

Kubernetes Releases

```
kubectl get nodes
```

NAME	STATUS	ROLES	AGE	VERSION
master	Ready	master	1d	v1.11.3
node-1	Ready	<none>	1d	v1.11.3
node-2	Ready	<none>	1d	v1.11.3

v1.11.3



- Features
- Bug Fixes
- Functionalities



v1.13.4

kube-apiserver

v1.13.4

Controller-manager

v1.13.4

kube-scheduler

v1.13.4

kubelet

v1.13.4

kube-proxy

v1.13.4

kubectl

v1.13.4

ETCD CLUSTER

v3.2.18

CoreDNS

v1.1.3

References

<https://kubernetes.io/docs/concepts/overview/kubernetes-api/>

Here is a link to kubernetes documentation if you want to learn more about this topic (You don't need it for the exam though):

<https://github.com/kubernetes/community/blob/master/contributors/devel/sig-architecture/api-conventions.md>

https://github.com/kubernetes/community/blob/master/contributors/devel/sig-architecture/api_changes.md

Cluster Upgrade Process

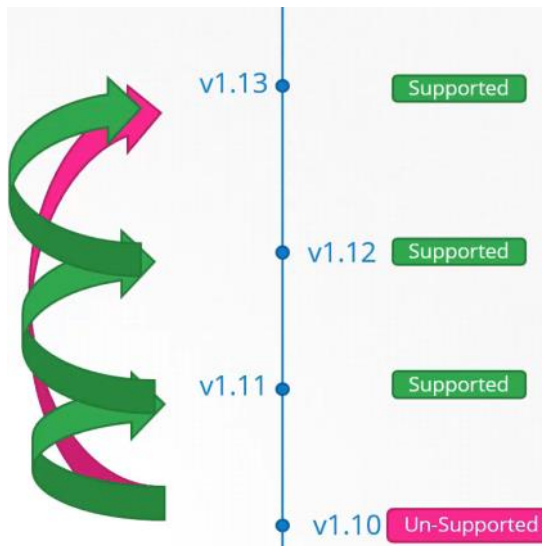



At any time, Kubernetes supports only up to the recent three minor versions.



the recommended approach is to upgrade one minor version

at a time, version 1.10 to 1.11, then 1.11 to 1.12,





standard-cluster-1

Details Storage Nodes

Cluster


Master version	1.10.12-gke.7	Upgrade available
Endpoint	35.238.15.143	Show credentials
Client certificate	Enabled	
Binary authorisation	Disabled	
Kubernetes alpha features	Disabled	
Total size	3	
Master zone	us-central1-a	
Node zones	us-central1-a	
Network	default	

