KCD
GROWING CLOUD NATIVE TOGETHER
El Salvador
SAN SALVADOR 2025

Kubernetes al límite: ¿cómo request & limits pueden proteger o degradar tu aplicación?

Apoyado Por

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BYTE

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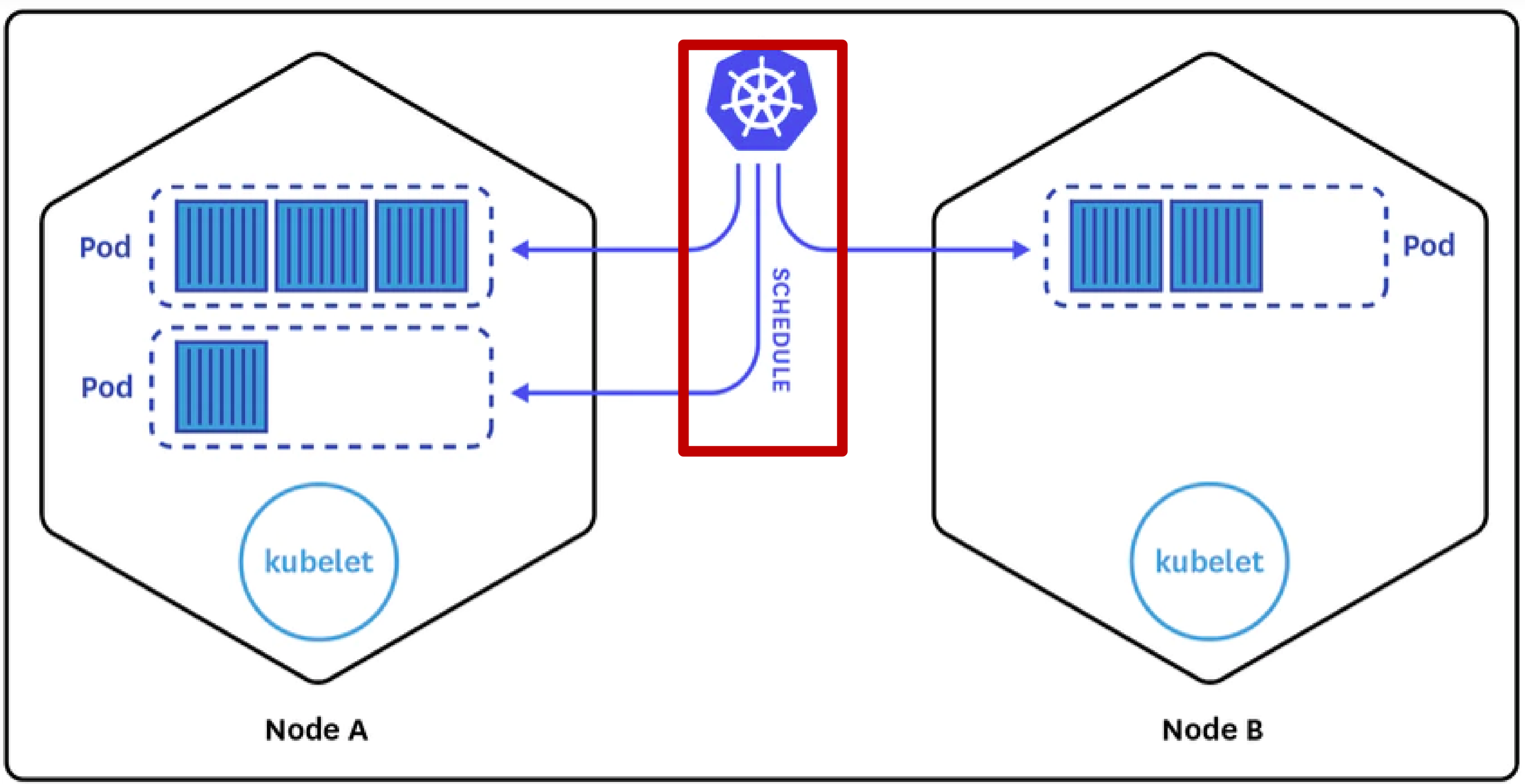
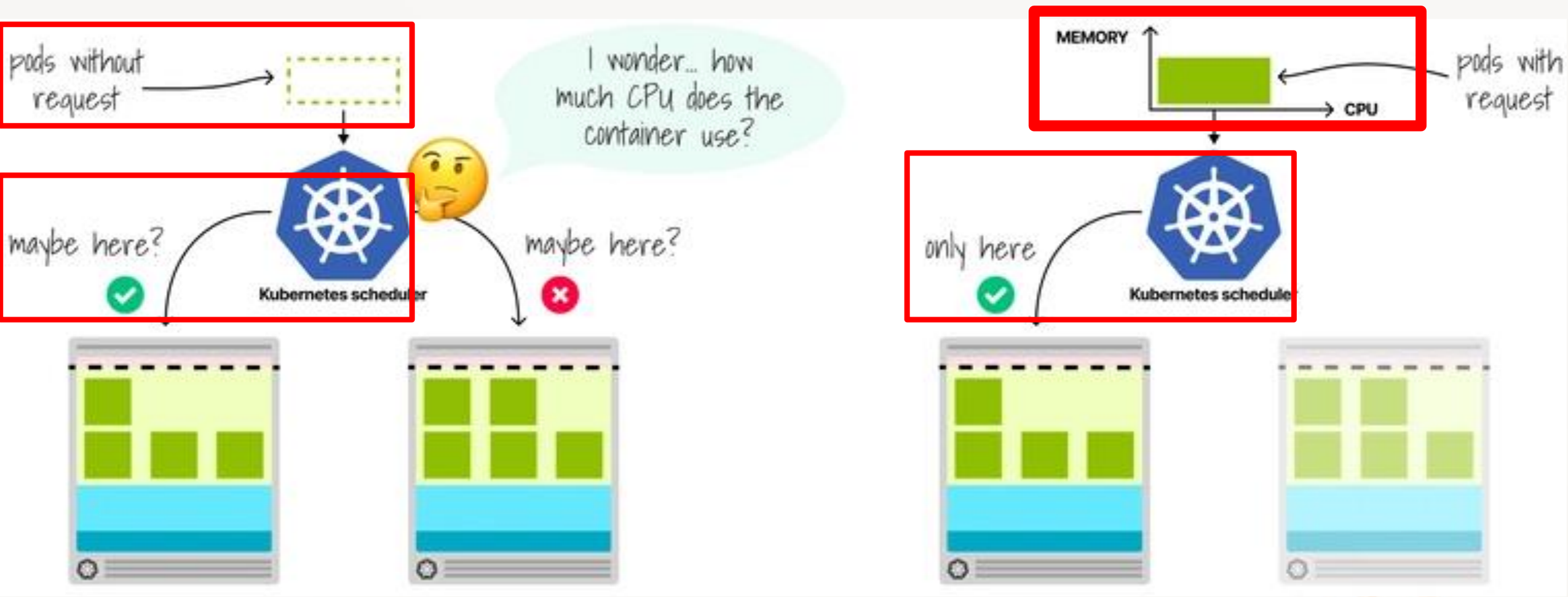


Fuente: https://blog.nashtechglobal.com/schedule-pod-over-nodes/



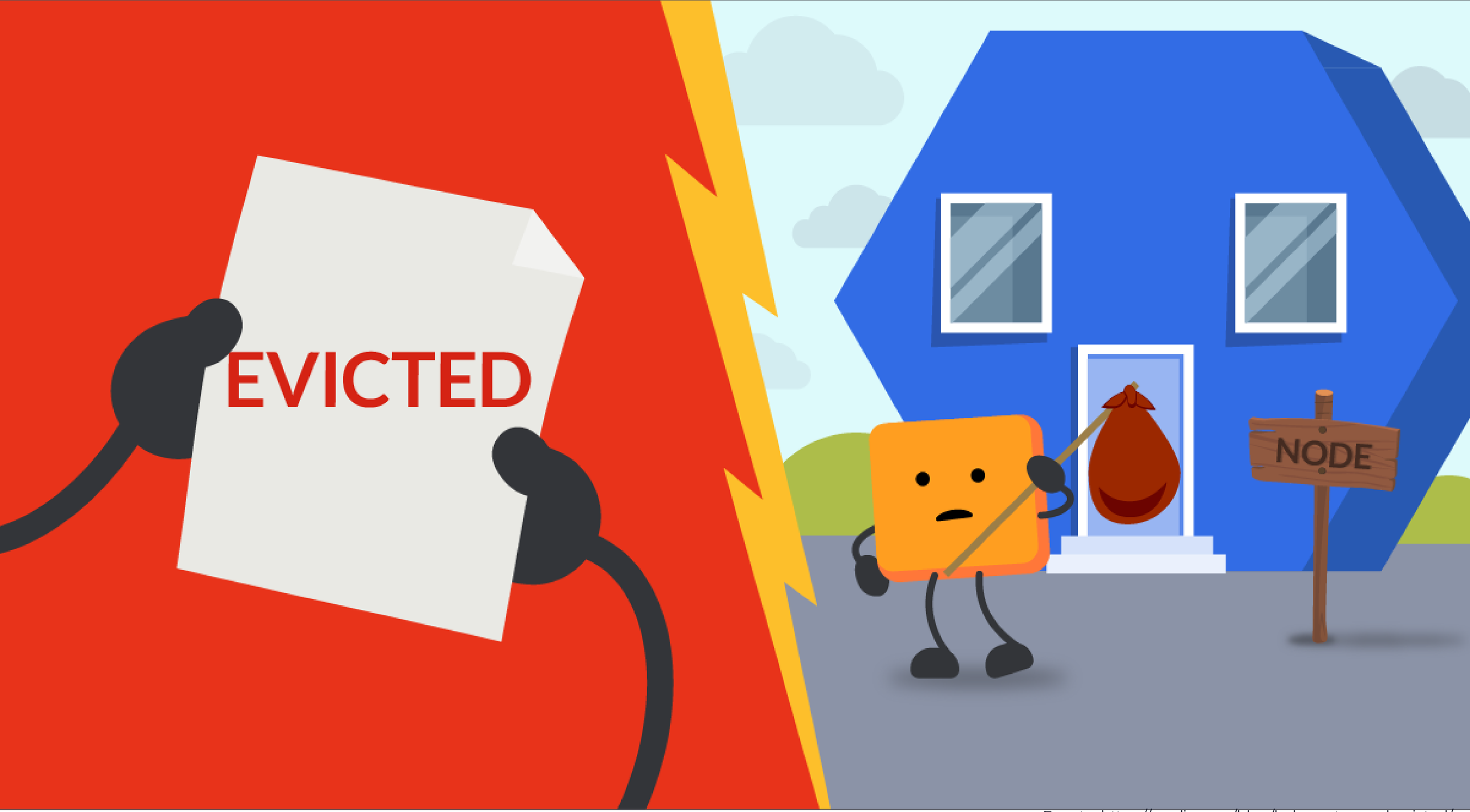
Fuente: https://dev.to/danielepolencic/cpu-requests-and-limits-in-kubernetes-10mh

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: app1-nginx-deployment
  labels:
    app: app1-nginx
spec:
  replicas: 1
  selector:
    matchLabels:
      app: app1-nginx
  template:
    metadata:
      labels:
        app: app1-nginx
