docker

# Module Two

Intro to Docker Desktop
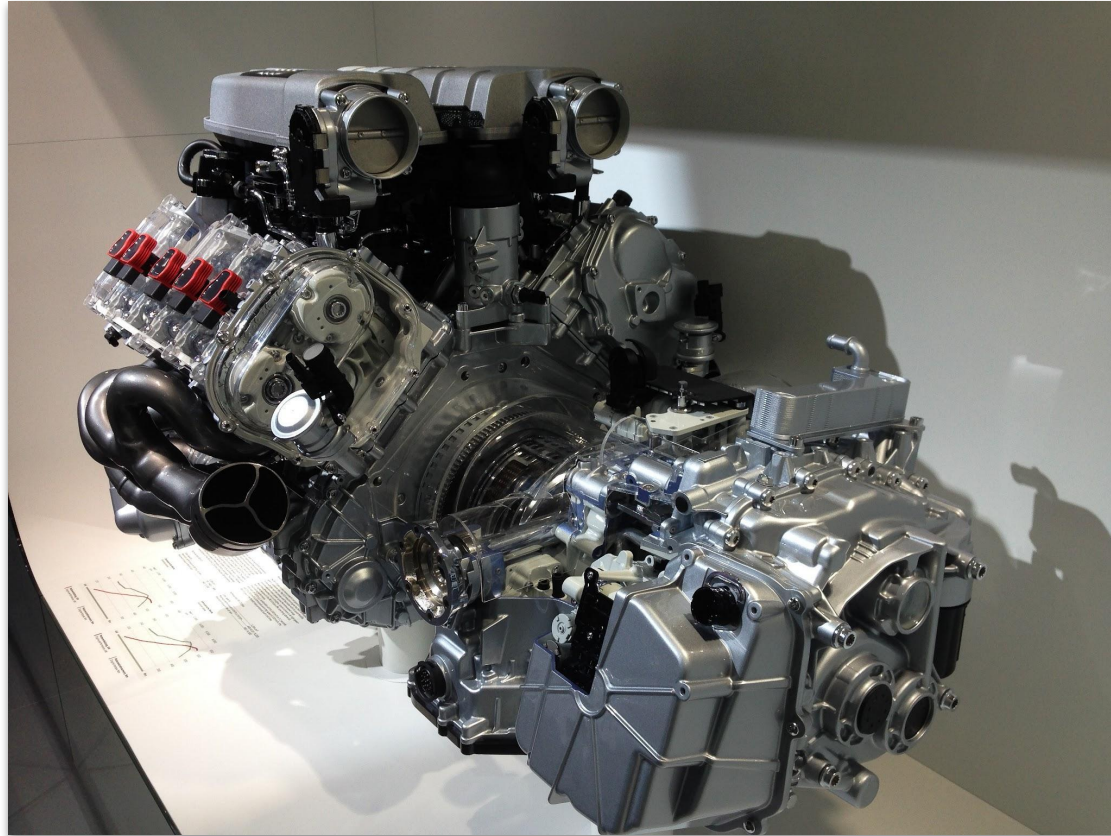
# Docker Desktop Components