kubeadm

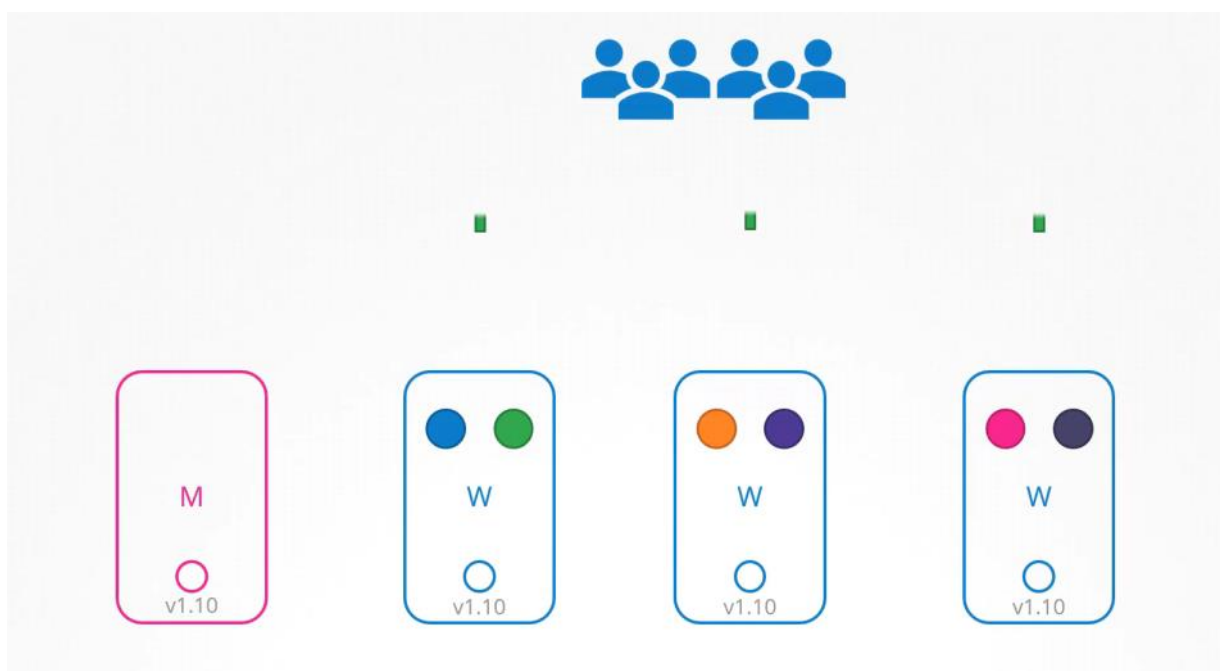
```
kubeadm upgrade plan
```

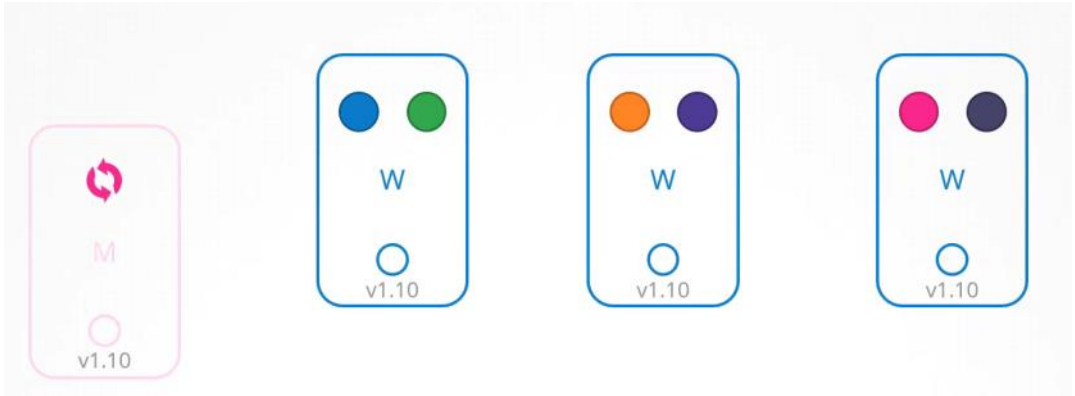
```
kubeadm upgrade apply
```

"The hard way"



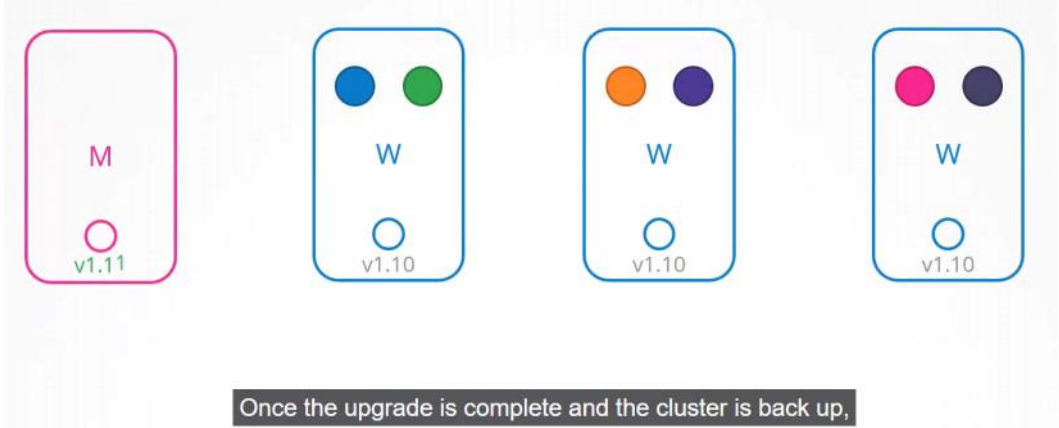
In this lecture, we will look at the options by kubeadm.





