

RESEARCH PAPER

ANALYTICAL STUDY ON NSX TECHNOLOGY

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Abstract

VMware NSX means the main mind and controller of the virtual networks installed through the VMWARE technology, which we will explain from its inception until it reached the NSX stage through the applications listed in the introduction that are loaded on the computer or more than one device and at a later stage These applications will be loaded step by step with all its components and details in order to get a real understanding of the NSX technology, which is at a later stage the cornerstone of the SDN technology, which is a true revolution in the world of networks

Method

- Prepare the physical infrastructure configuration (done one time)
- Install and configure VMware NSX network virtualization software (done one time)
- Programmatically create virtual networks (ongoing)
- ESXi host hypervisor software on the selected Cisco UCS servers, managed by VMware
- VCenter. With this in place you can deploy the VMware vSphere NSX Manager OVA (version 6.0 or greater). The NSX Manager is packaged with, and will automatically install, the additional requisite NSX
- Components, such as NSX controllers and ESXi host kernel modules
- The objective of this guide is to help you understand the design and configuration steps to reach milestones

Results

The SDN environment has become later clear with the presence of the mastermind of the network, the NSX, which is later called the CONTROL PLAN, and provides all the real and imaginary devices, which is later called DATA PLAN, The steps will gradually become clear through the practical application of each stage and by installing the required parts for each stage.

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CONCLUSIONS

We can install all the equipment virtually on a single database run by the NSX without having to buy any real physical equipment. The virtual environment provided us with a software environment through which we can control all parts of the network in the real world, no matter how large or wide it is.

KEYWORDS

NSX= Network , Security , X: Is A Mature Software Solution Available Today

VMware = VMware, A Global Leader In Cloud Infrastructure & Digital Workspace Technology, Accelerates Digital Transformation For Evolving IT Environments

ESXI =Host Hypervisor Software On The Selected Cisco UCS Servers, Managed By VMware

NX = Networking Software

SDN = Software Defined Networking

VSS= V NETWORK STANDARD SWITCH

VDS =V NETWORK DISTRIBUTED SWITCH

GRAPHICS

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Research Through Innovation

P

Reface

NSX was one of the acronyms on everyone's lips at World, but what is it and what does it mean to your organization?

VMware NSX³ is a network virtualization platform launched during World. The software is reportedly able to operate using any hypervisor and most networking hardware. It is a fully functioning network within a software container.

If it sounds similar to Software Defined Networks (SDN), you would be right. This is another type of network virtualization.

A virtual network replaces a physical network. It is akin to virtual server technology in that switches and other network components are represented in software.

NSX is the control layer in the data center used to manage virtual network switches. This allows the network architecture to be immediately adjusted to meet specific system needs. An administrator could, for example, improve the network's efficiency without needing to add hardware. Proponents say such an approach makes tasks such as load balancing easier, and cuts costs.

Adopters of this technology face some technical and operational challenges throughout the enterprise, according to Greg Ferro, writing for Network Computing. He says the technology makes sense when used for traffic between virtual machines within a data center, but network traffic often must encounter a physical network device and when it does, he claims the performance "isn't great."

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In this market segment, VMware competes with companies focused on networking heavy-hitters such as Cisco, Juniper, and Arista. Ferro adds:

"VMware isn't the only big vendor promoting the overlay approach. Juniper's Contrail-V and Nuage Networks' VSD (Nuage is backed by Alcatel) are targeting the very largest service and cloud providers. In OpenStack, NSX has many direct competitors such as Cisco and IBM in the enterprise, while Midokura and Big Switch offer solutions to the mid-size cloud segment."

However, several manufacturers recently announced hardware-based NSX support, including Arista, HP, and Dell.

But, because it is a proprietary solution, some observers contend that alone may deter some from adopting this VMware-centric SDN flavor.

Patrick Moorhead, a Forbes contributor, concludes:

"For those customers who are firmly embracing the VMware vision, NSX could be a great addition. But for the majority of the market that either does not run VMware or runs a mixed environment, NSX is a much more difficult sell. [...] The future state of SDN is still unclear, and VMware's NSX is not the de facto solution."

