PROJECT REPORT

DOCKER-COMPOSE AS INFRASTRUCTURE AS A SERVICE

PROBLEM STATEMENT : Industries are growing really fast and to keep up with the pace of development of new products we need a tool that can help accelerate the process of setting up environment required for project deployment.

PROPOSAL : Docker can be used to accelerate the process of setting up an environment for project deployment. The concept of multi-container in docker is used to set up multiple containers required to deploy a project at once. This project aims to ease the process of web development using DRUPAL

PROJECT DETAILS :

DOCKER : Docker is a set of platform as a service products that uses OS-level virtualization to deliver software in packages called containers. Containers are isolated from one another and bundle their own software, libraries and configuration files; they can communicate with each other through well-defined channels.

DRUPAL : Drupal is a free and open-source web content management framework written in PHP and distributed under the GNU General Public License. Drupal provides a back-end framework for at least 2.3% of all websites worldwide – ranging from personal blogs to corporate, political, and government sites.

- Drupal is explicitly not for beginners. As it is made for fast and rapid performance, it is considered as one of the most advanced, open source project community run software.
- It does offer a lot of customization which is very easy to implement, indirectly provides better control over the website.
- Though its installation, premium themes, and plugins are free, yet you have to pay for programming because Drupal.
- It requires a thorough knowledge of HTML, CSS, and PHP, therefore, is considered as most difficult but also attributed as the most powerful one of all others.
- Drupal attains the first position in terms of performance.
- Scalability is another aspect where most of the websites fall down due to sudden changes in traffic. Drupal here is the best option, reportedly known for its super-scalability.

MYSQL : MySQL is an open-source relational database management system. The application is used for a wide range of purposes, including data warehousing, e-commerce, and logging applications. The most common use for MySQL however, is for the purpose of a web database.

CONTAINERIZATION : A container is a standard unit of software that packages up code and all its dependencies so the application runs quickly and reliably from one computing environment to another. A Docker container image is a lightweight, standalone, executable package of software that includes everything needed to run an application: code, runtime, system tools, system libraries and settings.

Container images become containers at runtime and in the case of Docker containers - images become containers when they run on Docker Engine. Available for both Linux and Windows-based applications, containerized software will always run the same, regardless of the infrastructure. Containers isolate software from its environment and ensure that it works uniformly despite differences for instance between development and staging.

Docker containers that run on Docker Engine:

- **Standard:** Docker created the industry standard for containers, so they could be portable anywhere
- **Lightweight:** Containers share the machine's OS system kernel and therefore do not require an OS per application, driving higher server efficiencies and reducing server and licensing costs
- **Secure:** Applications are safer in containers and Docker provides the strongest default isolation capabilities in the industry

MULTI-CONTAINER APPLICATIONS : Applications that depends on one or more applications are known as multi-container application. Each dependency is run in a separate container. Multi-container application development environment can be setup using a **docker-compose file**.

Docker compose is a tool to define and run multi-container docker applications. With docker compose, you configure all your application's services (containers) in a single yml file, then spin up all of them with a single command. For example, if an application depends on a database, a queue, a cache, and another API service. We can define all of these dependencies as services in a docker-compose.yml file and start everything with a single command. No need for installing and running all the services independently.

APPLICATION DEVELOPED: The docker-compose.yml file is used to create a Drupal website which depends on MySQL database for backend services.

FUTURE SCOPE : The project can be enhanced to setup any number of containers in future as per requirement. The database used here is MySQL database but the user can opt for PostgreSQL.

CONCLUSION : Docker-compose eases the environment setup for development and testing.