All workloads hosted on the worker nodes continue to serve users as normal, since the master is down, all managements functions are down. You can not access the cluster using kube control or other Kubernetes API.

The controller managers don't function either. If a pod was to fail, a new pod won't be automatically created.



Users are no longer able to access the applications.

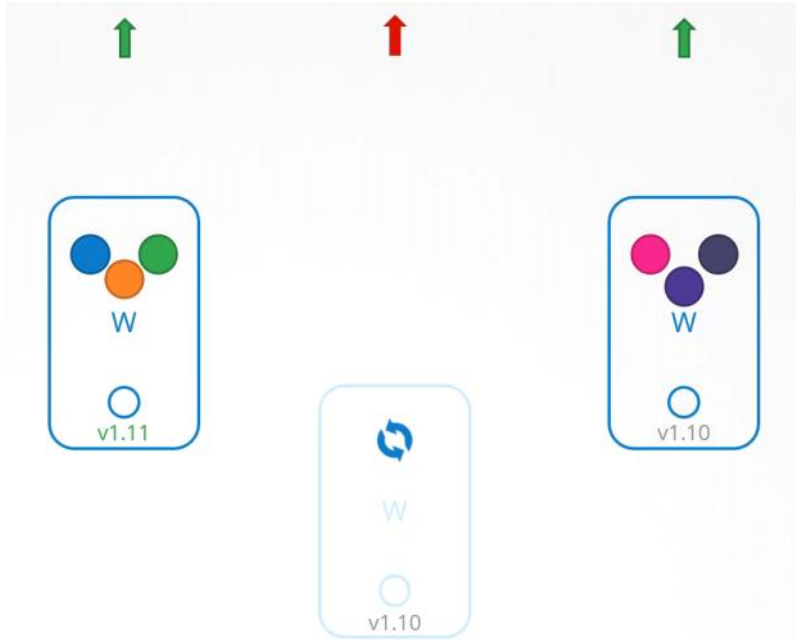
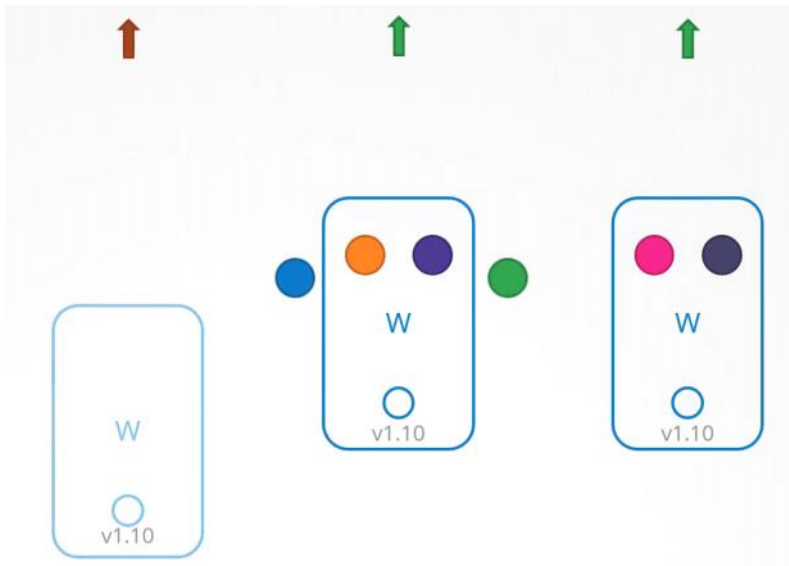


