Two-weekly report

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Project: **3**
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1. **What have I accomplished since the last Daily Standup?**

I have been focusing on the ground knowledge of migration - live migration and the two essential techniques of migration, that are pre-copy and post-copy memory migration.
Migration is the process of moving a running virtual machine (VM)/application between physical machines without interrupting the client/application. Memory, network connectivity and storage of VM will be transferred from host to client. After spending time to research, I am able to:

- Identified necessary steps to migrate a VM from host A to host B.
- Found out metrics of how good the migration technique is (total migration time & service downtime, or we could further consider metrics such as the impact on application performance, total network bandwidth consumed or total memory pages have been transferred.
- Studied the process of pre-copy based and post-copy based.
- Listed down potential optimization and the differences in performance between those two techniques.
- A short comparison between pre-copy and post-copy in general

Pre-copy	**Post-copy**
Much lesser downtime Copy more pages (some pages transferred multiple times) More migration time Suited for interactive application (web app,..)	More downtime Less pages Less migration time Better for memory-intensive application with large WWS

2. **What will I accomplish until the next Daily Standup?**

Based on these two techniques, I will research further on the advantages/disadvantages of applying these two techniques on different applications/environments.

3. **Do I anticipate any obstacles and can the team help me with them?**

For now, things are working smoothly. All 5 team members are on the same page, and we spend a lot of time discussing different ideas as well as sharing papers/documents to improve our knowledge of this topic inside/outside the classroom.

4. **References**

[1] Christopher Clark, Keir Fraser, Steven Hand, Jacob Gorm Hansen, Eric Jul, Christian Limpach, Ian Pratt, and Andrew Warfield. 2005. *Live migration of virtual machines*. In Proceedings of the 2nd conference on Symposium on Networked Systems Design & Implementation - Volume 2 (NSDI'05). USENIX Association, USA, 273–286.
[2] Michael R. Hines and Kartik Gopalan. 2009. *Post-copy based live virtual machine migration using adaptive pre-paging and dynamic self-ballooning*. In Proceedings of the 2009 ACM SIGPLAN/SIGOPS international conference on Virtual execution environments (VEE '09). Association for Computing Machinery, New York, NY, USA, 51–60. https://doi.org/10.1145/1508293.1508301