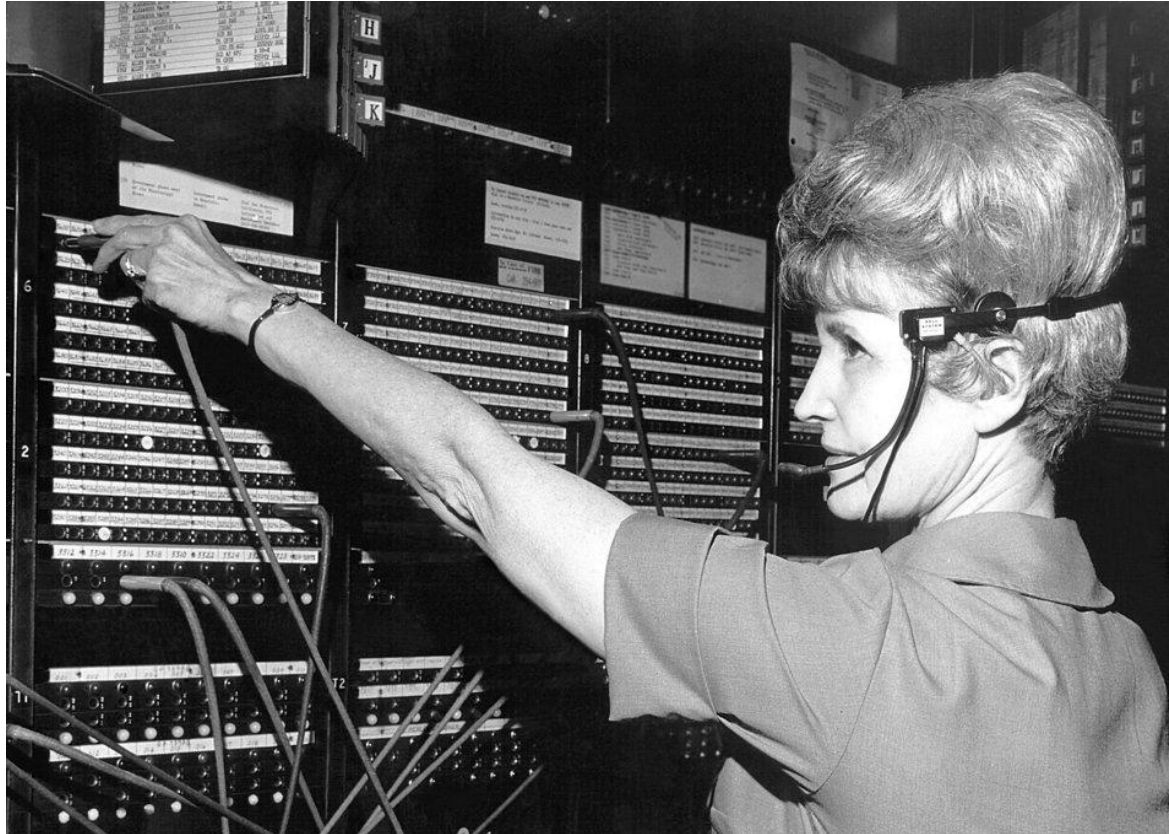# Built on Open Source

The core Docker experience is based on Open Source software.
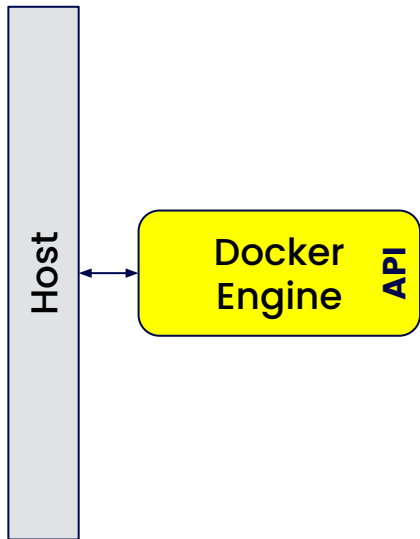
# Docker Engine

# Docker Engine API
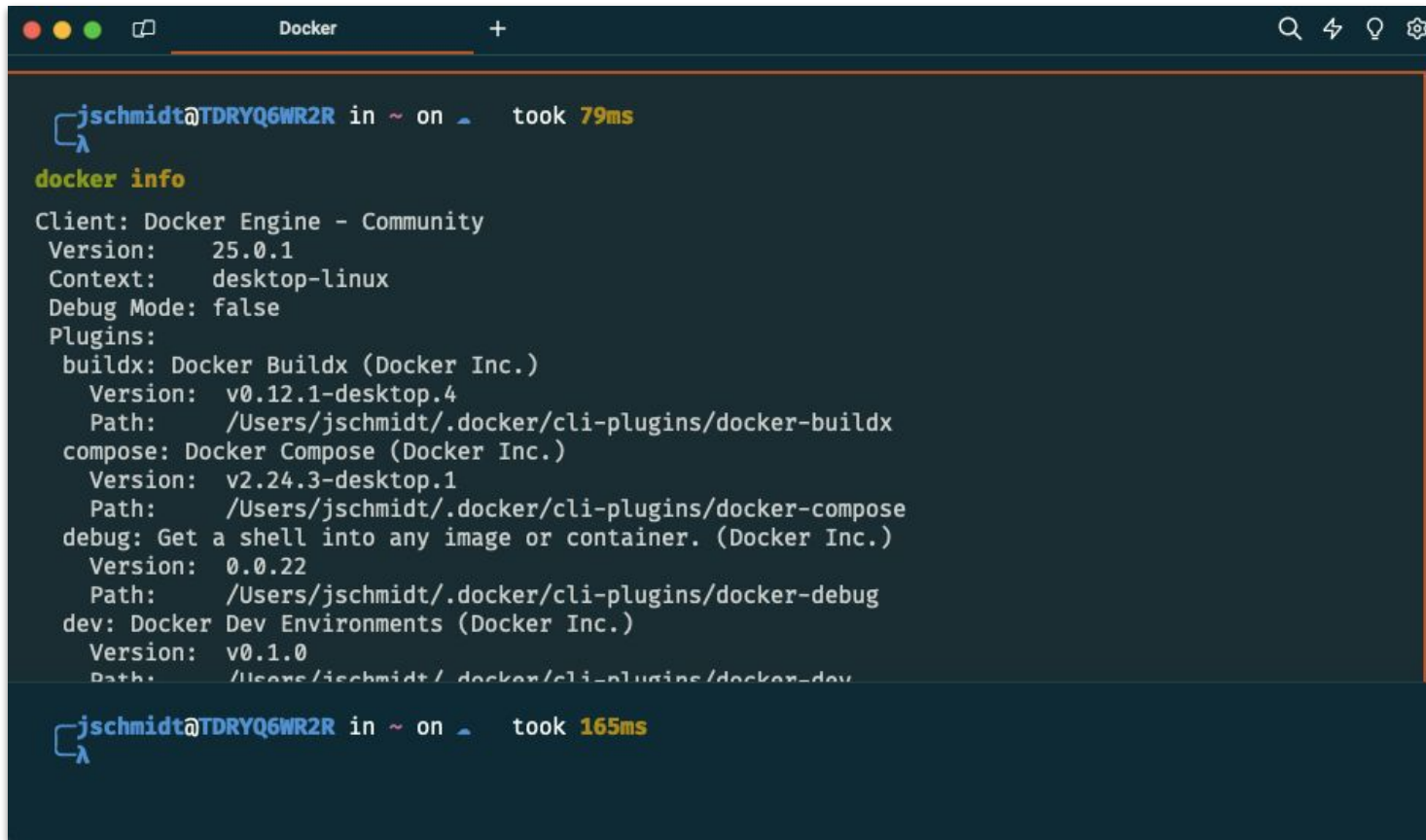
# Docker Engine

**Host**

**Docker Engine** **API**

Background process that creates and manages images, containers, networks, and volumes.

Exposes an API used by other components.

# Docker CLI

# Docker CLI
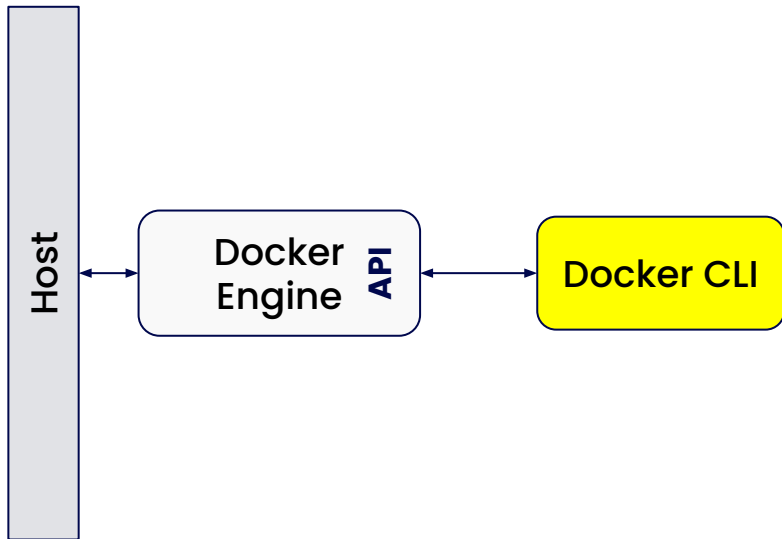
Host

Docker Engine — API

Docker CLI

A command line program that communicates with the Docker Engine via the API.