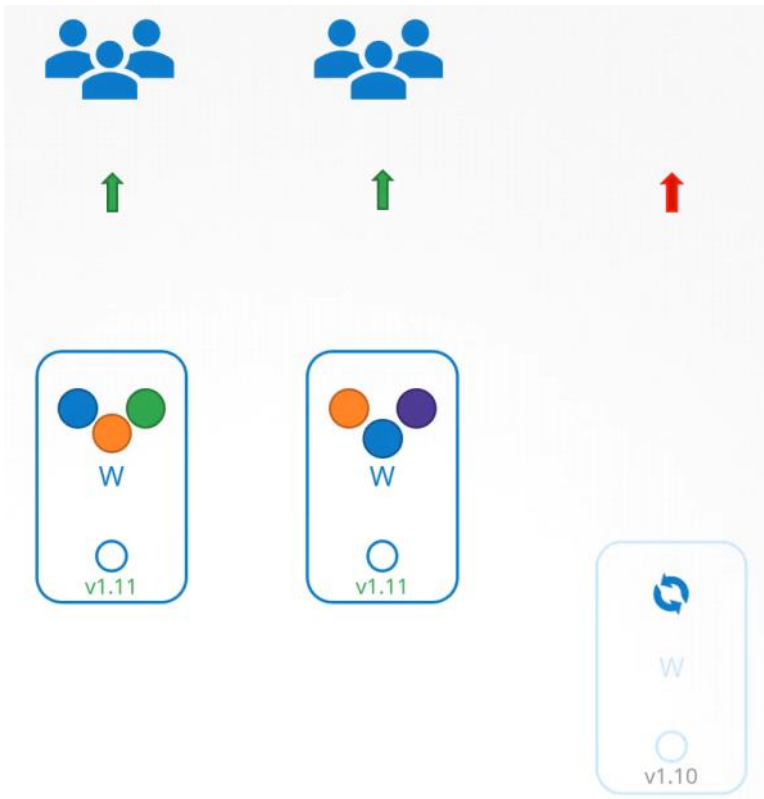
Upgrade is complete, the nodes are back up, new pods are scheduled, and users can resume access.

That's one strategy that requires downtime.

