Post-Completion Write-Up

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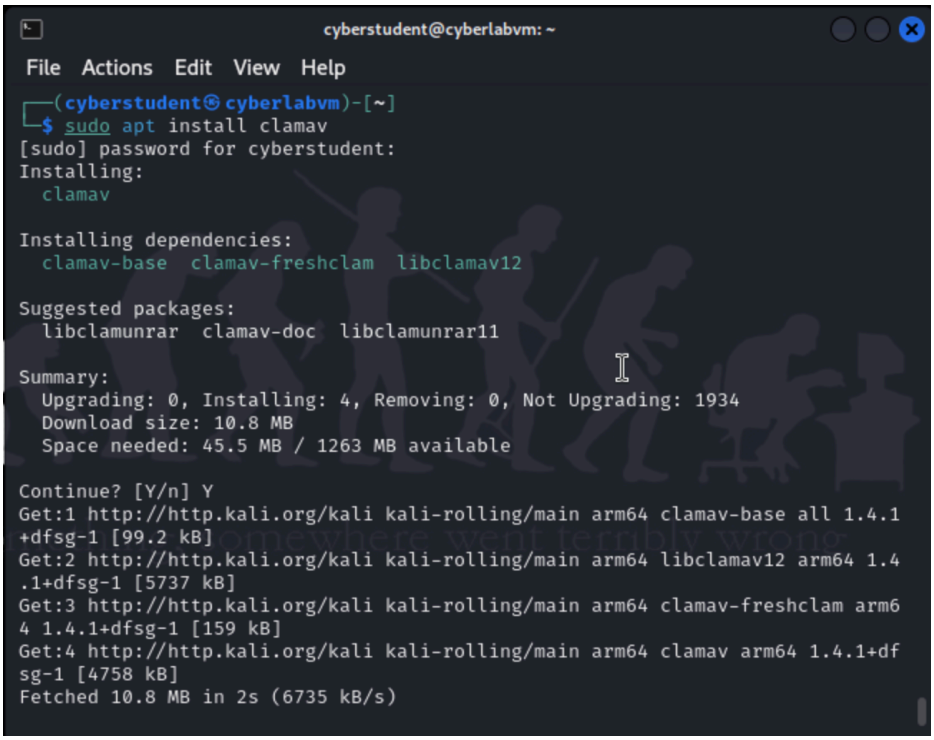
13 December 2024

What Occurred

The initial migration batch involved migrating three virtual machines onto Microsoft Azure. These three virtual machines consist of a Kali Linux VM, a Windows 2022 Server, and Metasploitable. Though we were not able to successfully set up the Azure environment for migration, we were able to secure the virtual machines from vulnerabilities and were able to test each of their responsiveness from our physical devices. The Kali Linux VM as well as the Windows 2022 Server had a multitude of vulnerabilities that demanded urgent remediation. After implementing secure practices and enhancing our cybersecurity posture were we able to reduce risks and threats within the virtual machines.



