invasive for the users (for instance, the total control of contents and applications of the work station).

- **Optimization of the work station resources and lower operating costs:** VDI demands less client hardware requirements so corporate devices can be simplified. These devices have a longer service life and the time dedicated to resolving incidents is much lower. As a result, it is possible to use obsolete computers, to acquire equipments with fewer features or to use thin clients (basic computers with reduced dimensions which perform the tasks connected to a more powerful computer via the network). Moreover, updates, processes, monitoring, maintenance, platform increase, etc., can be done by the administrator with a single click. And it is also possible to keep using obsolete or discontinued applications without support in certain operating systems.

- **Flexible access:** It facilitates the access from any location, anytime, anywhere using any device, to programs and applications of the workplace in a secure, quick and effective way, including BYODs. In this way, users can work comfortably, with higher flexibility and effectiveness, leading to an increase of productivity.

- **Security and availability of the environment:** In a virtualization environment, applications and data are located in a centralized and common environment, assuring their access and integrity. Furthermore, workplace virtualization allows to isolate the physical workplaces where the users connect, providing an additional security layer. Although users may use different kinds of devices, the data will still be located and managed in the company's environment, being also possible to quickly, efficiently and centrally implement corporate security policies.

- **Categorization of users:** Administrators can create different user profiles according to their operations, allowing to carry out the actions centrally by groups. This will lead to an improvement of users' productivity and effectiveness by using only the tools they need and which are always updated. User categorization implies as well a cost reduction by using software licenses only when it is necessary and by centralising administration, which implies a production environment easy to maintain and with fewer support incidents.

Some of the situations where the use of VDI can bring great benefits are:

Management of large amount of users (deployments, updates and support are done centrally), access to external or seasonal staff (having immediate and temporary access to a workplace), the management of remote offices (minimizing the presence of technical support staff), upgrading of IT equipment (reusing computers or acquiring basic ones), special desktop needs (flexible settings, adaptable to specific purposes such as laboratories, schools, etc.) and Disaster Recovery (since desktops can be included in the disaster recovery plan).

Despite their advantages, VDI solutions face different challenges such as:

- **High initial investment in hardware and licenses:** VDI projects require an initial high investment in hardware (computing host and centralized storage for hosting and executing VDIs) and licensing (interconnection elements for the whole infrastructure). Many corporations require a fast return on investment. However, this does not always occur, due to the initial investment needed. Another factor is that the cost per user makes VDI virtually unfeasible for those companies with a large amount of users.

- **User experience:** The remote execution and visualization of applications might not be exactly the same as at a local workplace. However, the benefits for users, administrators and the company are clear: it increases the simplicity of the new desktops provision, reduces the times of service interruption and extends the service life of the workplace, since equipments will be replaced only in case of incident and not obsolescence.

- **Complexity of the implementation process:** It is important to consider that a successful transition from a physical workplace into a virtual workplace requires detailed, specific planning, a proof of concept, training, etc. In some cases, the deployment process and the management of a VDI environment can be complex and involve additional or unplanned costs, such as shortcomings in the network bandwidth that interconnects the station and the increase of the computation capacity in the virtual infrastructure.

- **Security, new vulnerabilities:** Since the user infrastructure is centralized in one server, the consequences of a security or availability failure would not only affect one but multiple users. The data management policies should be redefined according to the new virtual infrastructure in order to prevent new vulnerabilities.

- **Closed solutions which depend on the manufacturer:** Increasingly more users demand freedom and flexibility to change suppliers according to the evolution of their needs or their satisfaction level. Choosing a closed product involves only using the capacities and features of that product. The incorporation of new characteristics, or even the discontinuity of the product, is subject to the product evolution and the client cannot rest assured that all his particular needs are covered.

ASPECTS TO BE CONSIDERED WHEN CHOOSING A VDI SOLUTION

The decision of implementing VDI leads to certain implications beyond the scale advantages or the technological implementation. In light of the different desktop virtualization solutions which can be found in the market, IDC believes that corporations should focus in the following aspects:

- **Initial investment:** For many corporations, the investment is too high and it presents a barrier to the necessary budget approval, due to the pressure for return on investment in a short period of time. There is a high demand for hardware elements such as memory, processing, storage and network resources. This demand requires detailed analysis and planning to minimize its impact on the budget. The investment in software (hypervisor platform, connection broker, attachments, workplace and virtual desktop licensing ...) often is not adequately analyzed during the decision-making phase. It is recommendable to assess it from the beginning and to choose the appropriate VDI elements and manufacturer. With regard to the VDI solution, the licensing cost accounts for a big percentage of the initial costs.