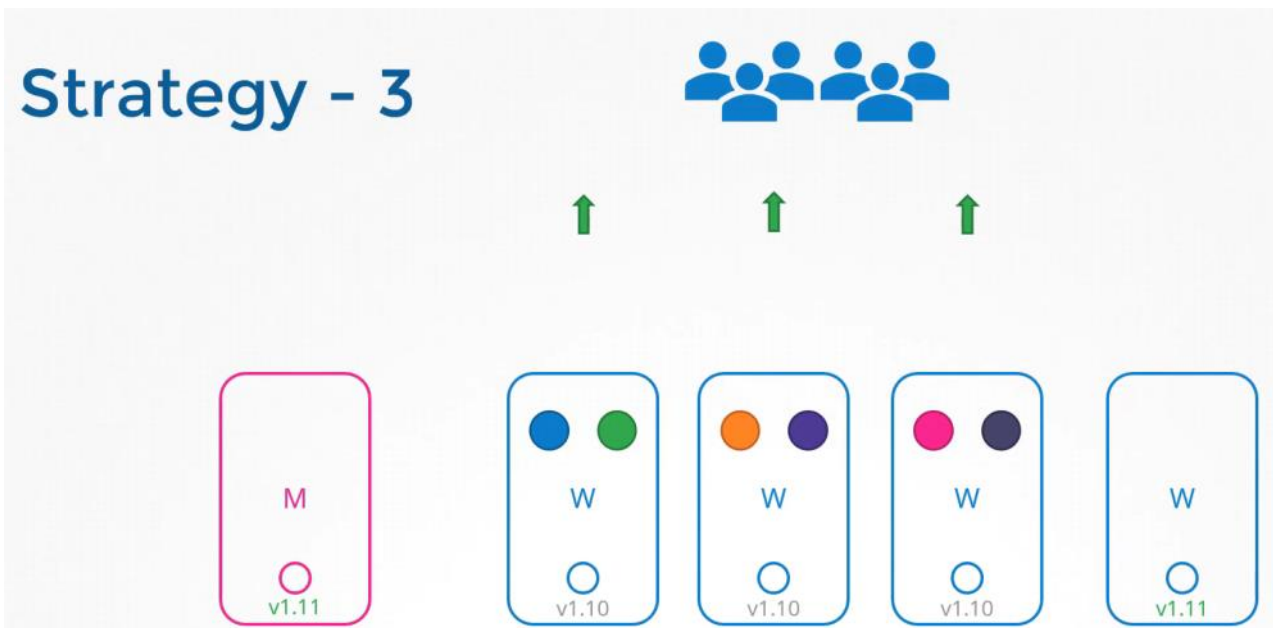


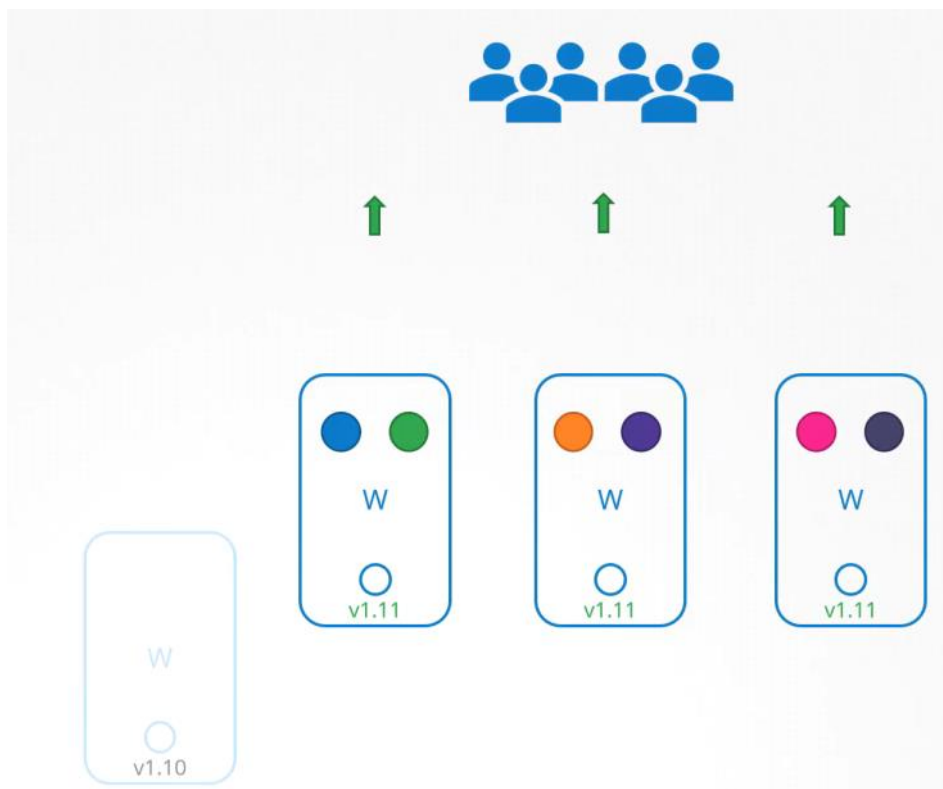
The second strategy is to upgrade one node at a time.