Ferro also notes:

"VMware has built a credible SDN platform and described an intriguing product road map. There is much to be excited about — but plenty of time for things to go wrong. Now that the fanfare around NSX's launch has subsided, it's time to examine the product with the cold eye of customer needs. Let's hope VMware can meet its promises because we need the results."

Are you an early adopter integrating SDN or NSX into your enterprise operations? What challenges and benefits has your organization seen as a result of adding NSX?

Or, are you curious about SDN or other virtualization technologies and need to bounce ideas off an expert? Leave a

comment below or give us a call to discuss how we might help your organization move to this or another virtual networking platform.

In the previous presentation, some companies and developers were given an idea about the NSX technology and whether they can be integrated with SDN technology. In other words, they are similar in performance within the virtual environment. In order to understand this technology, it must be discussed in detail in theory and practical application. The requirements of this service, which are quite a few need to be known thus, many companies, including Cisco, have developed these services to reach a common base agreed upon by all.

M

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5. vCenter. With this in place you can deploy the VMware vSphere NSX Manager OVA (version 6.0 or greater). The NSX Manager is packaged with, and will automatically install, the additional requisite NSX
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S

tage One

With the advancement of science, especially in the computer and communications revolution, all parts of the network and its components of the routers, switches and other controls are in the form of a software virtual image of these electronic pieces, which can be downloaded as software programs and applications within the computer through VMWARE and ESXI, by which we can control the physical world of devices. VMware technology was first introduced by adapting computer resources from memory, processors and hard drives. Computer scientists noted that these resources are not all sufficiently used. The role of this technology was to create a virtual image of computers with different operating systems for each image or device within one real device.

This technology has developed and has become a manufacturer of virtual servers, in addition to virtual computers, so that these servers provide services to the real computers that are outside the box of the machine that it operates within. These servers and computers have been connected

virtually to each other to provide services to external devices through the VMWARE technology loaded on the operating system.

Figure 1.