- **Operating cost:** In a VDI project, the support and maintenance of the assets acquired for the platform rollout is a handicap. An incident to VDI server level can directly affect the productivity of multiple users. Therefore, an effective and swift support is crucial to reduce the time spent resolving incidents in order to assure the high availability of the workplaces and the continuity of the business. The study on the return on investment of a VDI platform should be based in the cost savings of the initial and future deployment, as well as the maintenance cost of the workplaces.

- **Experience:** In order for the VDI implementation to provide productivity gains, the involvement of the company's different roles is crucial. For system administrators, a VDI project involves a change of mentality and habits, since the virtualization infrastructure will become one more administration tool of the company. It is necessary to understand the needs of the final customer and to inform him about the new way he is going to interact with the devices.

- **Interoperability**: Increasingly, corporations value that VDI systems support different platforms, work methods and devices, which guarantee a proper user experience and which does not lead to a loss of quality in the user experience. In the VDI product choice, it is necessary to consider from the beginning that the solution should not be an obstacle for the implementation of certain technologies and that it should offer the possibility to incorporate the own client's platforms.

- **Technological transition and customizations:** In the case of specialised applications, the transition to VDI may cause to reinstall these applications. This results in the corresponding loss of money and time. Adequate planning and the supplier's help are therefore of great value. It is also important to be aware of the user range and to respond all required customizations without significant costs.

- **Security**: The implementation of a VDI solution also affects security. While centralization of workplaces provides new availability and access control levels, some security measures should be observed when implementing a successful virtualization strategy: despite the corporate mobility boom, data security is always especially important, especially when intending to access corporate data and work stations from remote locations or public networks. Moreover, when accessing confidential data from these devices, these are exposed to greater vulnerability.

- **Sustainability:** Increasingly more corporations must comply with a series of corporate social responsibility goals and these shall be as well reflected on their technological activities. One of the most important aspects of VDI is that it offers the control and the reduction of the work stations environmental impact. The consumption of a thin client is approximately 80% lower in comparison to a traditional work station. Moreover, the number of physical services will be reduced and the machines can be scheduled to switch on and off in order to minimize energy consumption.

UDS ENTERPRISE: VIRTUALCABLE'S VDI SOLUTION

UDS Enterprise is a multiplatform connection broker for the administration and deployment of virtual Windows and Linux desktops and is compatible with virtually all hypervisors, authenticators and connection protocols, which makes it possible to activate all of them simultaneously. This software features a series of aspects to address the previously mentioned challenges:

- **Minimizing the initial investment:** UDS Enterprise is marketed without licensing, through an annual subscription system according to different user groups, and includes product support and updating. With unlimited users, from 350 on, the cost per user does not increase; on the other hand, it decreases as the number of user increases. The cloud version can also be found in the markets. It enables to flexibly increase the number of users. UDS Enterprise allows to deploy a solution 100% Open Source thanks to its compatibility with hypervisors, authenticators, connection protocols, client operating and virtualized Open Source systems, so it is not necessary to carry out any investment in this modules.

- **Automatic management of the resources lifecycle**: With this product it is possible to schedule availability, on and off switching, assuring an efficient use of resources. Its calendar system allows to schedule the automation of the resources lifecycle, so the administrator can define the date and time when the desktops are available:

  - Creation of desktops: UDS Enterprise allows the administrator to parametrize when, how, how many and which features should the desktops have (for instance, operating system).
  - Desktop assignment: The system assigns the desktop to the users and allows the access. It monitors the assignations and their use. Destruction of the desktops: It is possible to assign the persistence, destruction automation (also manually) in the event of new publications.

- **Optimization of resources and access time to desktops:** UDS Enterprise cache system makes possible to manage large amounts of users with high volatility and different profiles. It consists of two cache levels. Cache level 1: grants access to users without waiting time. The system can be scheduled so that there is a particular number of desktops ready for their immediate use. Cache level 2: it allows resource savings in case of large amount of users, since access cannot be simultaneous. The system can be scheduled so that it has several desktops ready to use but in sleep mode. In this way, it is possible to save in resources. The desktops will be switched on according to the user's demand.

