

PodSpec File

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PodSpec is a configuration file that describes a pod.

Notice kind is **pod**.

```
apiVersion: v1
kind: Pod
metadata:
  name: nginx
spec:
  containers:
  - name: nginx
    image: nginx:1.14.2
    ports:
    - containerPort: 80
```

The **spec** section will define

- multiple containers
 - The name of the container
 - The image
 - The command to run on startup
 - The port the container will operate on
 - The restart policy
 - ...

You can directly deploy a pod with the **kubectl apply** command

```
kubectl apply -f nginx.yaml
```



In practice you won't directly deploy pods, instead you'd use Deployment or Job as the **kind**

gRPC

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What is Remote Procedure Call (RPC)?

RPC is a framework of communication in distributed systems. It allows one program on machine to communication with another program on remote machine without knowing its remote. The concept of RPC has been around since 1970s.



gRPC is a modern open source high performance Remote Procedure Call (RPC) framework that can run in any environment. gRPC was initially created by Google.



You can think of gRPC as an **alternate method of communication** instead of REST or GraphQL

gRPC can connect services in and across data centers with pluggable support for:

- load balancing
- tracing
- health checking
- authentication

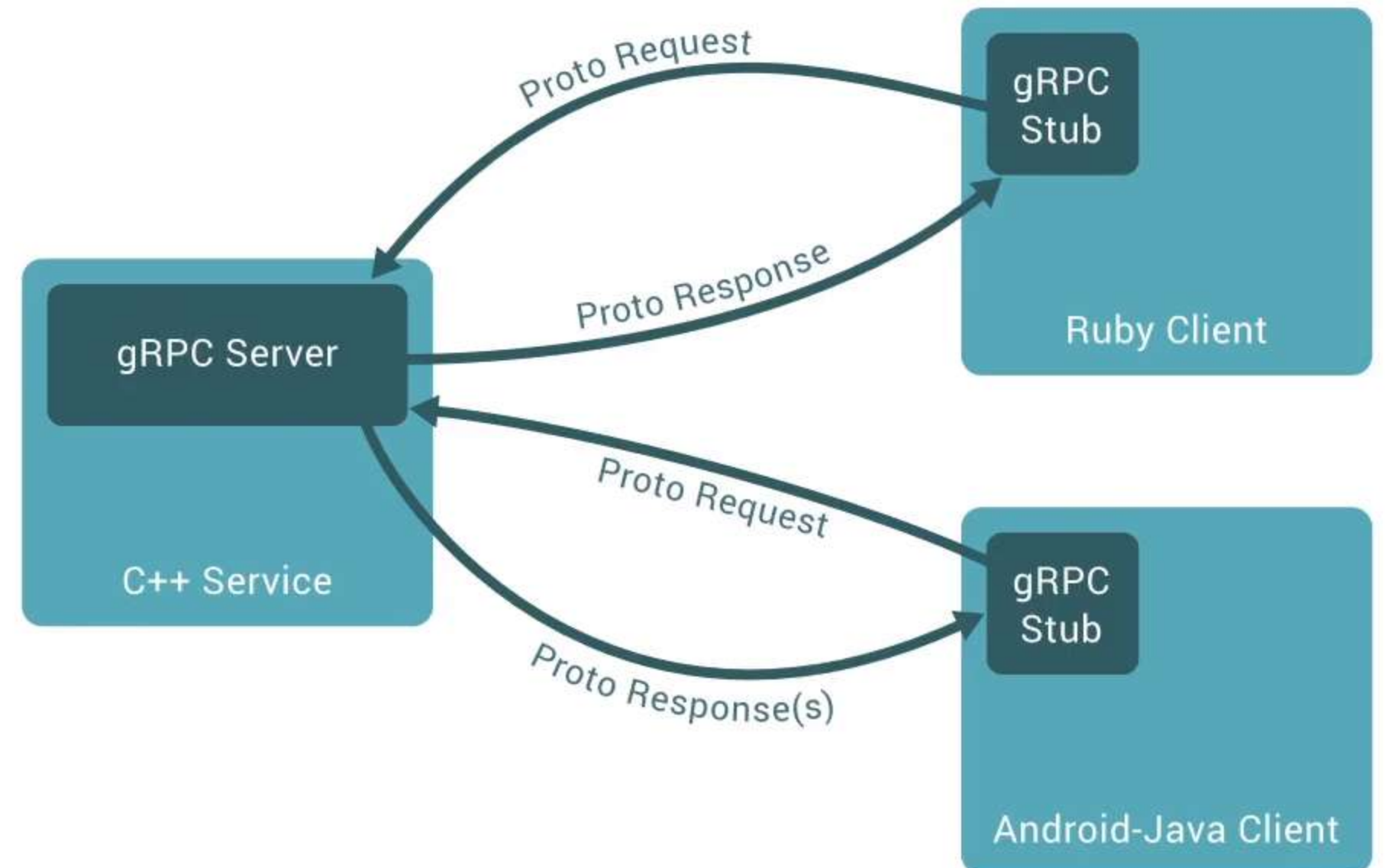
gRPC

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gRPC works by:

- Installing a gRPC library for your program.
- Defining a Protobuf file that describe the data structure.
 - Protobuf files have **.proto** extension
- Writing code that works with gRPC

Distributed systems like Kubernetes uses gRPC for pod communication.



