The migration process and advantages of Windows Server 2019

Research proposal bachelor's thesis 2018-2019

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Abstract

This research covers the topic of Windows Server 2019, the different versions, and the advantages it has to its precursor Windows Server 2016. Windows Server is one of the most used enterprise operating systems in the world. This makes keeping it up-to-date in the fast paced world of information technologies crucial. Thanks to the abundance of new features it offers looking into migration to this newer version is definitely an important question. This research paper will look into how the migration process from Windows Server 2016 to Windows Server 2019 would work, the advantages and possible disadvantages of this process. Another important part will be looking into the migration of an SAP environment, as described by delaware. At last, there will be a comparison between the different available base container images and how these can be leveraged. In the end this research paper will advise for or against a migration to the latest version of the operating system.

Keywords

System administration. Windows Server — Server Migration — Project Honolulu

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1. Introduction

Windows Server is a well-known Operating System (OS) among Information Technology (IT) professionals. With major organizations all around the globe, like Infosys, that have implemented some form of the OS in their infrastructure. (Shailendra, 2015) One of the tasks that often need to be performed on the OS, is keeping applications up-to-date. However, it is not often described how to migrate to the latest version. This does not mean that frequent updates are not important, for both the addition of new features as well as the improvement of security, as this is becoming one of the big concerns of this century. This bachelor's thesis will go in-depth about the advantages and disadvantages of migrating to the latest version of Windows Server. In specific, this bachelor's thesis looks at the migration from Windows Server 2016 to Windows Server 2019, with as an optional requirement the migration of a SAP environment, as this is applicable to the business environment of the originator, delaware. The key purpose is to find a procedure that is efficient, minimizes possible downtime and is applicable not only to the originator, delaware but also to other organizations that find them self in the same situation and want to migrate their infrastructure to the latest version of the OS.

1.1 Research question

What are the advantages and disadvantages of a migration from Windows Server 2016 to Windows Server 2019 in a business environment?

1.2 Sub-research question

- What are the differences between the Windows, Server Core and Nano Server base container images of Windows Server 2019?
- Can SAP be migrated from an existing Windows Server 2016 to Windows Server 2019 in a business environment?
- How can the new features of Windows Server 2019 be leveraged in the migrated infrastructure?

2. State-of-the-art

Windows Server 2019 was built on the strong foundation of Windows Server 2016 although it introduces new features. (Gerend et al., 2018) These can be boiled down to four key themes (Microsoft Windows Server Team, 2018):

1. Hybrid Cloud
2. Security
3. Application Platform
4. Hyper-Converged Infrastructure (HCI)

In the following subsections, the essence of the above themes is discussed.

2.1 Hybrid cloud

One of the new features in terms of hybrid cloud is the Server Core App Compatibility Feature on Demand. (Pacquer, Poggemeyer, & Plett, 2018) This is an optional feature pack that was designed for the Windows Server 2019 Server Core base container image and can always be applied to the system. It significantly improves application compatibility by adding binaries and packages. Even with these added packages, the footprint of the machine will remain as small as possible. It does not achieve this by implementing the Windows Desktop Experience GUI, but by using a lightweight GUI instead.

2.2 Security

Security has always been a fundamental part of any OS. With over 53.000 reported incidents and 2.216 confirmed data breaches, security is without a doubt hot topic. (Mansfield-Devine, 2018) This is heavily reflected in the newest edition of Windows Server, with the seamless integration with Windows Defender Advanced Threat Protection (WDATP), Security with Software Defined Networking (SDN) and Shielded Virtual Machines. This bachelor's thesis will also explore the additional safety mechanisms that were added.

2.3 Application platform

At the heart of a server, applications can be found. The application platform provides the necessary services required by these applications. There have been key improvements in this aspect as well. These improvements are mostly virtualization and security related.

2.4 Hyper-Converged Infrastructure (HCI)

This technology could easily come out of buzzword bingo however, it is perhaps the most exciting feature that was improved in the release of Windows Server 2019. HCI makes it effortless to scale up from two nodes to a hundred node environment. This makes the technology intriguing for organizations with an in-house data centre.

3. Methodology

Extensive research will be done before attempting the migration. The proof of concept will consist of an environment with Windows Server 2016 that will be migrated to Windows Server 2019. This will be done both using the in-place upgrade and side-by-side migration method. By carrying out this migration, the advantages and disadvantages will become clear.

Carrying out the migration will show the limitations and features of the latest version. Afterwards, an attempt will be made to migrate an existing SAP environment to our new and optimized Windows Server 2019 environment.

Finally, the different base container images will be compared, both in terms of performance and size. The goal at the end of the proof of concept is to make a reasoned decision between Windows Server 2016 and Windows Server 2019.

4. Expected results

It is expected that the proof of concept will demonstrate the advantages of the latest version of Windows Server and that the migration is an investment in the future. However, migrating a SAP will not yet be recommended due to the new nature of Windows Server 2019. Also, when looking at the base container images, the latest version will have the upper hand.

5. Expected conclusions

It is expected to conclude that migration from Windows Server 2016 to Windows Server 2019 is perfectly manageable, with a preference for a side-by-side migration, however additional research will be necessary for each individual software solution.

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