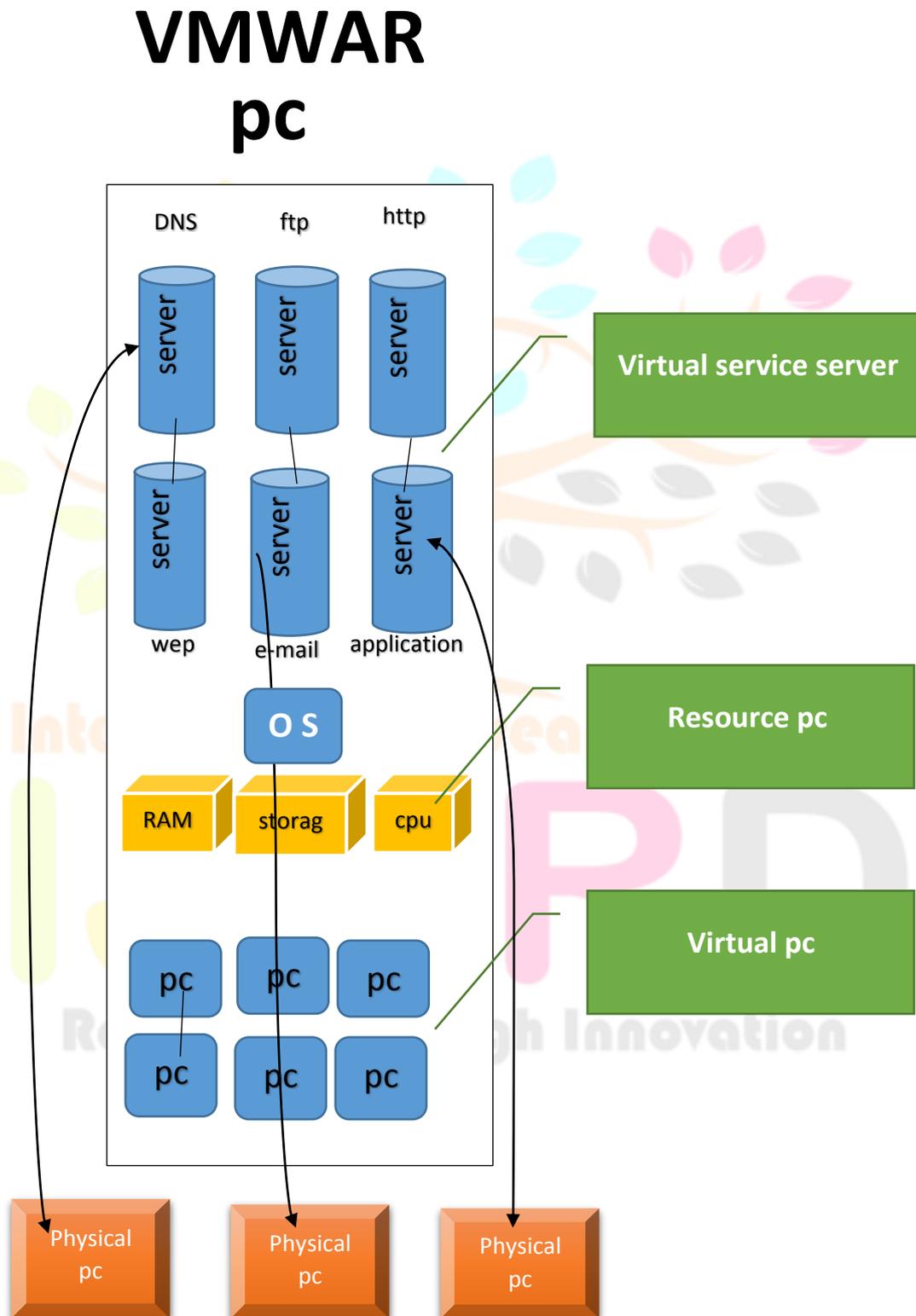


Figure 1



Stage Two

VMware technology manufacturers noted that the operating system (OS) on the computer is hindering the work of this technology because of the exploitation of local computer resources by it, and they developed this service where the operating system was eliminated through the introduction of a new technology called (VIRTUAL HYPER VISOR) which is a program or application to create a system that compensates for the operating system, which includes an operating system and the VMware Technology, and thus updating without affecting the operating system. It is part of a technology called VSPHERE where a technology called ESXI has been introduced and this technology is the

operating system through which we can provide many of the virtual servers and virtual computers for large numbers.

This new technology has also provided a link through which we can connect the devices and virtual servers with the physical world outside this computer through a switch connected to all the real devices so that the ESXI technology controls the outside world and this has developed the technology of VMWARE widely, where it can connect the real devices with virtual machines and vice versa. Its services have also enabled the distribution of computers to the physical world. It is possible to control, give permissions to computers and block them from each other through the provision of a virtual switch (VS), which ESXI installs it for the simulation of the parts of the network, and it has two types (VIRTUAL STANARD SWITCH and VIRTUAL DISTRIBUTED SWITCH) This technology provides 127 Virtual Switch (VS) where it provides a VLAN service and a LAN partition. **Figure 2**



