

## Report on APRICOT 2025 Workshop

I participated in the Practical Virtualization with Hybrid Strategies Workshop at APRICOT 2025. During this master class, I learned many valuable lessons. The workshop lasted for three days.

Day 1: I learned about cloud services, including Software as a Service (SaaS) and Infrastructure as a Service (IaaS). I also gained knowledge on how to manage AWS services, estimate costs efficiently, and protect the security of public cloud services using AWS IAM. We configured Multi-Factor Authentication (MFA) and used strong passwords. Additionally, I learned how to respond effectively by monitoring cloud activity and reviewed past attacks on public cloud services. The day also involved practical exercises in the AWS environment, where we ran security check scripts, controlled current AWS cost usage by region and service, and used the AWS billing service efficiently.

Day 2: On the second day, I learned about containers, their advantages, Dockerfiles, and Automating Infrastructure as Code. I also learned how to deploy infrastructure in AWS, as well as the concepts of virtualization, physical storage, and its types, including filesystems, Logical Volume Manager (LVM), and ZFS. During the lab session, we built a Docker container and deployed a Zabbix monitoring server. We also set up a hosted zone, created DNS records, and launched an EC2 instance on AWS using Terraform. In the virtual hosting lab, we imported an image and created a VM using that image on Proxmox. We also completed several challenges, such as performing live migration of a VM between clusters within a single datacenter and creating containers on the cluster. In the physical storage lab, we worked with logical volumes, physical volumes, and volume groups on the host in the Proxmox cluster. We then created a logical volume, formatted the volume group (VG), and extended the logical volume on a Linux machine.

Day 3: On the final day, I learned about network storage (Ceph), monitoring systems (Grafana and Prometheus), and how to use Grafana with queries. We also discussed data protection and data risks in the cloud and how to choose the right strategy. In the lab section, we worked with Prometheus to collect and monitor data metrics, such as Proxmox VE metrics and Ceph metrics, and explored the Grafana dashboard. During the session, we worked on Ceph tasks such as checking the Ceph status and fixing health warnings on Proxmox and worked with Prometheus to collect and monitor data metrics, such as Proxmox VE metrics and Ceph metrics, and explored the Grafana dashboard. Additionally, we learned how to provide data replication for data integrity on AWS S3 buckets using Terraform.

This workshop was extremely helpful to my work and will help improve our company's infrastructure and virtualization. I plan to enhance security and maintain the AWS environment more effectively.

One of the most engaging and memorable sessions was the Soft Skills workshop. This session helped break the ice and encouraged effective communication with others. In this session, we introduced ourselves to the group, spoke about various topics, and discussed issues such as whether countries should be able to prohibit the flow of internet data, and the causes and advantages of such actions. Overall, the Soft Skills workshop was challenging but helped us overcome our fears and improve our communication abilities.

One piece of feedback I would like to offer is that it would be more beneficial if the lab environment were separated for each individual, allowing for more focused learning.

This journey was incredibly helpful, challenging, and rewarding. It advanced both my hard and soft skills, and I am grateful for the opportunity. Thank you, APRICOT!

**Khongorzul Purev**