

Erald Dervishi

CS 478

Professor: Tiago Cogumbreiro

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What is a container, what is the difference between container, virtualization, and sandboxing. List the container options in Linux and Windows, with a short one-sentence summary of its features.

❖ **What is a container?**

Containers are similar to Virtual Machines but slightly different they give developers the opportunity to deploy applications securely and ship them through different environments with their full code package, configuration settings and their dependencies.

❖ **What is the difference between Container, Virtualization, and Sandboxing.**

First of all we need to have a better understanding of Virtualization, *“Virtualization is the process of running a virtual instance of a computer system in a layer abstracted from the actual hardware. Most commonly, it refers to running multiple operating systems on a computer system simultaneously.”* As stated above Containers help developers to ship their projects in different environments on the other hand Virtualization it includes the entire the operation system in layers from its hardware that could be a server.

In other words containers are reduced in size use compared to Virtualization since Virtualizations are used for big layers servers they need a bigger size use, another advantage of using containers is that containers are very quick to use and run the application they have instantly in time and when is no more needed they can disappear and free the space occupied by running that application.

Sandboxing, it is a software that isolates the applications from other programs, this software provides a layer of security for those applications in order to run malware free. Compare to Containers and Virtualization this software it has too many restrictions starting from the security, to use Sandboxing you need to have permission to do it and you need to be assigned to read and write to that system you install the Sandboxing.

❖ **List the container options in Linux and Windows, with a short one-sentence summary of its features.**

The biggest repository container now in the market is Docker, Docker is used on Windows and Linux the only problem for user to use Docker on Windows they need to have either Windows 10 Pro and Windows WorkStation, which means it has its own restrictions for Windows users, on the other hand for Linux users it can be installed from the terminal directly from the Docker site.

Hyper-V containers(Windows): It allows users to create run multiple container instance on a host, provides kernel level isolation.

Docker(Linux & Windows): Some of the features for Docker are, Application Isolation, Easy and faster configuration, Increase Productivity, Service Management

LXC(Linux): Is low level, flexible it is supported by upstream kernel also is known for templates and library language bindings.

LXD(Linux): Secure by design, is Scalable from other containers in your system, Intuitive it uses command line experience, Image based and supports image transfer and live migration, Storage Management, Network Management etc.

Work Cited

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