VMWAR PC

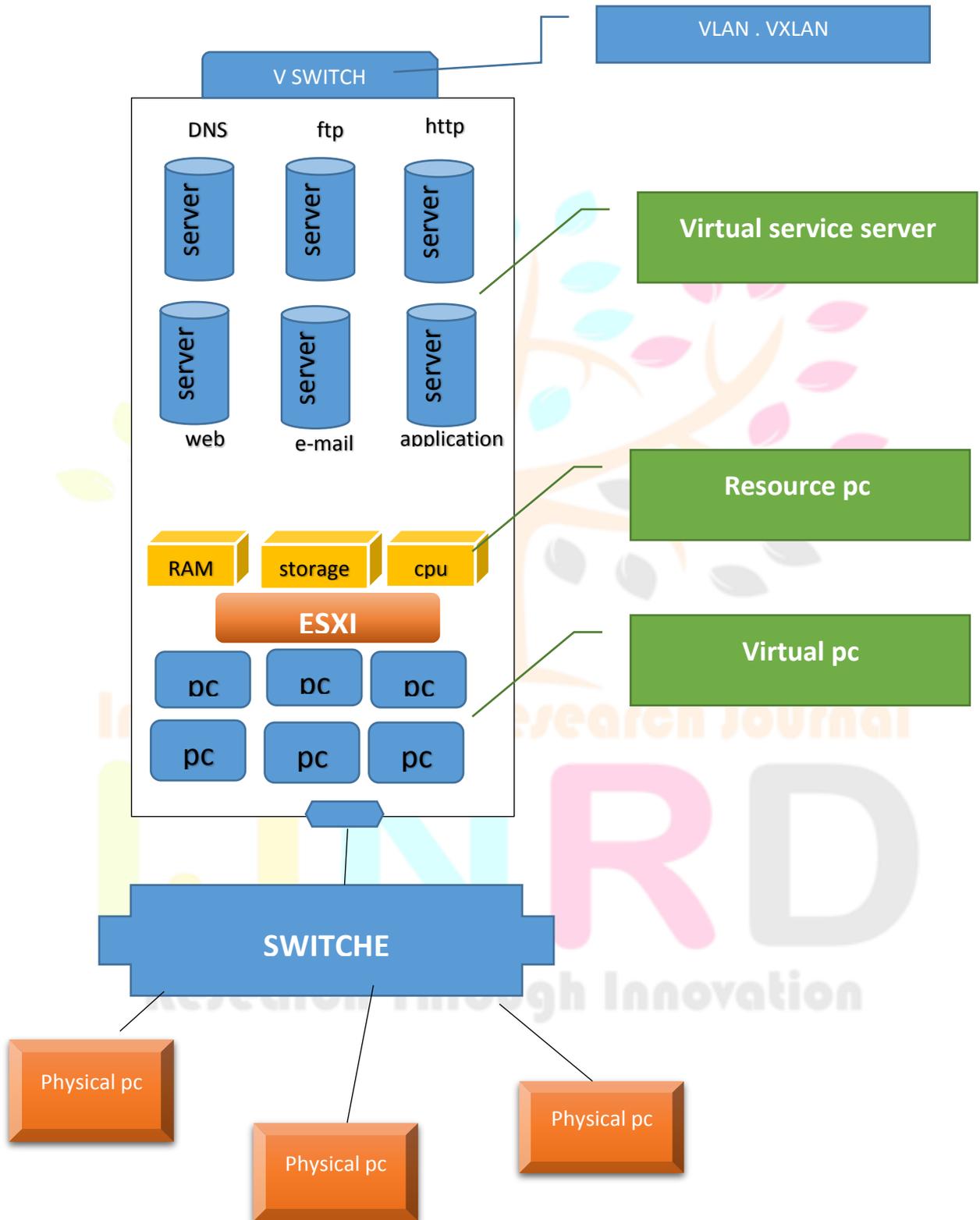


Figure 2



Stage Three

At this point, the developers were afraid that the device would be dropped (or stopped abruptly) that ESXI was installed on, and then the entire work would be lost. So developers began to think of new technology to avoid this and reached a new stage of

work through HIGH AVAILABILITY (HA) technology, where it transfers the virtual machine from a virtual server to a virtual server on another virtual device by connecting the two machines which have ESXI service installed on them, through a certain cable, so we will have a first device with ESXI 1 and another device with ESXI 2 with the same virtual elements. But the slow speed of it did not give the right meaning, thus we can call it a copy or backup only. Thus having a better technology would be preferable. **Figure 3**

