**Parallel and distributed system**

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Why do we need docker?

Docker is an open platform for developing, shipping, and running applications. Docker enables you to separate your applications from your infrastructure so you can deliver software quickly. With Docker, you can manage your infrastructure in the same way you manage your applications. By taking advantage of Docker’s methodologies for shipping, testing, and deploying code quickly, you can significantly reduce the delay between writing code and running it in production.

1. **Portability:** Docker containers are designed to be platform-agnostic, meaning that they can be run on any system that supports Docker. This makes it easy to move an application between development, testing, and production environments.
2. **Isolation:** Docker containers provide a lightweight and isolated runtime environment for applications. Each container runs in its own sandboxed environment, which prevents conflicts with other applications and dependencies.
3. **Consistency:** Docker makes it easy to ensure that all dependencies are present and in the correct version, as well as making it easy to reproduce the same environment across different machines.
4. **Efficiency:** Docker containers are lightweight and consume fewer resources compared to traditional virtual machines. This makes it possible to run more containers on a single machine, improving resource utilization and reducing costs.
5. **Collaboration:** Docker simplifies collaboration by providing a standard way to package and distribute applications. Developers can create images of their applications and share them with others, making it easy to collaborate on projects and share code.

Overall, Docker provides a powerful platform for developing, packaging, and deploying applications that can improve efficiency, consistency, and collaboration while reducing costs and increasing portability.