Strategy - 3





kubeadm - upgrade



```
kubeadm upgrade plan
```

```
[preflight] Running pre-flight checks.
[upgrade] Making sure the cluster is healthy:
[upgrade/config] Making sure the configuration is correct:
[upgrade] Fetching available versions to upgrade to
[upgrade/versions] Cluster version: v1.11.8
[upgrade/versions] kubeadm version: v1.11.3
[upgrade/versions] Latest stable version: v1.13.4
[upgrade/versions] Latest version in the v1.11 series: v1.11.8
```

Components that must be **upgraded manually** after you have upgraded the control plane with 'kubeadm upgrade apply':

COMPONENT	CURRENT	AVAILABLE
Kubelet	3 x v1.11.3	v1.13.4

Upgrade to the latest stable version:

COMPONENT	CURRENT	AVAILABLE
API Server	v1.11.8	v1.13.4
Controller Manager	v1.11.8	v1.13.4
Scheduler	v1.11.8	v1.13.4
Kube Proxy	v1.11.8	v1.13.4
CoreDNS	1.1.3	1.1.3
EtcD	3.2.18	N/A

You can now apply the upgrade by executing the following command:

```
kubeadm upgrade apply v1.13.4
```

Note: Before you can perform this upgrade, **you have to update kubeadm to v1.13.4.**

kubeadm - upgrade



```
➤ apt-get upgrade -y kubeadm=1.12.0-00
```

```
➤ kubeadm upgrade apply v1.12.0
```

...

[upgrade/successful] SUCCESS! Your cluster was upgraded to "v1.12.0". Enjoy!

[upgrade/kubelet] Now that your control plane is upgraded, please proceed with upgrading your kubelets if you haven't already done so.

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kubeadm - upgrade



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```
➤ apt-get upgrade -y kubelet=1.12.0-00
```