    spec:
      containers:
        - name: app1-nginx
          image: stacksimplify/kube-nginxapp1:1.0.0
          imagePullPolicy: Always
          ports:
            - containerPort: 80
          # Requests & Limits for usermgmt-webapp Container
          resources:
            requests:
              cpu: "100m"
              memory: "128Mi"
            limits:
              cpu: "200m"
              memory: "256Mi"
```

Fuente: https://stacksimplify.com/course-images/azure-kubernetes-service-resources-requests-limits-2.png

request & limits

¿ porqué algo tan importante es opcional y no obliga a definirlo de manera mandatoria?



Fuente: https://sysdig.com/blog/kubernetes-pod-evicted/

Pod Priority

Quality of Service Classes (QoS)

Limits:
cpu: 1
memory: 500Mi
Requests:
cpu: 1
memory: 500Mi

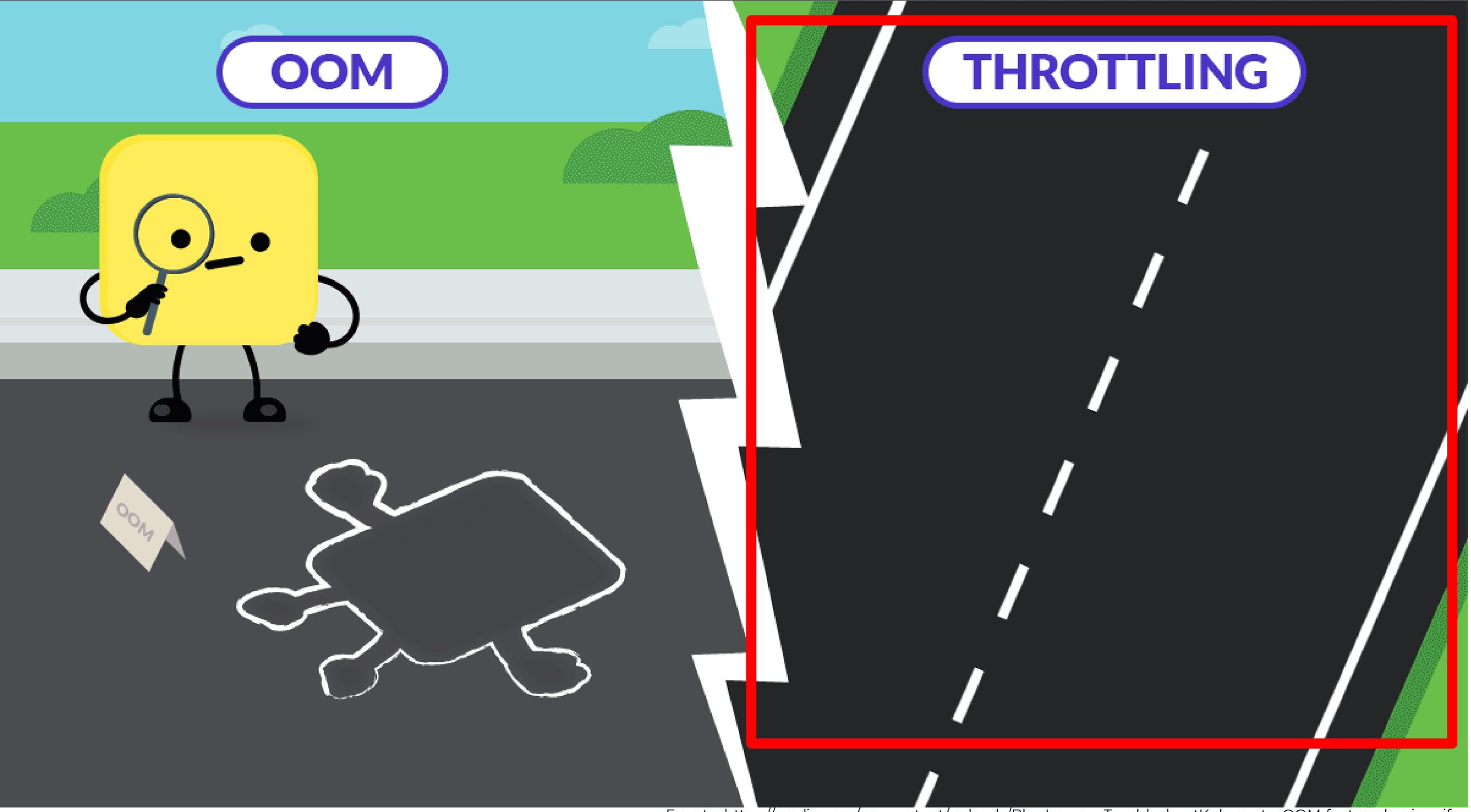
Guaranteed

Limits:
cpu: 500m
memory: 500Mi
Requests:
cpu: 300m
memory: 400Mi

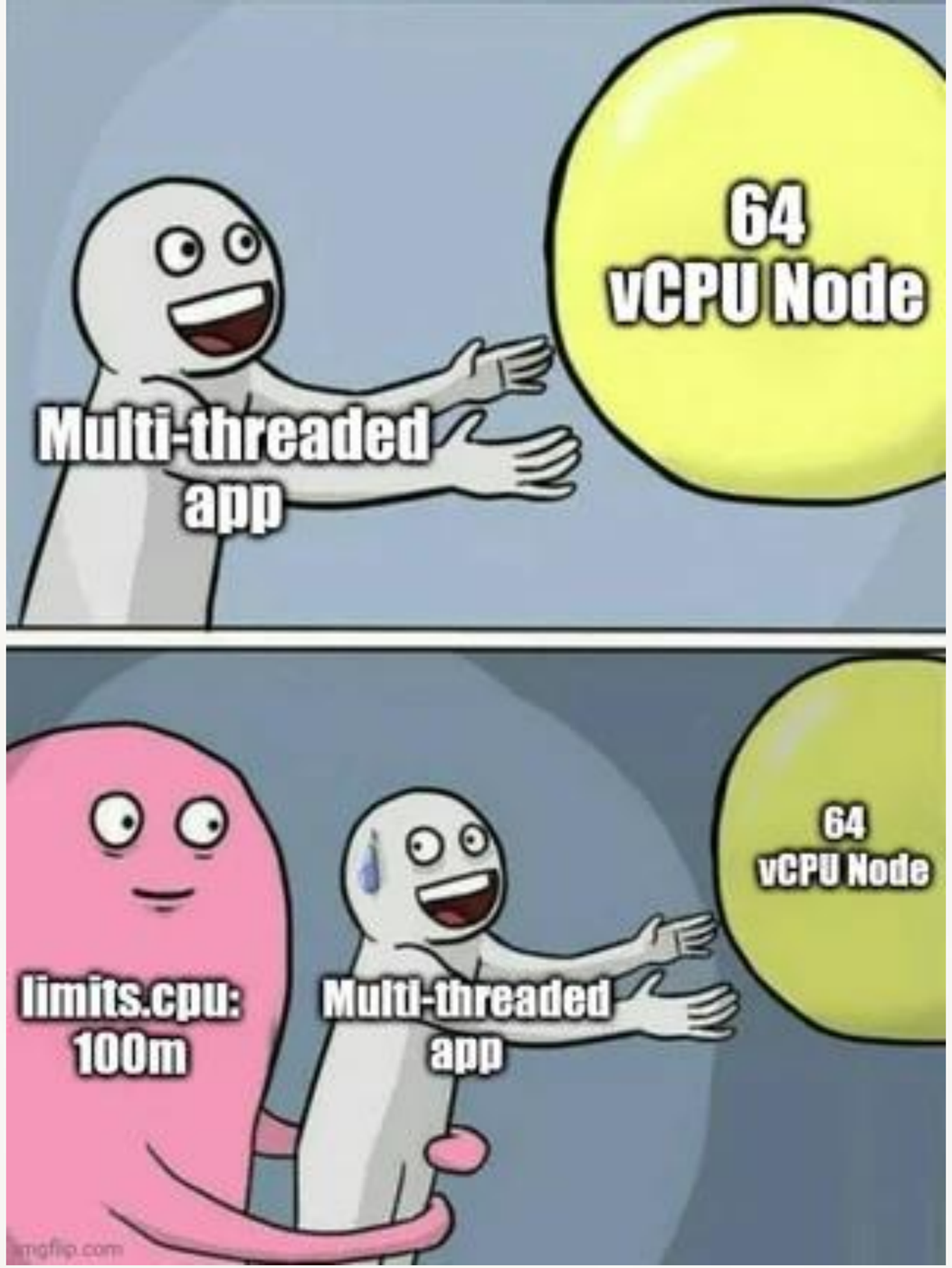
Burstable

<No Limits or Requests>

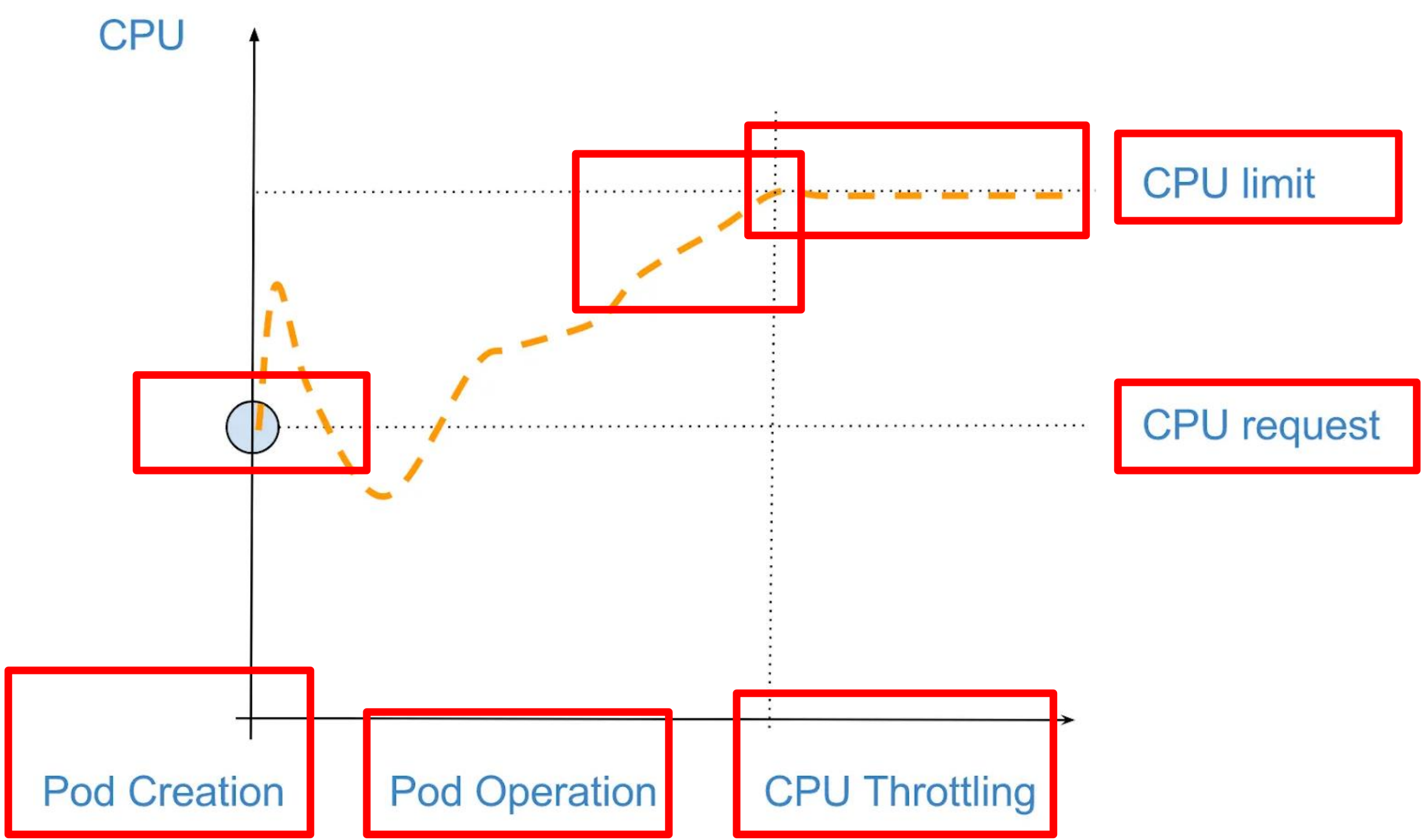
BestEffort



Fuente: https://sysdig.com/wp-content/uploads/BlogImages-TroubleshootKubernetesOOM-featured-anim.gif



Fuente: https://www.reddit.com/r/kubernetes/comments/qdcex8/humor_cpu_shares/



Fuente: https://faun.pub/how-to-use-priorities-in-kubernetes-e1bb1b722b6a

DEBATE

¿Deberíamos establecer límites de CPU o dejar que los contenedores tomen lo que necesiten?

Request & Limits

10 consejos prácticos para no sufrir con tus aplicaciones...

1

Siempre define CPU request: garantiza planificación adecuada

2

Usa Pod Priority: protege tus cargas críticas..

