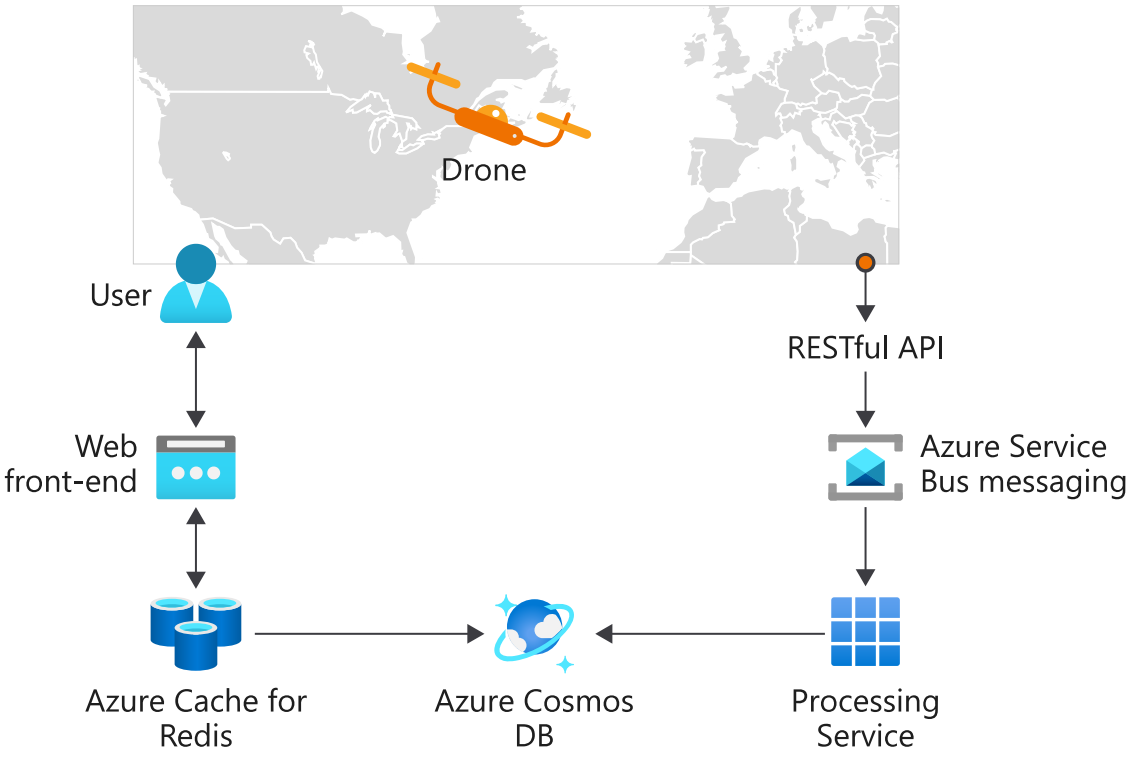
100 XP

When to use Kubernetes

4 minutes

The decision to use a container orchestration platform like Kubernetes depends on business and development requirements. Let's review the high-level architecture of your drone tracking solution.

The solution is built as microservices that are designed as loosely coupled, collaborative services. You're deploying these services separately from each other to simplify the solution's design and maintenance. Here is the current configuration of your solution.



- A drone tracking website that includes maps and information about tracked assets
- A cache service that stores frequently requested information displayed on the website
- A RESTful API where tracked drones send data about their status, such as GPS location and battery charge levels
- A queue that holds unprocessed data collected by the RESTful API
- A data processing service that fetches and processes data from the queue

- A NoSQL database that stores processed tracking data and user information captured from the website and the data processing service

Separate teams in your company develop and own these services. Each team uses containers to build and deploy its service. This new strategy allows the development teams to keep up with the requirements of modern software development for automation, testing, and overall stability and quality.

The change in developer thinking has resulted in several process and business benefits for the company. Examples include better use of hosted compute resources, new features that have improved time to market, and improved customer reach.

However, several challenges with container management led your company to investigate container orchestration solutions. Your teams found that scaling the tracking application to a handful of deployments was relatively easy, but scaling and managing many instances was hard.

There are several other aspects to consider. Examples include dealing with failed containers, storage allocation, network configuration, and management of application secrets.

As you've seen earlier, Kubernetes provides support for all of these challenges as an orchestration platform.

You want to use Kubernetes when your company:

- Develops applications as microservices.
- Develops applications as cloud-native applications.
- Deploys microservices by using containers.
- Updates containers at scale.
- Requires centralized container networking and storage management.

When not to use Kubernetes

Not all applications need to run in Kubernetes. As a result, Kubernetes might not be a good fit for your company.

For example, the effort in containerization and deployment of a monolithic application might be more than the benefits of running the application in Kubernetes. A monolithic architecture can't easily use features such as individual component scaling or updates.

Kubernetes can introduce many business benefits for software development, deployment, management, and streamlining of processes. However, Kubernetes has a steep learning curve. The modular design of Kubernetes introduces potentially new concepts that will affect teams across your company.

Your development teams will have to embrace modern design concepts when developing and designing applications. These concepts include the use of microservices and the containerization of these services. Teams also have to experiment with container and orchestration environments to make the best use of all the available options.

If your company isn't ready to adopt this change, then Kubernetes might not be a good fit for your company.

Next unit: Summary

Continue >