Allows interaction with the Docker Engine by commands or scripts.

# Docker Compose



Photo: Shkëlzen Rexha / © Valed Promotion

# Docker Compose

Host

Docker Engine **API**

Docker Compose
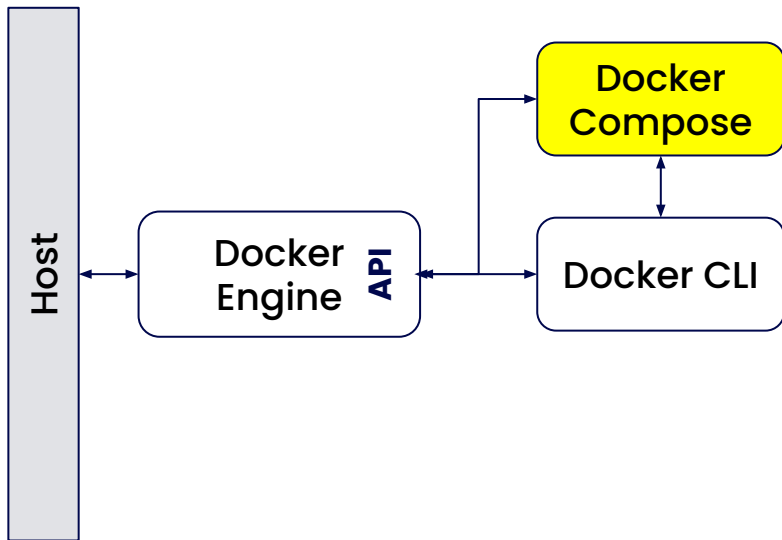
Docker CLI

A tool for defining and running multi-container Docker applications using a YAML file.

Communicates to the Docker Engine via the API and CLI.

# Kubernetes

# Kubernetes
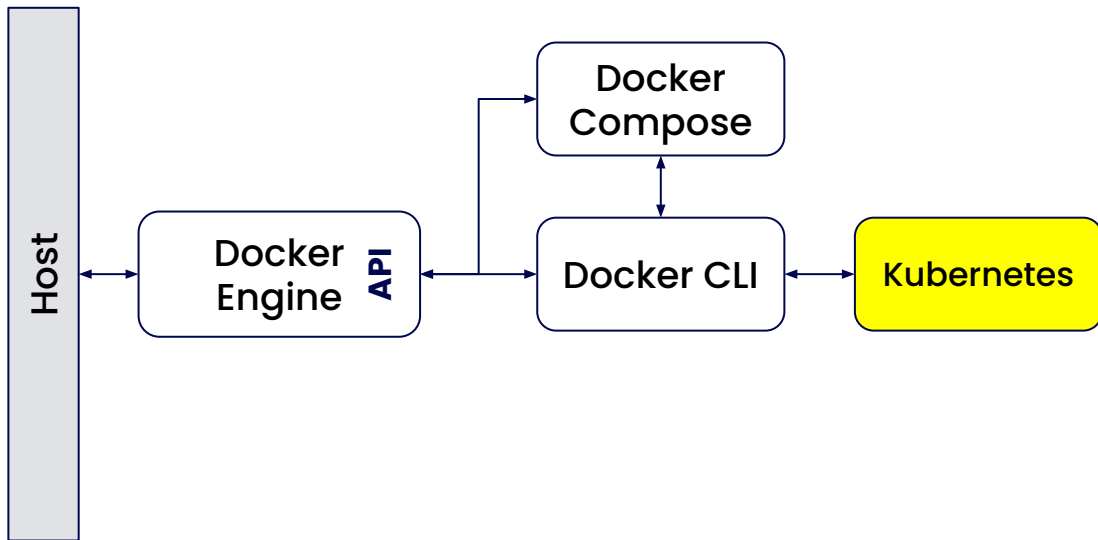


A standalone Kubernetes server and client with Docker CLI integration and integration with Docker for networking and volume management.

# Docker Buildx / Buildkit

# Docker Buildx / Buildkit



Creates Docker images from a Dockerfile and Context.Large ecosystem of tools that support both common and more complex and advanced scenarios.

