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Subject:- Seminar-1

A brief overview of working, application and benefits of containerization.

Abstract

Containerization has become a major trend in software development as an alternative or companion to virtualization. It involves encapsulating or packaging up software code and all its dependencies so that it can run uniformly and consistently on any infrastructure. The technology is quickly maturing, resulting in measurable benefits for developers and operations teams as well as overall software infrastructure.The concept of containerization and process isolation is decades old, but the emergence of the open source Docker Engine in 2013, an industry standard for containers with simple developer tools and a universal packaging approach, accelerated the adoption of this technology.It quickly became the most popular container technology – effectively an industry standard, although the specifications set by the Open Container Initiative (OCI) have since become central to containerization. Docker is a contributor to the OCI specs, which specify standards for the image formats and runtime that container engines use. Containerized applications inherently have a level of security since they can run as isolated processes and can operate independently of other containers. Server virtualization reproduces an entire computer in hardware, which then runs an entire OS. The OS runs one application. That's more efficient than no virtualization at all, but it still duplicates unnecessary code and services for each application you want to run.Containers take an alternative approach. They share an underlying OS kernel, only running the application and the things it depends on, like software libraries and environment variables. This makes containers smaller and faster to deploy.

In a nutshell, virtualization eliminates the need for an entire server for one application. Containerization eliminates the need for an entire OS for each application.Portability, agility, fault isolation, ease of management, and security are among the advantages of utilizing containerization technology.