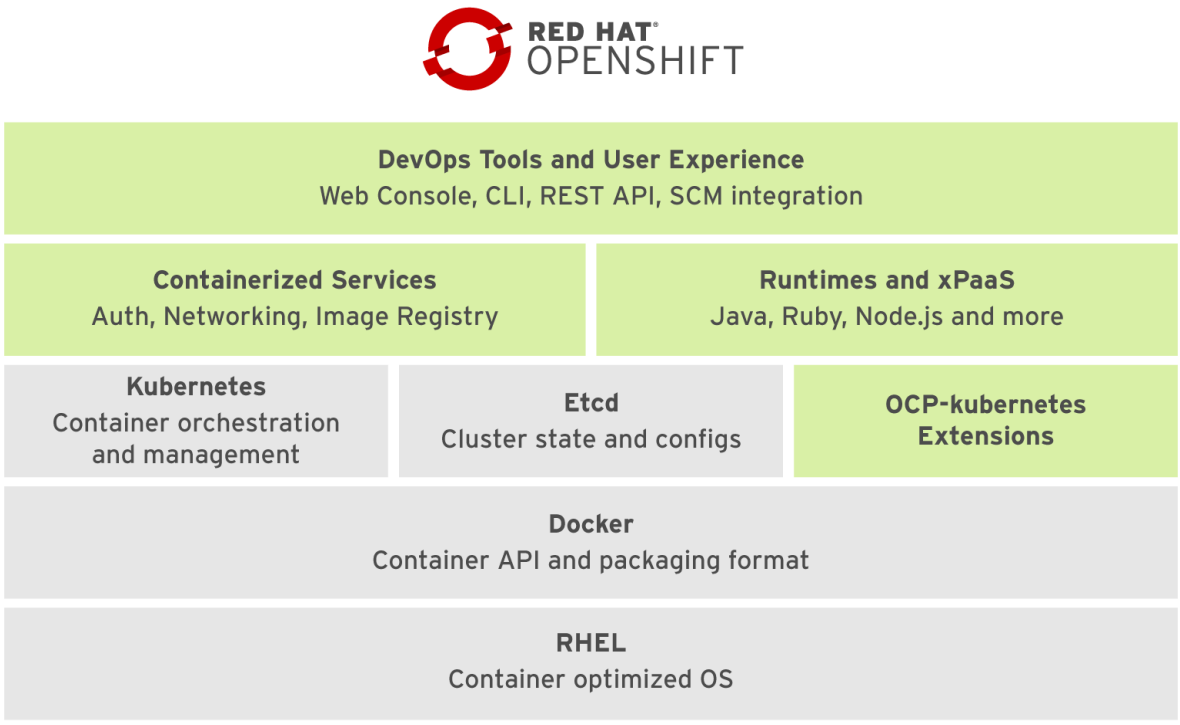
OpenShift Terminology

Red Hat OpenShift Container Platform (OCP) is a set of modular components and services built on top of Red Hat Enterprise Linux and Docker. OCP adds PaaS capabilities such as remote management, multitenancy, increased security, application life-cycle management, and self-service interfaces for developers.

Throughout this course, the terms OCP and OpenShift are used to refer to the Red Hat OpenShift Container Platform. The following figure illustrates the OpenShift software stack.



OpenShift architecture

In the figure, going from bottom to top, and from left to right, the basic container infrastructure is shown, integrated and enhanced by Red Hat:

- The base OS is Red Hat Enterprise Linux (RHEL).
- Docker provides the basic container management API and the container image file format.
- Kubernetes manages a cluster of hosts (physical or virtual) that run containers. It works with *resources* that describe multicontainer applications composed of multiple resources, and how they interconnect. If Docker is the "core" of OCP, Kubernetes is the "heart" that keeps it moving.
- *Etcd* is a distributed key-value store, used by Kubernetes to store configuration and state information about the containers and other resources inside the Kubernetes cluster.

OpenShift adds the capabilities required to provide a production PaaS platform to the Docker + Kubernetes container infrastructure. Continuing from bottom to top and from left to right:

- OCP-Kubernetes extensions are additional resource types stored in Etcd and managed by Kubernetes. These additional resource types form the OCP internal state and configuration.
- Containerized services fulfill many PaaS infrastructure functions, such as networking and authorization. OCP leverages the basic container infrastructure from Docker and Kubernetes for most internal functions. That is, most OCP internal services run as containers orchestrated by Kubernetes.
- Runtimes and xPaaS are base container images ready for use by developers, each preconfigured with a particular runtime language or database. The xPaaS offering is a set of base images for JBoss middleware products such as JBoss EAP and ActiveMQ.

- DevOps tools and user experience: OCP provides Web and CLI management tools for managing user applications and OCP services. The OpenShift Web and CLI tools are built from REST APIs which can be leveraged by external tools such as IDEs and CI platforms.

A Kubernetes cluster is a set of node servers that run containers and are centrally managed by a set of master servers. A server can act as both a server and a node, but those roles are usually segregated for increased stability.