# Docker Volume and Network Mgmt

# Docker Volume and Network Mgmt

```
         ┌──────────────┐        ┌──────────────┐
Host ◄──►│  Vol / Net   │◄──────►│   Docker     │
         │    Mgmt      │        │   Compose    │
         └──────────────┘        └──────────────┘
                                        ▲
                                        ▼
         ┌──────────────┐        ┌──────────────┐        ┌──────────────┐
Host ◄──►│   Docker     │◄──────►│  Docker CLI  │◄──────►│  Kubernetes  │
         │ Engine   API │        │              │        │              │
         └──────────────┘        └──────────────┘        └──────────────┘
                                        ▲
                                        ▼
                                 ┌──────────────┐
                                 │   Docker     │
                                 │   Buildkit   │
                                 └──────────────┘
```
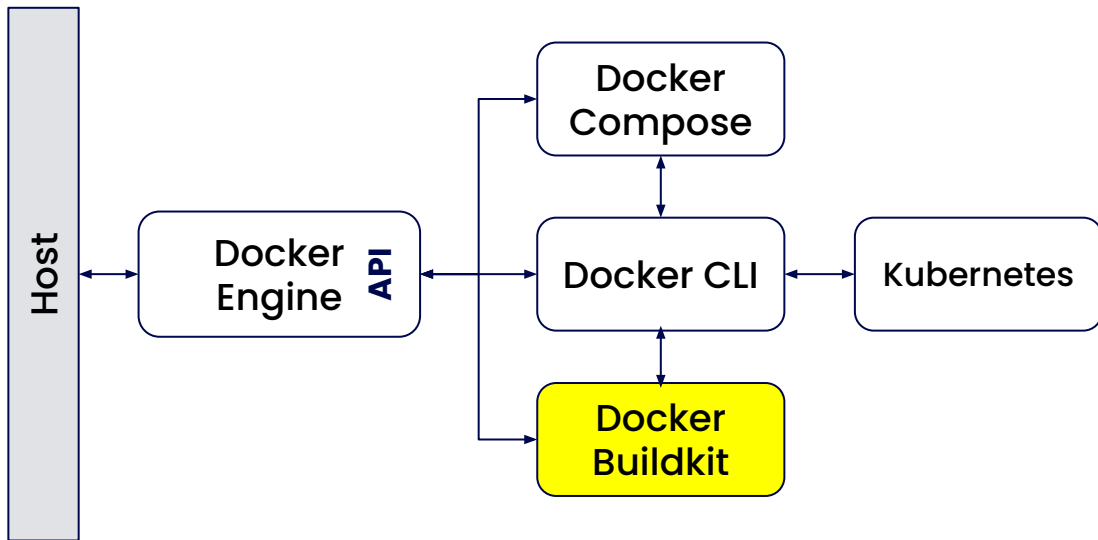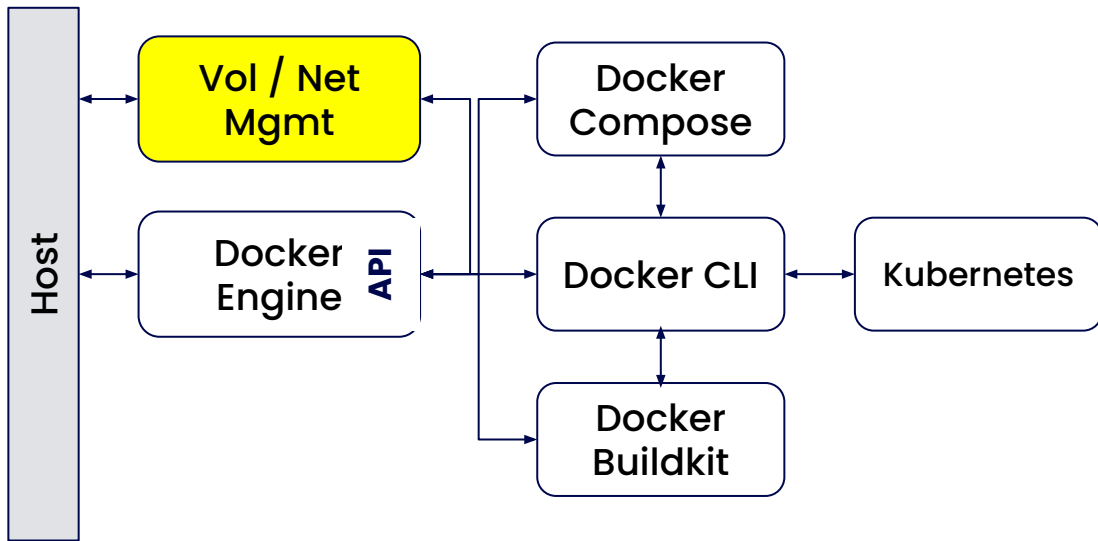
Creates and manages Docker networks and volumes on the host system. Supports different drivers and configurations.

Implemented by the Docker Engine and configured via API or CLI.
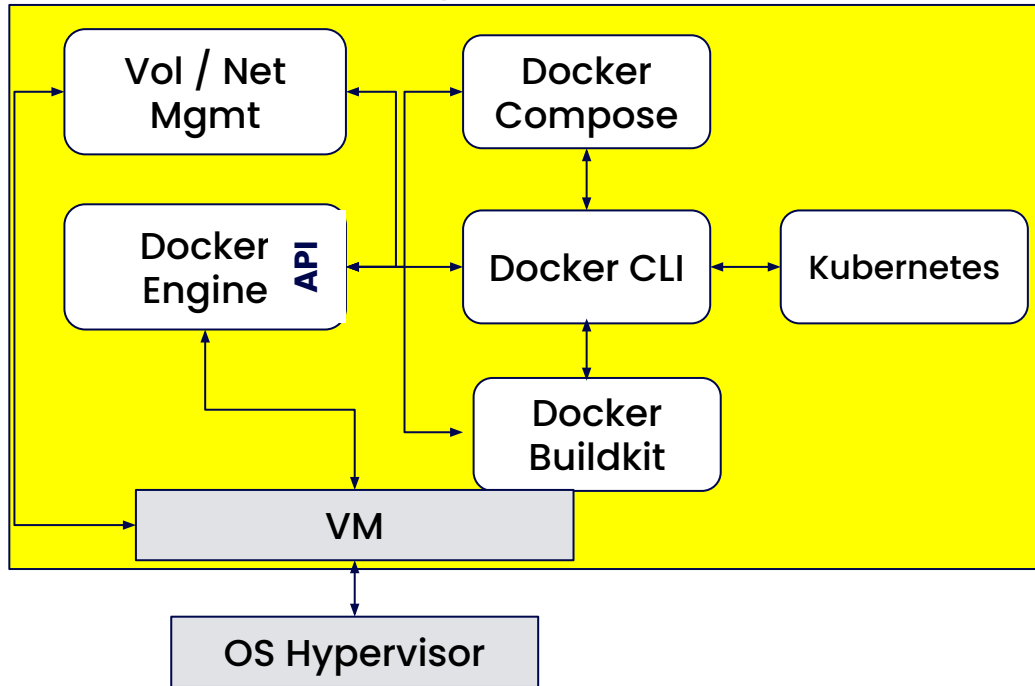
# Docker Desktop Advantage

Docker extends, enhances, and manages the underlying OSS components.

