Dr Perigo,

A container is a package of software that contains all the necessary information to run in any type of environment (1). Containers are used throughout the tech industry in which they are heavily leveraged in Software Defined Networking. These packages virtualize the operating system and can run anywhere from the cloud, data center, or even on a personal computer. In this email I will be going over how containers are implemented and what their industry use cases are.

Implementations of containers:

* Containers are implemented over a host operating system, and usually require system memory, CPU cores, and general storage to run just like a native OS.
* Containers isolate software from its environment and will work uniformly despite its differences in the development and staging cycle (2).
* A key difference between a virtual machine and a container is that a container virtualizes from the operating system up, while a virtual machine virtualizes the entire machine down to the hardware itself. (3)
* Docker is an example of container deployment software. Software like Docker can manage OS images and can mass deploy a desired number of containers at once.

Industry use cases:

* For developing applications, containers can be a good testing ground for software that doesn’t interfere with different stages of deployment. (3)
* Containers do not require new hardware but can run on existing hardware. This means that companies wanting to utilize new software do not need to buy new hardware.
* Scaling application compute can be tricky with traditional hardware but is enabled through containers. (4)
* Containers can be very efficient and can decrease OpEx when it comes to cloud use cases

Containers have changed the way we look at operating systems. The ability to decouple hardware from software and scale it accordingly has simplified development of countless applications. Containers are used heavily throughout the industry and it is easy to see why large companies leverage these packages to increase productivity.

Best Regards,

Logan Chayet

1. <https://cloud.google.com/learn/what-are-containers>
2. <https://www.docker.com/resources/what-container/>
3. <https://www.simform.com/blog/containerization-use-cases/>
4. <https://www.redhat.com/en/topics/containers>

What are containers, how are they implemented, and what are industry use cases?