Kubelet

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Kubelet is responsible for pod internal API communication via the API Server.

Kubelet is a **node agent** that runs on every single node (control plane and workers).



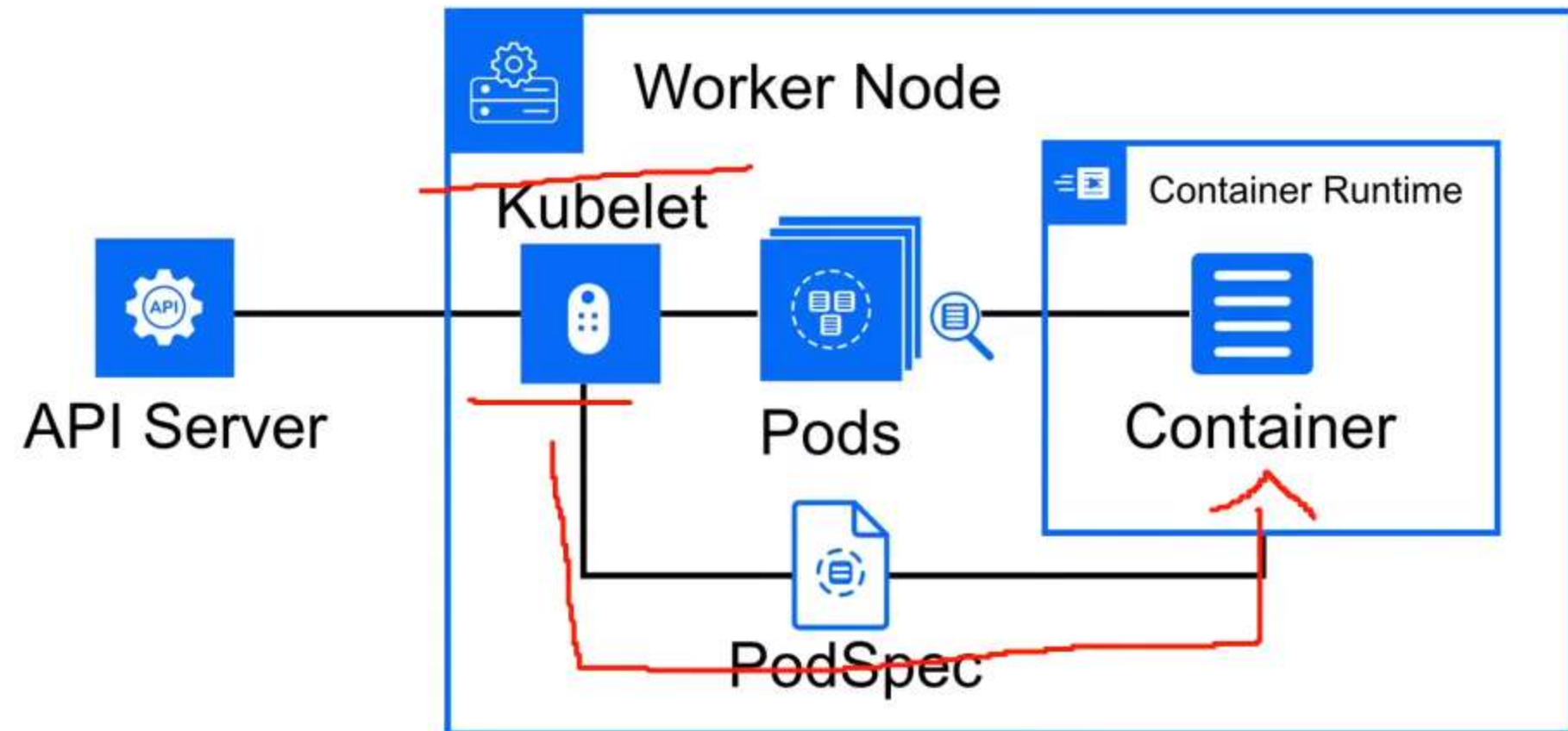
What is an agent?

An agent is a program installed on a server to observe what occurs for specific programs, and to communicate information externally or trigger actions to be performed.

The Kubelet perform the following tasks:

- watches for pod changes
- Configures the Container Runtime to
 - Pull images
 - Create namespaces
 - Run containers

Kubelet uses **PodSpec files** to determine what images to pull and containers to run.



Kubelet

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