# Docker Component Isolation
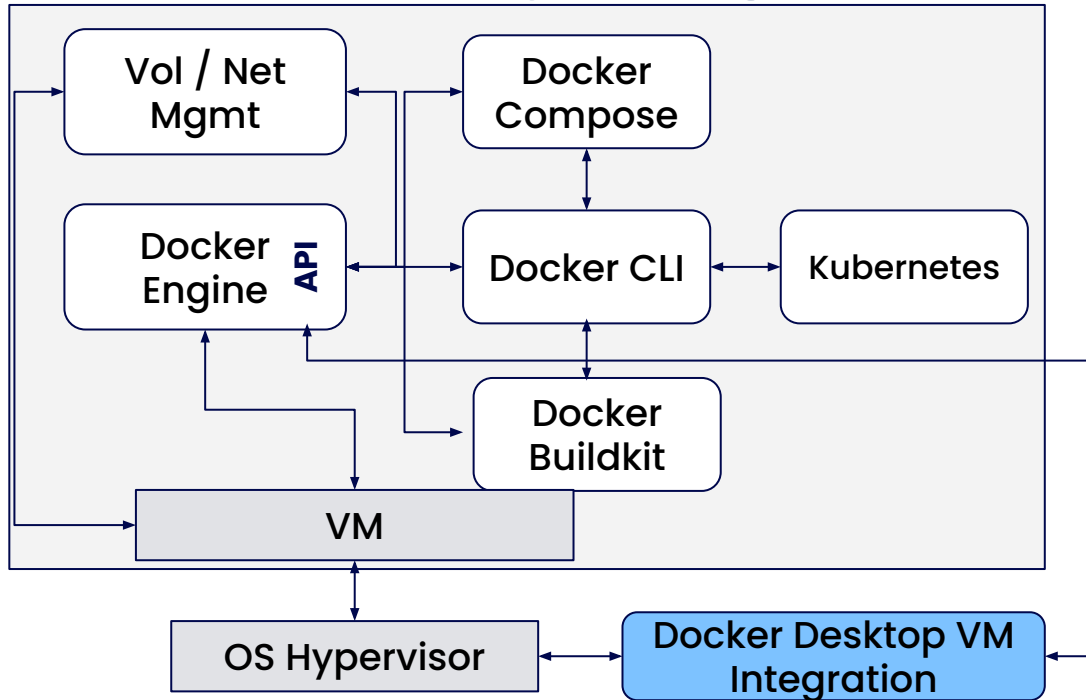
# Docker Component Isolation



Docker Desktop uses a VM on Mac, Windows, and Linux for better management and control of the underlying components and to provide a consistent user experience across different operating systems.

# Docker Desktop Integration
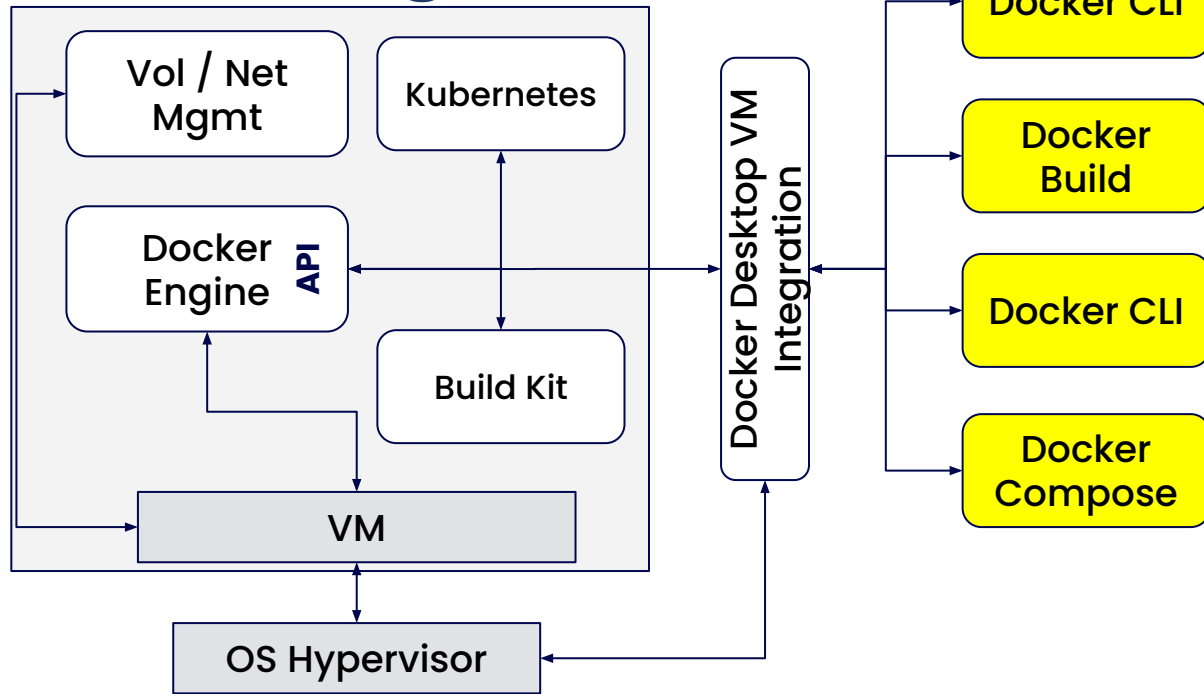
# Docker Desktop Integration



Docker Desktop manages all the communications between Desktop components and the VM based components. This includes mounts, networks, and Kuberentes related items.

# Host Tooling

# Host Tooling



With Docker Desktops's VM/Host integration, commands can be run on the host and communicated to the Docker Engine in the VM. (Note: Commands are still available in the VM as well).