```
➤ systemctl restart kubelet
```

```
➤ kubectl get nodes
```

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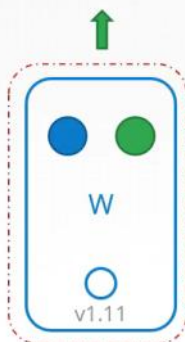
kubeadm - upgrade



kubeadm - upgrade



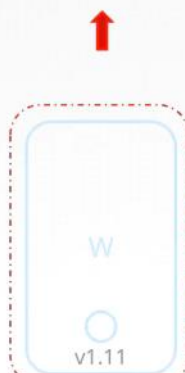
► `kubect1 drain node-1`



kubeadm - upgrade



► `kubect1 drain node-1`

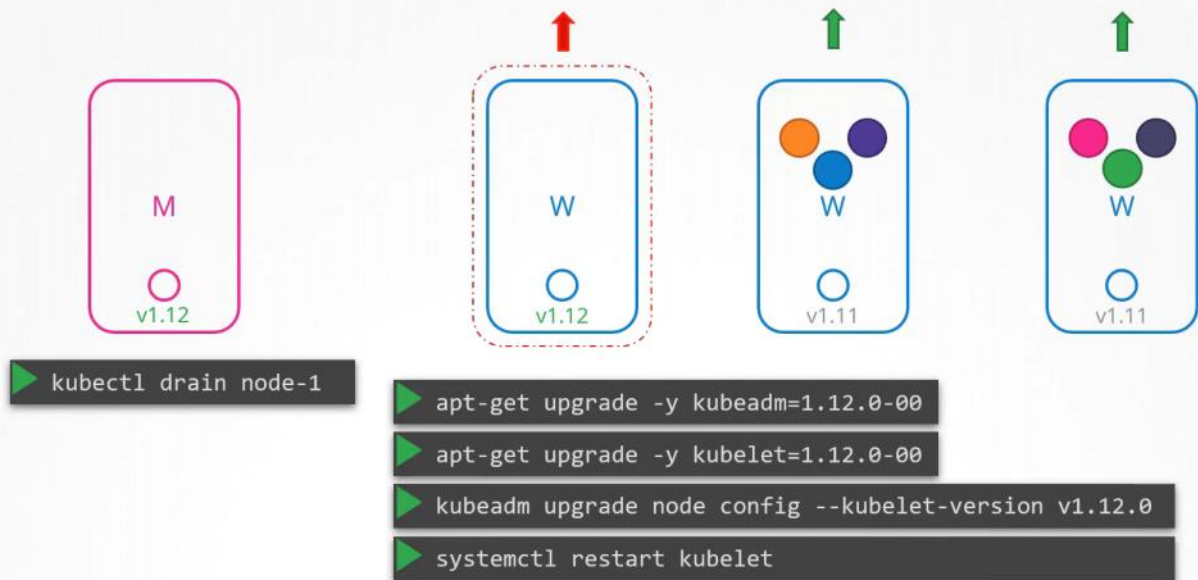


► `apt-get upgrade -y kubeadm=1.12.0-00`

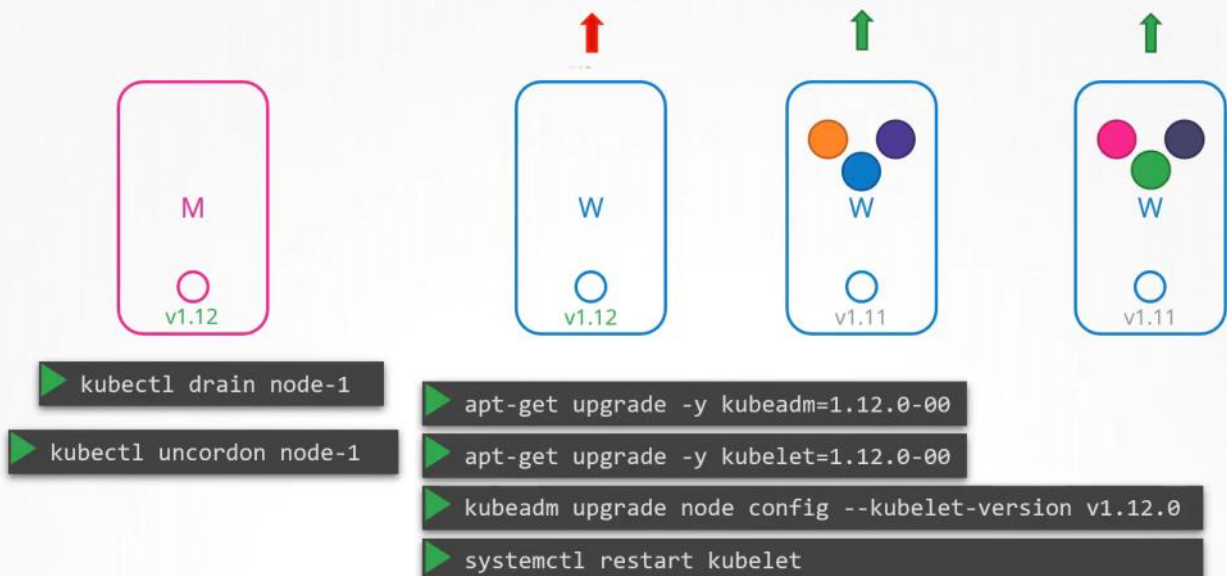
► `apt-get upgrade -y kubelet=1.12.0-00`

► `kubeadm upgrade node config --kubelet-version v1.12.0`

kubeadm - upgrade



kubeadm - upgrade



kubeadm - upgrade



- ▶ `kubect1 drain node-1`
- ▶ `kubect1 uncordon node-1`
- ▶ `kubect1 drain node-2`
- ▶ `kubect1 uncordon node-2`



- ▶ `apt-get upgrade -y kubeadm=1.12.0-00`
- ▶ `apt-get upgrade -y kubelet=1.12.0-00`
- ▶ `kubeadm upgrade node config --kubelet-versi`
- ▶ `systemctl restart kubelet`

kubeadm - upgrade



- ▶ `kubect1 drain node-1`
- ▶ `kubect1 uncordon node-1`
- ▶ `kubect1 drain node-2`
- ▶ `kubect1 uncordon node-2`
- ▶ `kubect1 drain node-3`



- ▶ `apt-get upgrade -y`
- ▶ `apt-get upgrade -y`
- ▶ `kubeadm upgrade nod`
- ▶ `systemctl restart k`