

УДК 811.111

R. Lutsyshyn, O. Perenchuk

(Ternopil Ivan Puluj National Technical University)

DOCKER VIRTUALIZATION AND CONTAINERIZATION TECHNOLOGY

When developing laboratory workshops, the teacher faces the following tasks:

- reduction of time for preparation and deployment of the laboratory stand;
- simplification of the process of deployment of the laboratory stand (the student may not have good system administration skills for installing and configuring certain types of services, or they are considered in other courses);
- minimizing the use of system resources.

In some cases, it is expedient to maximize automation and facilitate the deployment of a laboratory stand, in particular when it comes to distance learning.

Operating system virtualization is a virtualization method in which the kernel of the operating system supports several isolated instances of the user space, instead of one. These instances (often referred to as containers or zones) are completely identical to the real server in terms of the user. When organizing the learning process, you can often find an approach to deploying laboratory stands in the form of images of ready-made virtual machines (Cloudera CDH Hadoop clusters and Hortonworks HDP, MongoDB University [1]). However, such images of virtual machines are quite voluminous and their use is rather resource intensive

According to the authors, it is more appropriate to use containerization technologies, in particular, to use the Docker platform. This approach involves the student having some basic concepts about containerization, however, starting up and working with such a laboratory stand is quite simple (the number of necessary pre-settings and the number of necessary actions for start / stop / save the state) and effective (in terms of memory usage, and processor time), faster in deployment (the need to download data of a smaller volume), can be used both on the working computer and in the cloud service.

Using this technology, interaction with the virtual unit occurs through the operating system, when the hypervisor is absent. There are several containers, the main of them is LXC (Linux Container), the others are LXD, CGManager, LXCFS.

References

1. Turnbull J. The docker book containerization is the new virtualization / James Turnbull., 2014. – 321 c.
2. MongoDB University. M202: MongoDB Advanced Deployment and Operations. [Online] – Available: URL: <https://university.mongodb.com/courses/M202/about>
3. Docker Documents [Online] – Available: URL: <https://docs.docker.com/>.
4. Lutskiv A.M. Parallel and distributive computing: Course book / Lutskiv A.M., Lupenko C.A., Pasichnyk V.V. – Lviv : Magnoliya 2006 , 2015 – 566 pp. – ISBN 9786175741108.