3

Evita CPU limit salvo que tengas razones técnicas claras para usarlos.

4

```
kind: LimitRange
```

```
limits:
  cpu:
  "500m"
  memory:
  "1Gi"
```

Fuente: generado con chatgtp..com

5

```
kind: ResourceQuota
```

```
hard:
  cpu: "4"
  memory: "8Gi"
```

Fuente: generado con chatgtp..com

6

No es solo monitorear: entiende el impacto del throttling en tu aplicación (Grafana / Prometheus)

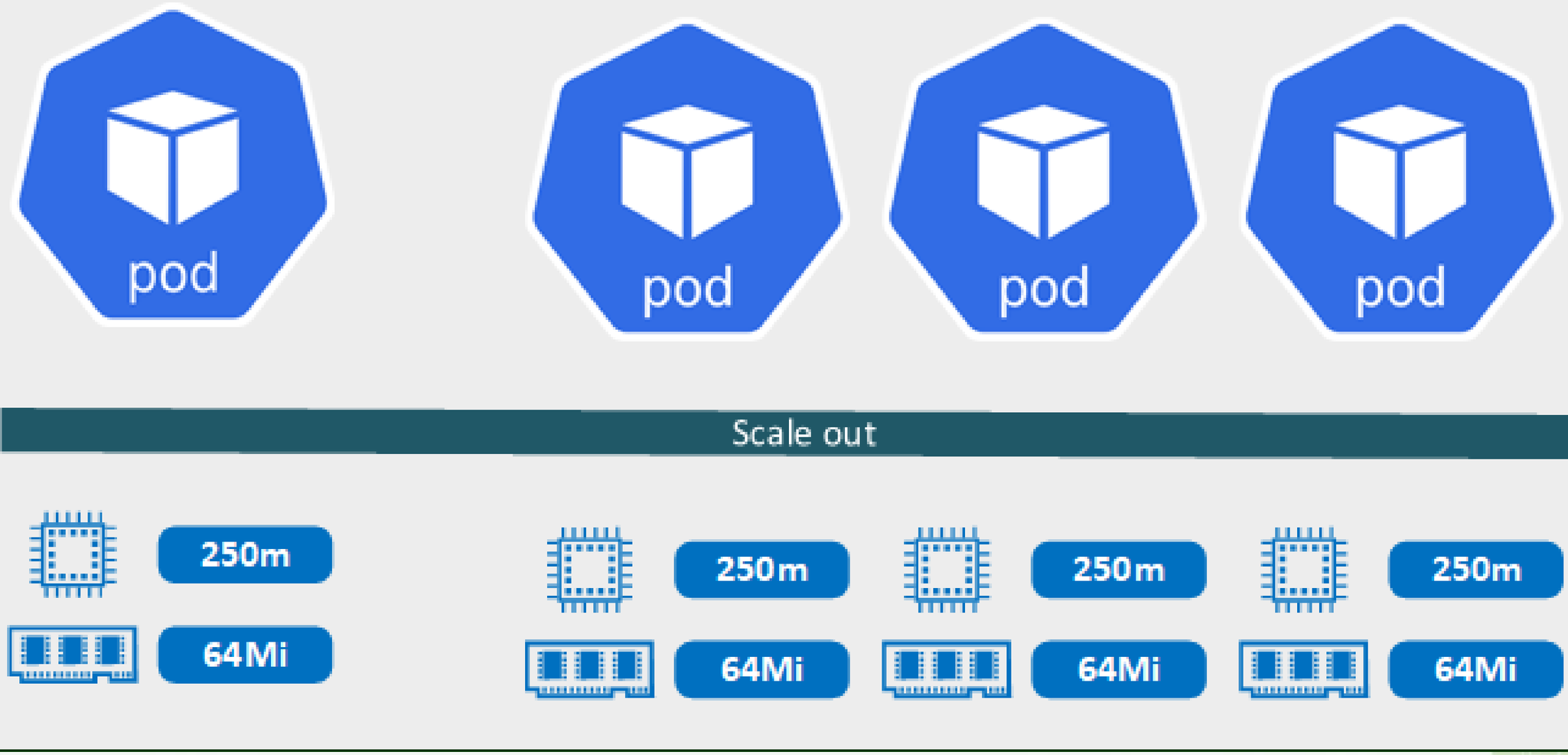
7

Usa limits (al inicio)...

Hasta que sepas cuándo no usarlos (Del límite fijo al escalado inteligente).

8

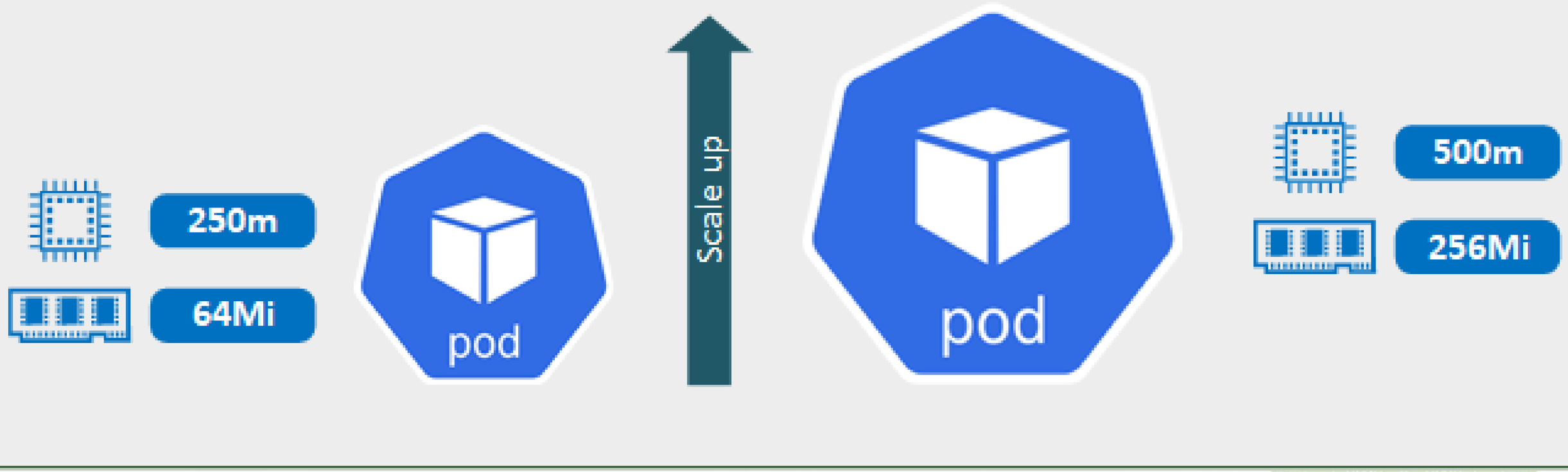
Horizontal Pod Autoscaler (HPA)



Fuente: https://www.kreyman.de/index.php/others/linux-kubernetes/249-was-ist-kubernetes-autoscaling

9

Vertical Pod Autoscaler (VPA)



