Benefits Of Kubernetes By Anderson Okwechime

Kubernetes has several benefits, below are a list of 5 main benefits of using Kubernetes;

1. Cost efficiency.
2. Scalability of service.
3. Infrastructure Abstraction.
4. Cloud Agnostics.
5. Velocity.
6. **Cost efficiency:** Kubernetes containers allow for much better resource utilization than conventional VMs or Hypervisors do, because containers are light weight and require less CPU and memory resources to run.
7. **Scalability of Service:** Kubernetes optimizes service scalability by allowing decoupled architecture (i.e an architecture in which each component is separated from other components by defined APIs and Load balancers). APIs provide a buffer between running instances of a given service.
8. **Infrastructure Abstraction:** Kubernetes possesses several plugins that can abstract developers from a particular cloud/host infrastructure. It separates developers from strict software security and or governance requirements of the host platform.
9. **Cloud Agnostics:** Kubernetes is cloud agnostic i.e You can move workloads across different cloud service providers without having to redesign your applications or completely rethink your infrastructure.
10. **Velocity:** Kubernetes significantly improves the speed at which software updates are implemented and deployed, eliminating downtime and system unavailability.  
    3 core concepts of Kubernetes which facilitate this optimized velocity are described below;

* **Immutability:** The immutable structure of Kubernetes allows you build a new container image which holds all software updates/requirements and deploy, instead of updating the existing software bundle every time there is an update to be deployed. Should the new build fail, you can easily rollback to the previous image.
* **Declarative Configuration:** The configuration type of Kubernetes is entirely declarative i.e you get to declare the desired state of the system. This configuration type allows for easy rollbacks in Kubernetes system because you can include reverse instructions in declarative configurations.
* **Self-Healing system:** Kubernetes has a Liveness & Readiness probe feature which it uses to check the health of a container. So if a container is detected unhealthy with the aid of Liveness & Readiness probes, Kubernetes can kill/restart that container.