# Docker GUI

# Docker GUI

Vol / Net Mgmt

Kubernetes

Docker Engine **API**

Build Kit

VM

Docker Desktop VM Integration

OS Hypervisor

Docker CLI

Docker Build

Docker CLI

Docker Compose

Docker GUI

With Docker Desktops's VM/Host integration, commands can be run on the host and communicated to the Docker Engine in the VM. (Note: Commands are still available in the VM as well).

# Docker Products

Docker Desktop provides easy access to additional Docker products.

# Docker Build Cloud

# Docker Build Cloud



**Vol / Net Mgmt**

**Kubernetes**

**Docker Engine** — **API**

**Build Kit**

**VM**

**OS Hypervisor**

**Docker Desktop VM Integration**

**Docker CLI**

**Docker Build**

**Docker CLI**

**Docker Compose**

**Docker GUI**

**Build Cloud**

**Docker SaaS**
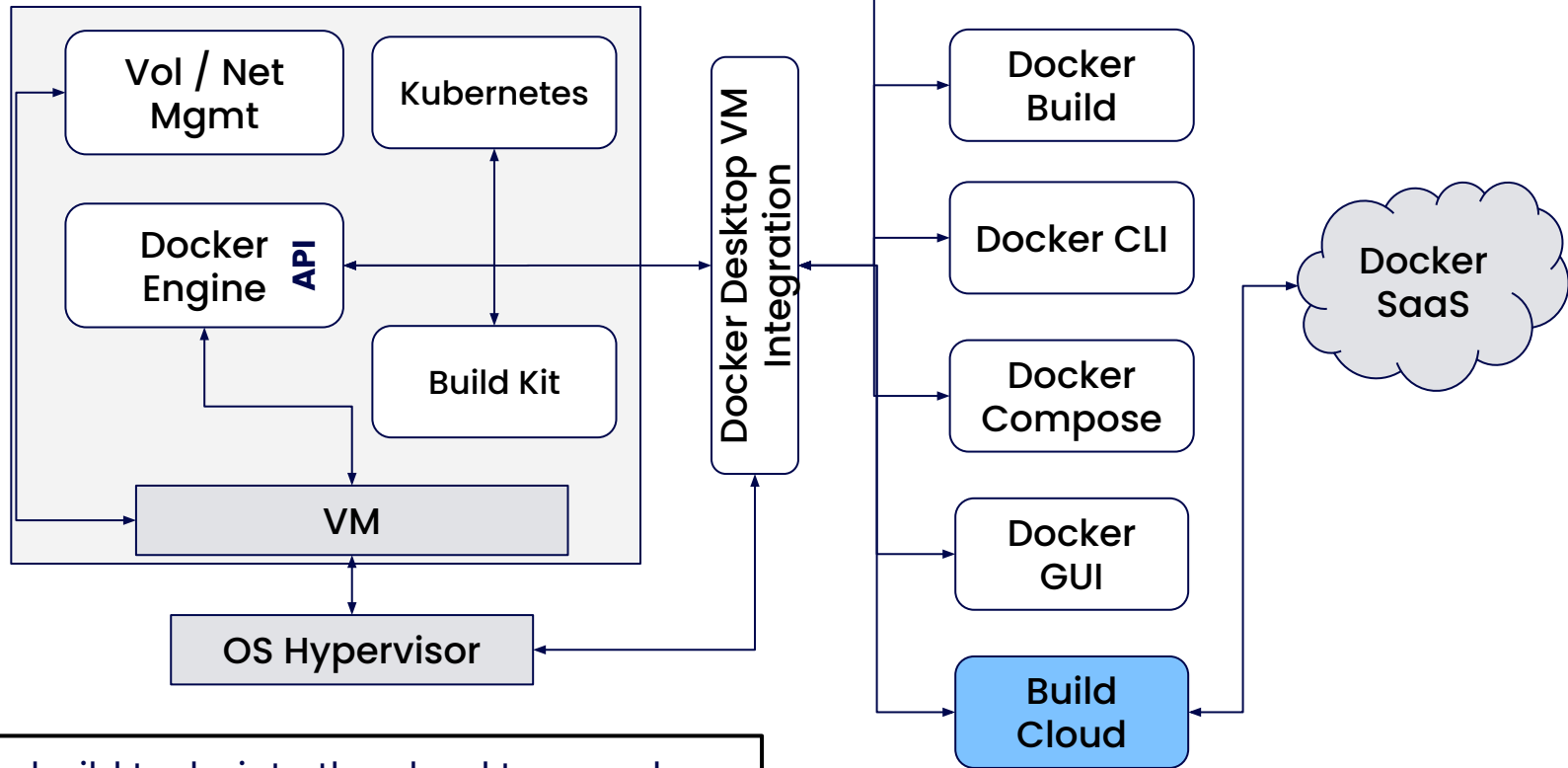
Offloads build tasks into the cloud to speed up builds with dedicated build systems and shared cache.