Fuente: https://www.kreyman.de/index.php/others/linux-kubernetes/249-was-ist-kubernetes-autoscaling

10 Kubernetes Resource Recommender - krr

Scan result (99.96 points)

Number	Cluster	Namespace	Name	Pods	Type	Container	CPU Requests	CPU Limits	Memory Requests	Memory Limits
1.	gke_robusta-development_us-east5-a_arik…	default	crashpod	3	Deployment	crashpod	none -> ?	none -> none	none -> 10M	none -> 10M
2.	gke_robusta-development_us-east5-a_arik…	default	hamster	1	Deployment	hamster	100m -> 171m	300m -> none	50Mi -> 10M	none -> 10M
3.	gke_robusta-development_us-east5-a_arik…	default	ng.inx-deployment	3	Deployment	nginx	none -> 5m	none -> none	none -> 10M	none -> 10M
4.	gke_robusta-development_us-east5-a_arik…	default	nginx-deployment	3	Deployment	nginx	none -> 5m	none -> none	none -> 10M	none -> 10M
5.	gke_robusta-development_us-east5-a_arik…	kubewatch	ng.inx-deployment	1	Deployment	nginx	none -> 5m	none -> none	none -> 10M	none -> 10M
6.	gke_robusta-development_us-east5-a_arik…	robusta	inline-crashpod	1	Deployment	crashpod	none -> ?	none -> none	none -> 10M	none -> 10M
7.	gke_robusta-development_us-east5-a_arik…	robusta	robusta-forwarder	1	Deployment	kubewatch	10m -> 8m	none -> none	512Mi -> 37M	512Mi -> 37M
8. 9. 10.	gke_robusta-development_us-east5-a_arik…	robusta	robusta-grafana	1	Deployment	grafana-sc-dashboard grafana-sc-datasources grafana	none -> 9m none -> 5m none -> 5m	none -> none none -> none none -> none	none -> 97M none -> 93M none -> 79M	none -> 97M none -> 93M none -> 79M
11.	gke_robusta-development_us-east5-a_arik…	robusta	robusta-kube-prometheus-st-operator	1	Deployment	kube-prometheus-stack	100m -> 5m	none -> none	none -> 30M	none -> 30M