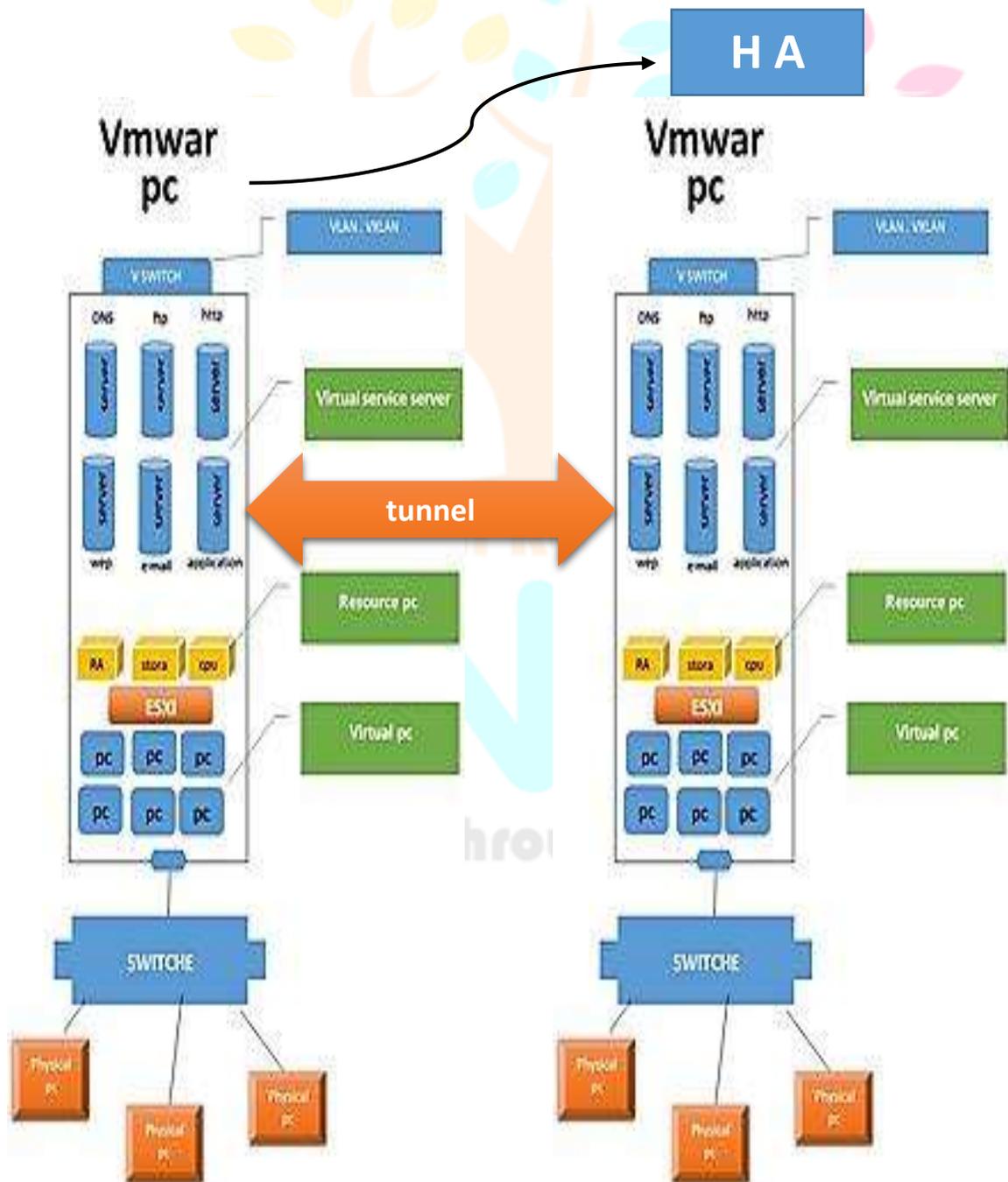


Figure 3

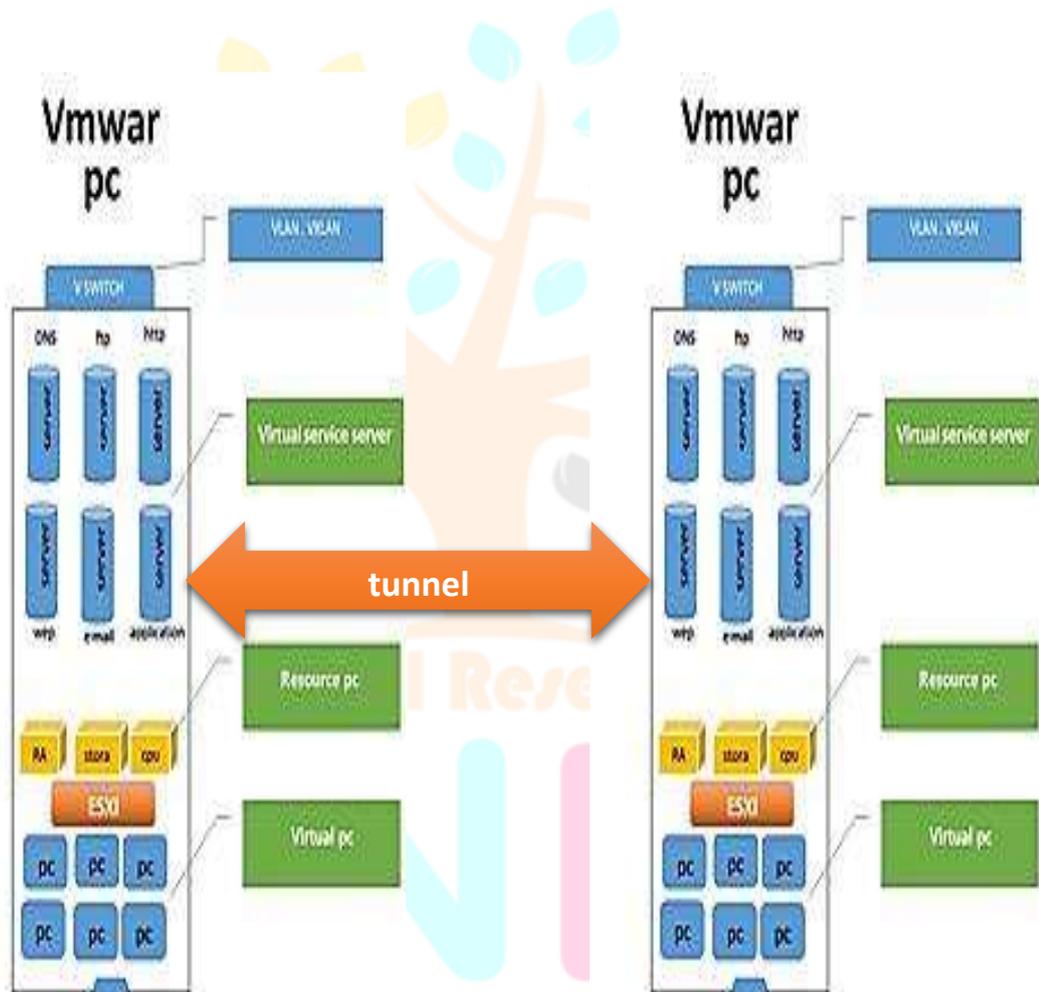


Page Four

Which is the V-CENTER SERVER stage? It says that we make ESXI1 and ESXI2 on a single database. No matter how many ESXIs, we can combine them with one

database so this database contains images for each ESXI with all its virtual contents So that the switching from ESXI to the other can be done quickly. The maintenance can be carried out without affecting the work, in addition to many benefits we derive from this technology and the idea of unity between all devices and share them.

Figure 4



V CENTER SERVER

Figure 4



Stage Five

At this stage, a virtual application or technology called SNX was created on the same database or V CENTER SERVER, which combines all the virtual ESXI resources including switches, routers and servers that control the virtual and physical network through a VLAN service. Thus, NSX is the dominant and master of the network, This network is virtual, NSX contains MONITORING which can distribute evenly and provide communication as needed by providing the appropriate transmission speed for each network or device. NSX becomes the dominant controller of this virtual environment.