# Docker Scout

# Docker Scout

```
Docker Scout
  ┌─────────────────────────────────────┐
  │  Vol / Net Mgmt      Kubernetes      │
  │                                      │
  │  Docker Engine  API    Build Kit     │
  │                                      │
  │            VM                        │
  └─────────────────────────────────────┘
              OS Hypervisor
```
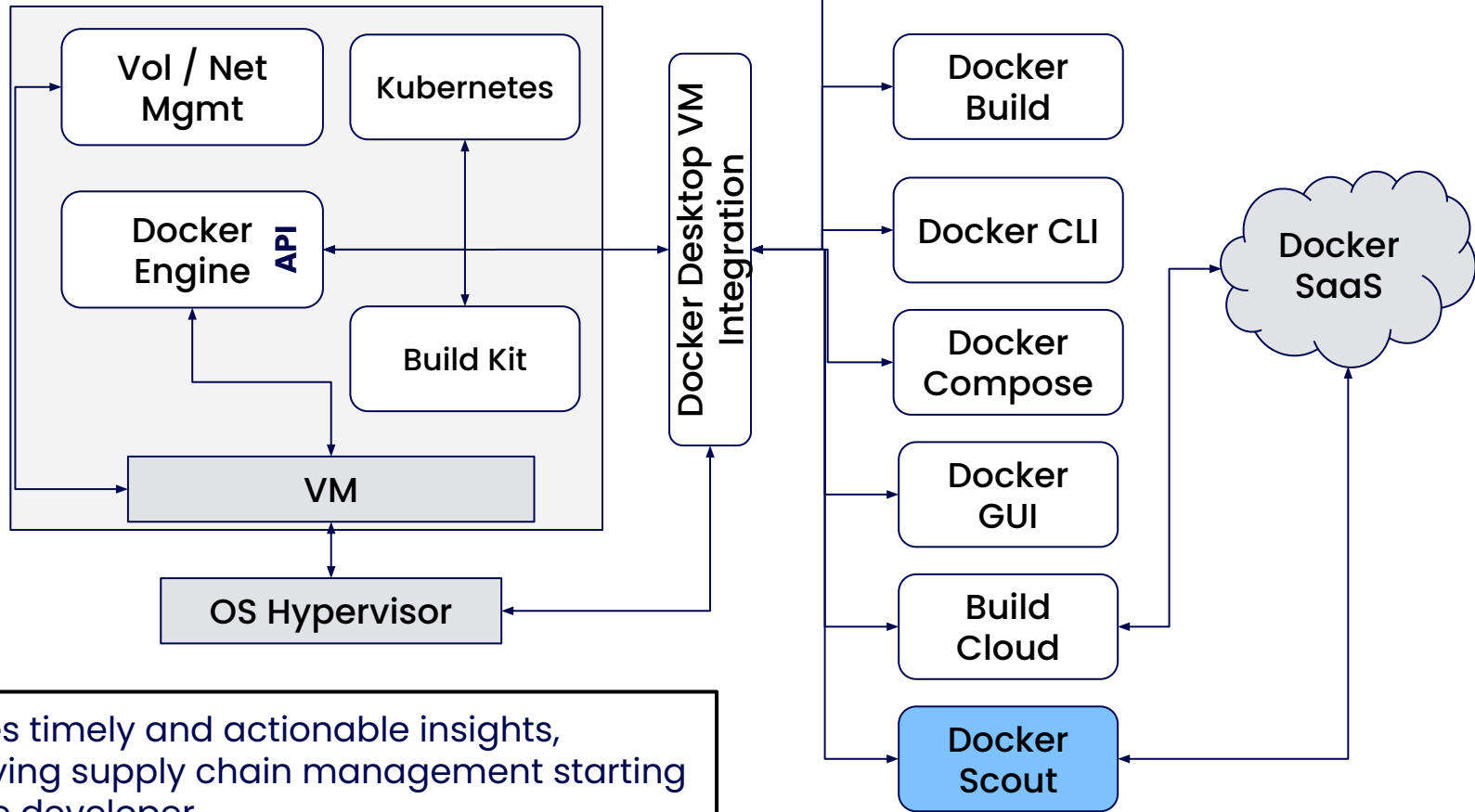
Docker Desktop VM Integration

- Docker CLI
- Docker Build
- Docker CLI
- Docker Compose
- Docker GUI
- Build Cloud
- Docker Scout

Docker SaaS

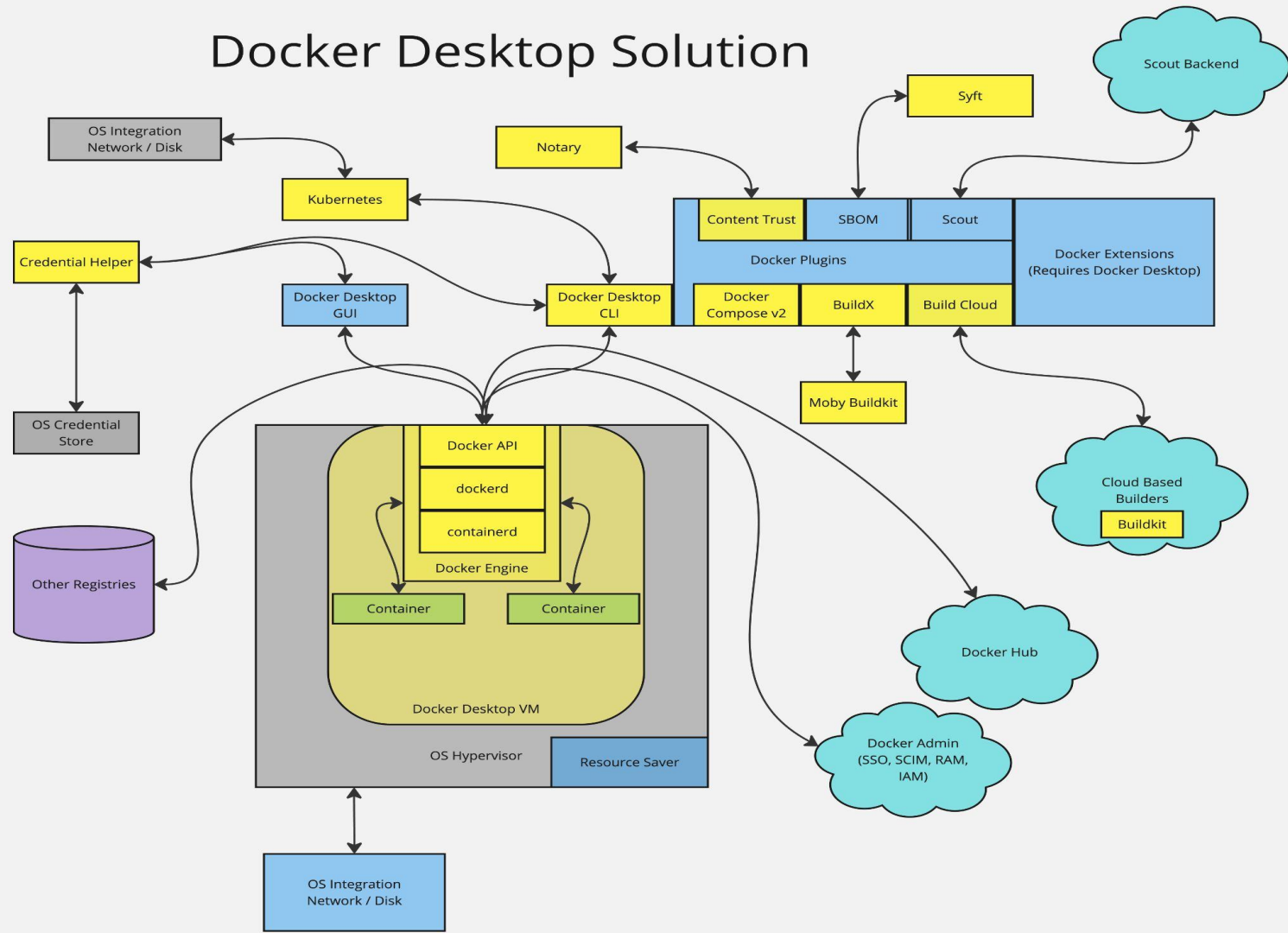Provides timely and actionable insights, simplifying supply chain management starting with the developer.