12.	gke_robusta-development_us-east5-a_arik…	robusta	robusta-kube-state-metrics	1	Deployment	kube-state-metrics	10m -> 5m	none -> none	none -> 19M	none -> 19M
13.	gke_robusta-development_us-east5-a_arik…	robusta	robusta-runner	1	Deployment	runner	250m -> 105m	none -> none	1Gi -> 918M	1Gi -> 918M
14. 15.	gke_robusta-development_us-east5-a_arik…	robusta	alertmanager-robusta-kube-prometheus-st-…	1	StatefulSet	alertmanager config-reloader	50m -> 5m 200m -> 5m	none -> none none -> none	200Mi -> 36M 50Mi -> 10M	none -> 36M 50Mi -> 10M
16. 17.	gke_robusta-development_us-east5-a_arik…	robusta	prometheus-robusta-kube-prometheus-st-pr…	1	StatefulSet	prometheus config-reloader	50m -> 201m 200m -> 5m	none -> none none -> none	none -> 1060M 50Mi -> 14M	none -> 1060M 50Mi -> 14M
18.	gke_robusta-development_us-east5-a_arik…	robusta	robusta-prometheus-node-exporter	3	DaemonSet	node-exporter	50m -> 5m	none -> none	none -> 16M	none -> 16M

https://github.com/robusta-dev/krr

One more thing {steve jobs}

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Kubernetes v1.33: In-Place Pod Resize Graduated to Beta

Fuentes: https://kubernetes.io/blog/2025/05/16/kubernetes-v1-33-in-place-pod-resize-beta/
https://www.linkedin.com/feed/update/urn:li:activity:7335198614337576960/

Ten Presente

Estabilidad sin rendimiento es ineficaz.

Rendimiento sin estabilidad es insostenible.

Ten Presente

Kubernetes nos da el equilibrio!

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/adalj8d/kubernetes-resources-demo/

09/oct/25