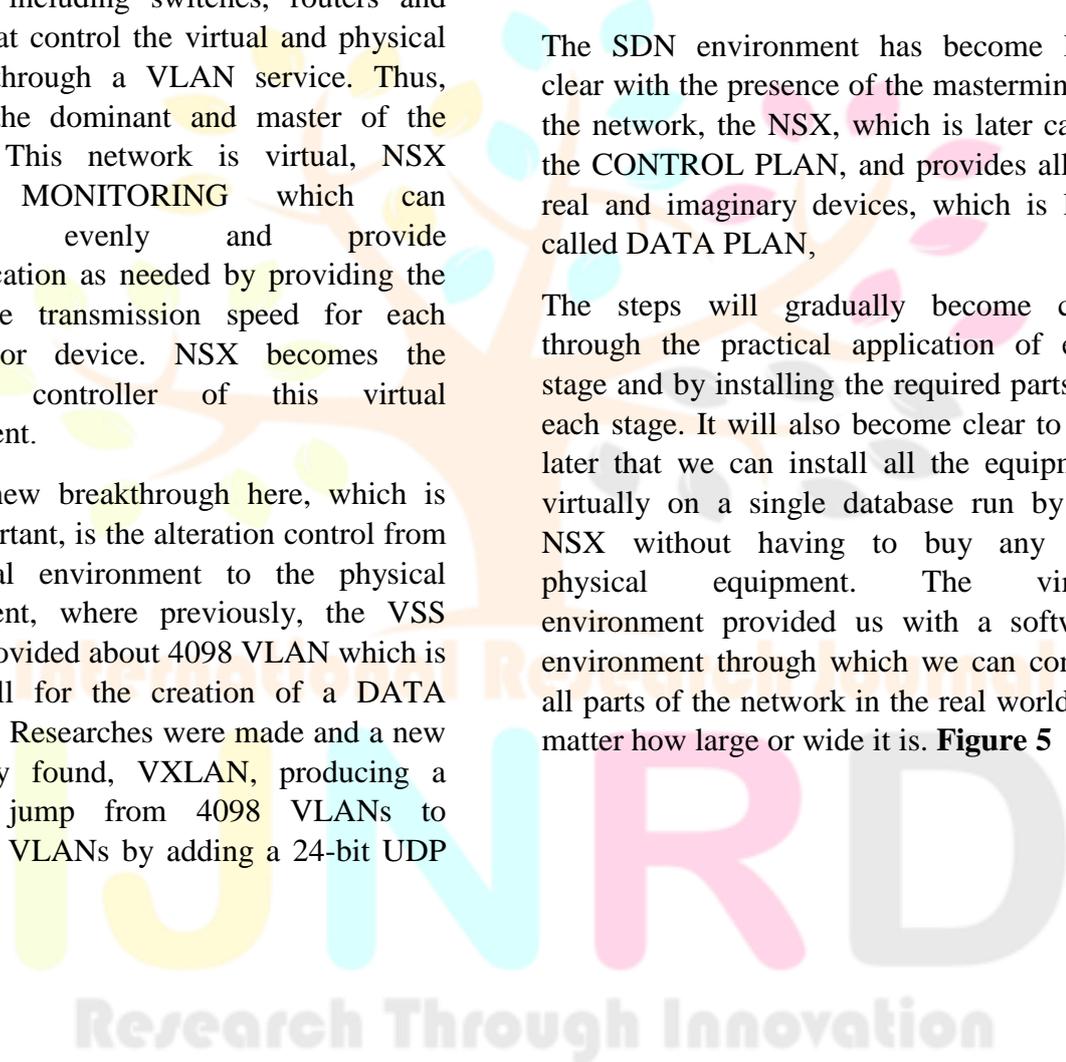
But the new breakthrough here, which is very important, is the alteration control from the virtual environment to the physical environment, where previously, the VSS service provided about 4098 VLAN which is very small for the creation of a DATA CENTER. Researches were made and a new technology found, VXLAN, producing a quantum jump from 4098 VLANs to 16777216 VLANs by adding a 24-bit UDP

instead of 12 bits. This leap enabled NSX to be the mastermind of this environment and was able to keep abreast of VMware's evolution, which has developed its tools making it easy to create a very large number of virtual devices just by the pushing of a button.

Then the transition to physical real network became possible through a switch called NX with both its real and virtual types that can read a large amount of information in a very short time other than the normal switch.