# The Big Picture

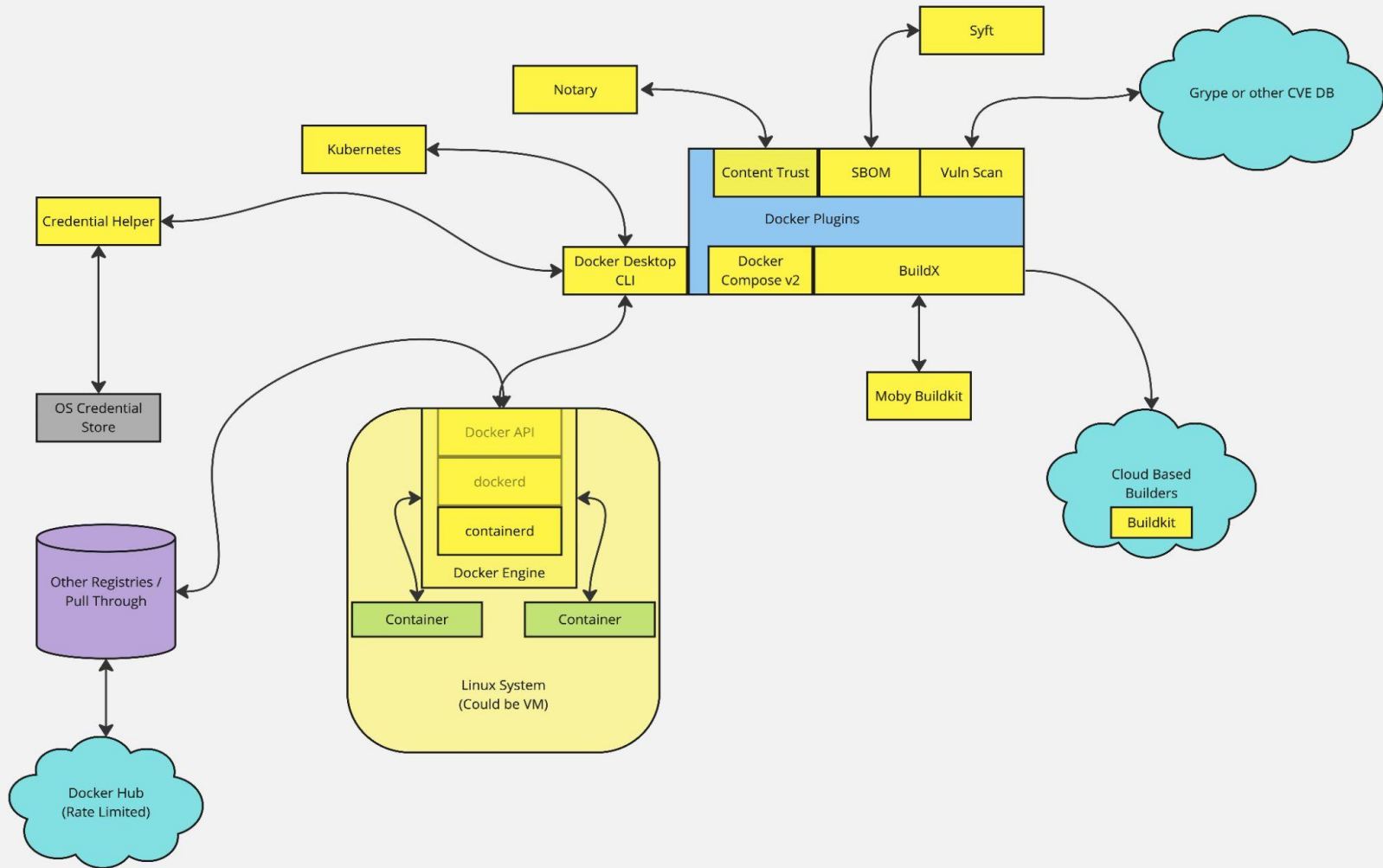# Docker Desktop Solution

# Maybe More Like This...

Can I DIY Docker?

# Can I just DIY my Docker?

- Setup Environment
  - Use Linux or run a Linux VM on Macintosh or Windows platforms
  - Install Docker Community Edition
- Configuration
  - Configure networking and storage devices as needed
  - Configure clients
- Maintenance
  - Monitor and apply upgrades/patches regularly for all components

- Usage
  - Rely solely on the CLI provided by Docker Community Edition or write API calls
- Security and Governance
  - Manually manage security measures
  - Implement governance practices on your own
- Support
  - Handle all support issues internally

# Roll Your Own Docker Solution

# Would your developers rather **manage** a toolchain or **write** code?

# Docker Desktop provides an integrated, supported, and consistent developer experience

# Questions and Answers