- **Flexibility and scalability:** It allows the access from any customer device and operating system (Windows, Linux Mac and mobile devices), supports multiple hypervisors (Citrix XenServer, Microsoft Hyper-V, Nutanix Acropolis, RHEV KVM, oVirt KVM, VMware vSphere…), authenticators (Active Directory, CAS, eDirectory, custom LDAP, OpenLDAP, SAML, Internal authentication system, Authentication system via device, IP, MAC, Hostname…) and connection protocols (HTML5, NX, RDP, RemoteFX, RGS, SPICE, PCoIP, XRDP, X2GO…). All these elements can be simultaneously activated, depending on the needs. It allows access to any remote Windows or Linux service via WAN and LAN. It is also possible to deploy virtual Windows and Linux desktops, applications, static machines, cloud services support (e-Learning Platforms: Moodle. AWS, Microsoft Azure...) and cloud orchestrators (OpenStack, OpenNebula).

- **Customized support** 8x5 via e-mail the same day or NBD (Next Business Day). Assignment of a technician who will solve the incident, making sure it is solved and that the client has no further problems or doubts. Apart from solving potential incidents as quickly as possible, the UDS Enterprise team performs an advisory role for clients, helping them in the use of the desktop virtualization platform according to the specific needs of each project in order to achieve the best results possible as well as a greater control and cost reduction.

- **Platform customization:** UDS Enterprise is based on Open Source, which allows for an easy integration of new features, third-party software as well as assuring the continuity of the product. Furthermore, it is also possible to join the developer community or to request their support in case of new developments. For any future enhancement of the features, the Roadmap is based on the clients' needs and demands and will be included in each new version.

- **Increased security:** UDS Enterprise makes possible to define two types of users: one type of user for the validation in the system, in the UDS Enterprise login screen, and the other type of user who will connect to the virtual desktop. When connecting to the virtual desktop, UDS Enterprise can provide users with random passwords to access the different desktops. In this way, all desktops will have a different password even with the same generic user. The connection to desktops is fully clear to users, which allows access through single sign-on. (A single sign-on system or SSO allows a user to identify himself only once and to maintain the session as "valid" while other applications used it).

CONCLUSIONS

Corporations are currently in an ongoing process of technological evolution. The consolidation of the management and the lifecycle of the workplace are increasingly more important in digital transformation projects: new needs for access to information arise as well as the execution of applications in remote users and those with mobile devices. At the same time, users increasingly demand more policies such as BYOD to gain more flexibility in devices and technologies.

Desktop virtualization (VDI) is an option to more and more corporations who need to resolve the work station challenges.

IDC believes that the main advantages of VDI systems are dynamism and efficiency in deployment, updating and support, the optimization of the workplace resources, the flexibility of multi-device access and the security and availability of applications and data. An effective implementation of VDI should, therefore, result in a reduction of operating costs.

Nevertheless, there are also implicit risks in the desktop virtualization projects, such as a high initial investment in hardware and licensing, the management of expectations in the user experience and the complexity of the implementation process.

Security and the centralized management of data are advantages to consider, since corporations enhance the operation control and maximize the continuity of the business. Other important advantage is the interoperability with the existing applications and systems which result in cost savings.

All these considerations must be taken into account since a desktop virtualization project must be carefully planned bearing in mind dependencies and hidden costs.

VirtualCable is a Spanish company specialized in the development of virtualization software. Its product, UDS Enterprise, provides an answer to the management needs of the lifecycle of virtual desktops, the remote and local user access to desktop virtualization platforms and to remote desktop services, including simple installation and management, one-click user access to desktop services, compatibility and easy integration with third-party software and a flat fee subscription system starting from 350 users that includes support and product updating without licensing.

ABOUT IDC

International Data Corporation (IDC) is the main global provider of market intelligence, consulting services and events for information technology, telecommunications and consumer technology markets. IDC helps professionals in the field of Information Technologies, business executives, the investment community, etc. to make decisions relying on facts relating to technology purchases and the business strategy. More than 1100 analysts at IDC provide global, regional and local experience on technology and industry opportunities and trends in more than 110 countries around the globe. For more than 50 years, IDC has provided strategic information to help our customers achieve the main objectives of their business. IDC is a subsidiary of IDG, the world leaders in technology media, research and companies specialised in events.

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