The SDN environment has become later clear with the presence of the mastermind of the network, the NSX, which is later called the CONTROL PLAN, and provides all the real and imaginary devices, which is later called DATA PLAN,

The steps will gradually become clear through the practical application of each stage and by installing the required parts for each stage. It will also become clear to you later that we can install all the equipment virtually on a single database run by the NSX without having to buy any real physical equipment. The virtual environment provided us with a software environment through which we can control all parts of the network in the real world, no matter how large or wide it is. **Figure 5**



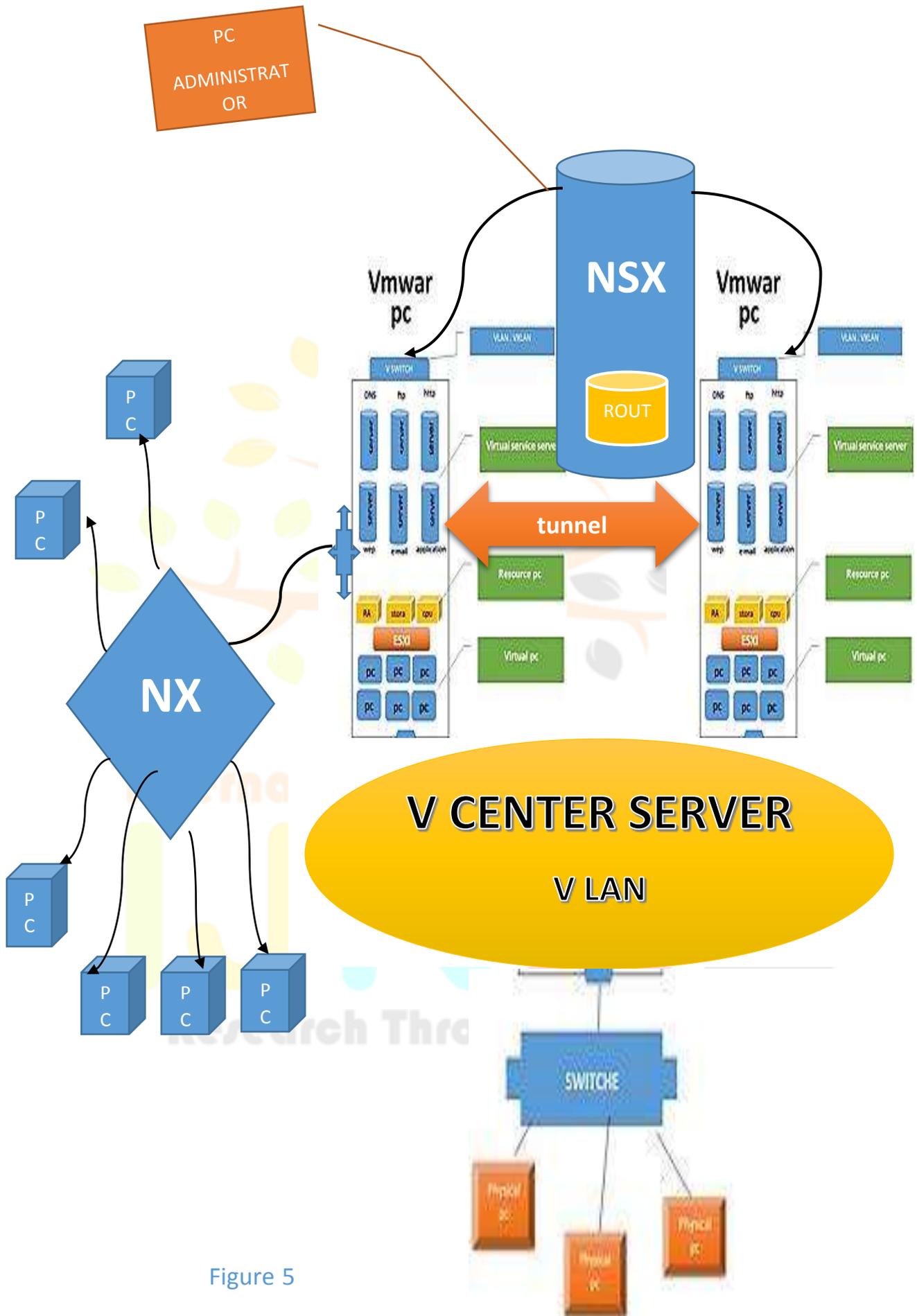


Figure 5

Conclusions and recommendations:

- Developing the NSX environment in all foundations and organizations.
- Centering the work through the Datacenter
- Proceeding to work by acquiring all the programs within the datacenter and dispensing all the real physical devices by using virtual ones.

References.

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