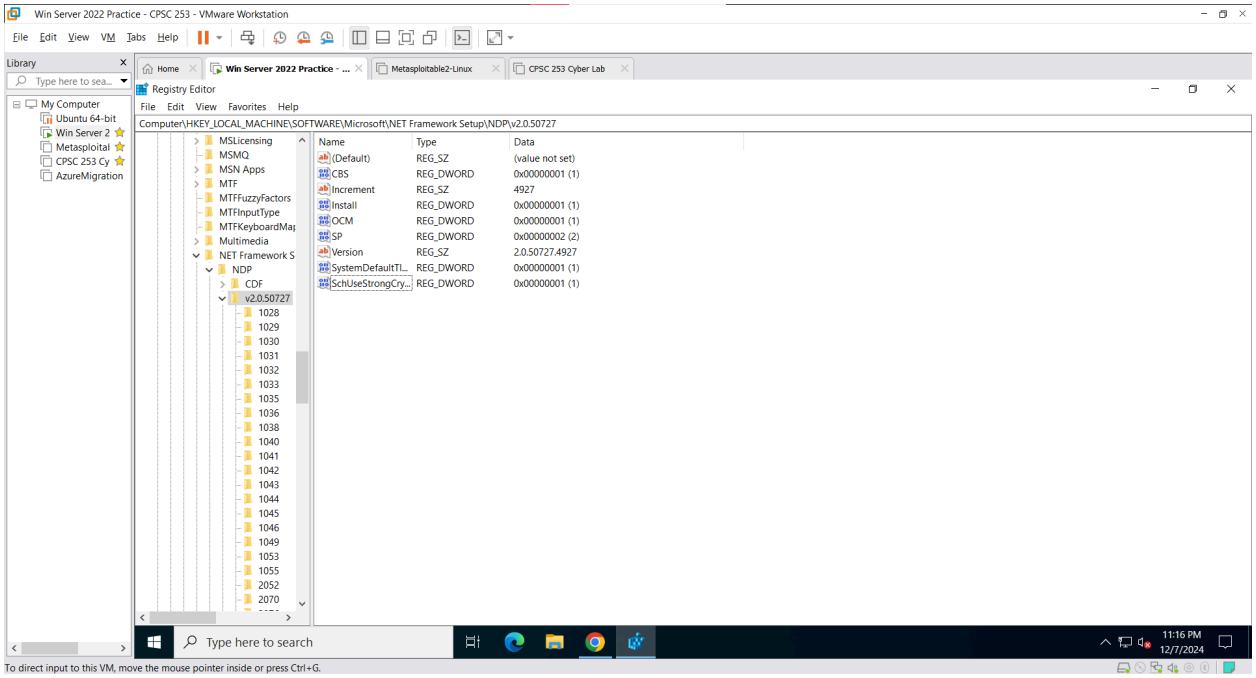
Installation of antivirus software on the Kali Linux VM.

Why Migration is Necessary

Microsoft Azure has many built-in tools that enhance protection against cybersecurity threats. Also, because Microsoft Azure is regulated, the tools that we use are trusted to be in compliance with security standards. In the context of business management, using Azure allows organizations to scale operations through flexible cloud infrastructure. Azure is a reliable and cost-effective resource that enables businesses to scale down in hardware. This migration is necessary in order to learn about modernizing systems using cloud-based technologies. Azure also has recovery services which helps retain backups in the event of breaches or disasters.

Issues Faced During Migration

There was an error when trying to enable windows security. To resolve this error, a script needed to be inputted to Windows PowerShell to repair windows security. Afterwards, it was possible to enable windows security as well as virus & threat protection. When using Microsoft Entra Connect Sync there was a pop-up that said the software wouldn't be able to run unless TLS 1.2 was enabled. In order to enable TLS 1.2, we had to start up regedit and add TLS 1.2 into the security provider protocols. However, even after this change and reboot, there were still sync issues with TLS 1.2.. To remediate this issue, we found that not only the security provider protocols had to be changed, we also had to change the .netframework. After we added TLS 1.2 and rebooted the system, the sync issue was resolved. Another crucial issue that we had encountered was that we were not able to use some of the Microsoft Azure resources through the school-monitored subscription account. This led to us being unable to migrate the virtual machines. This may be just a steep learning curve in understanding the tools on Microsoft Azure, but a multitude of procedures were employed to resolve these issues but to no avail.



Enabling TLS 1.2 in the .netframework.

Why Microsoft Azure

Microsoft Azure was used for the virtual machine migration because of its cost-effectiveness. Azure also has the capability of integrating with our Windows Server which is crucial in uploading our virtual machine to the cloud. Azure also provides a variety of tools that meet compliances making Microsoft Azure a more reliable choice than the other providers. Microsoft Azure is also user-friendly and has a ton of documentation that helps guide users with certain procedures and setting up the migration process.

Cost of Running the Initial Batch in the Cloud

The Microsoft Azure resources that were used are free of charge using the student subscription.

Lessons Learned

Through this project were we able to understand the significance of cloud migration. Also, we were able to learn the importance of migration planning. Though we were unable to successfully migrate our virtual machines, the migration planning process helped lay the foundations of our understanding of cloud-based technologies. The capstone also exposed us to Azure tools which really introduced us as to what real-situation-like resources would consist of. Not only has this project helped us develop familiarity with Azure, it has also reinforced our learning of the importance of security. It was difficult to properly secure the virtual machine and come up with a plan to ensure it maintains security after the migration process. The capstone helped me learn how to configure security settings for Linux-based and Windows-based machines to ensure that they have some form of protection.