

coremedia & kubernetes

whoami

```
$ kubectl describe svc marko.lauke
```

```
Name:                Marko Lauke
Namespace:           coremedia
Annotations:         experience/java: 22a
                    experience/coremedia: 15a
                    experience/kubernetes: 2a
Type:                k8s-rookie
IP:                 127.0.0.1
Port:               favorite 6502/asm
Endpoints:          -
Events:             17:00:00.20201124 CMUG001
```

coremedia & kubernetes

themen

```
$ kubectl get pods -o custom columns=CONTAINERS:.spec.conta...
```

CONTAINERS

kubernetes-in-AWS

werkzeugkasten

coremedia-10

konzepte-und-architektur-entscheidungen

probleme-und-learnings

monitoring

infrastructure-as-code

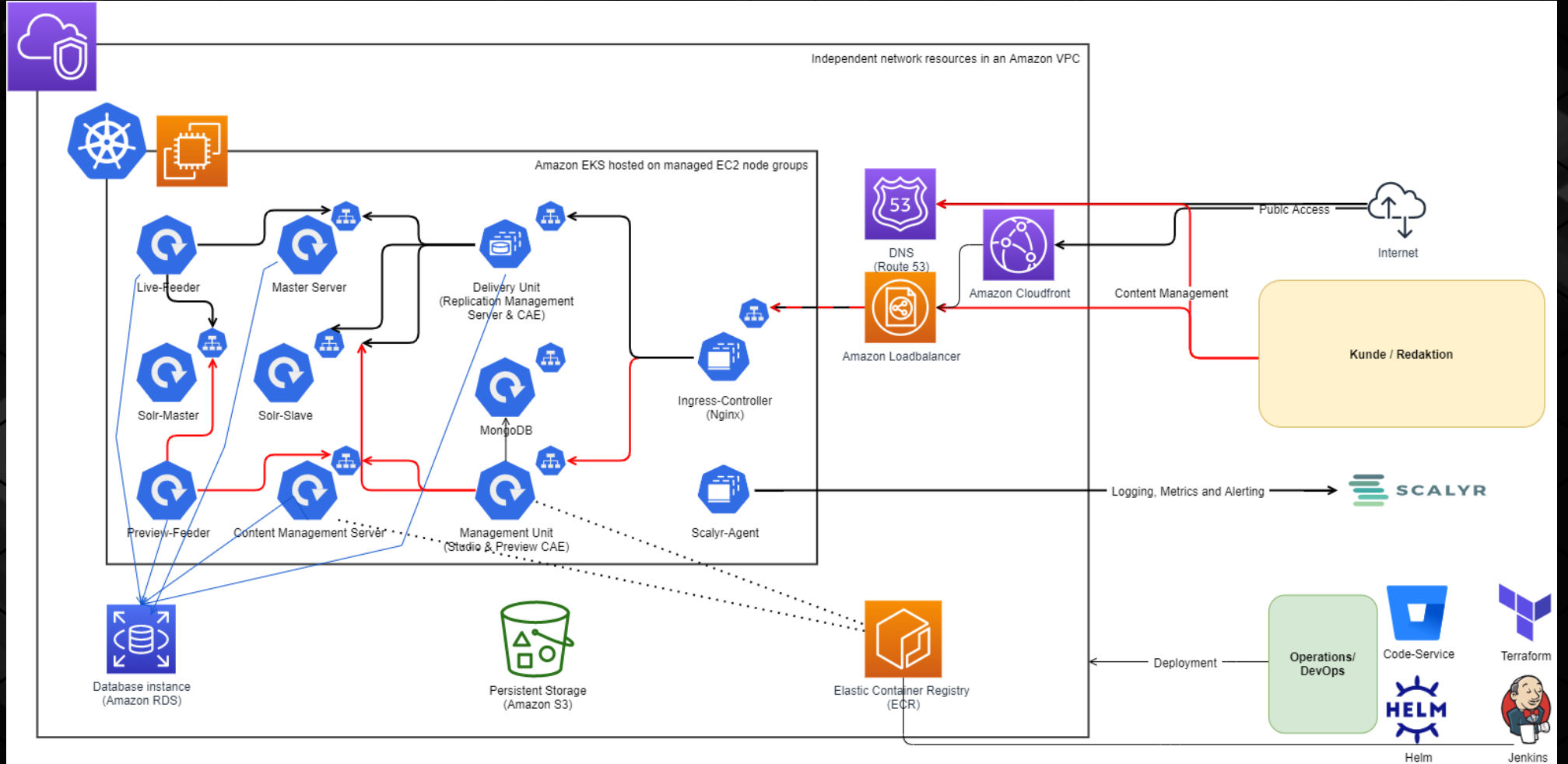
coremedia & kubernetes

kubernetes-in-AWS

```
$ kubectl api-resource | egrep 'node|rds|pod|pv|cert|ingress'
```

SHORTNAMES	NAME
EKS	Elastic Kubernetes Service
EC2	Elastic Compute Cloud (Virtual Machines)
ECR	Elastic Container Registry
RDS	Managed Relational Database Service
R53	Route 53
CDN	Content Delivery Network (CloudFront)

coremedia & kubernetes



coremedia & kubernetes

werkzeugkasten

```
$ docker-compose exec cli /usr/local/bin/cloudcontrol run
```

```
https://github.com/dodevops/cloudcontrol
```

```
[cloudcontrol@44122a889b7b preprod2]$ alias psx
alias psx='kubectl get pods -o wide'
[cloudcontrol@44122a889b7b preprod2]$ psx
```

NAME	READY	STATUS	RESTARTS	AGE	IP	NODE	NOMINATED NODE	READINESS
cae-preview-8b98cfd68-wbkbh	1/1	Running	0	2d7h	10.1.14.116	ip-10-1-31-131.eu-west-2.compute.internal	<none>	<none>
caefeeder-cms-6bb4b869c4-dx4pc	1/1	Running	0	2d7h	10.1.8.119	ip-10-1-31-131.eu-west-2.compute.internal	<none>	<none>
caefeeder-mls-75656866bb-5nnmt	1/1	Running	0	2d7h	10.1.60.221	ip-10-1-31-131.eu-west-2.compute.internal	<none>	<none>
content-feeder-cms-6db77666d6-kvrns	1/1	Running	0	2d7h	10.1.91.187	ip-10-1-115-9.eu-west-2.compute.internal	<none>	<none>
content-management-server-9c974976b-7457k	1/1	Running	0	2d7h	10.1.72.199	ip-10-1-115-9.eu-west-2.compute.internal	<none>	<none>
imagefeeder-579fb48c8b-bhg7t	1/1	Running	0	2d7h	10.1.84.218	ip-10-1-115-9.eu-west-2.compute.internal	<none>	<none>
management-tools-shell-7645f9748b-sctnp	1/1	Running	0	2d7h	10.1.98.167	ip-10-1-115-9.eu-west-2.compute.internal	<none>	<none>
management-unit-studio-client-795cdcd97b-h2rtq	1/1	Running	0	2d7h	10.1.114.71	ip-10-1-115-9.eu-west-2.compute.internal	<none>	<none>
management-unit-studio-server-9856d7646-qjtbm	1/1	Running	0	2d7h	10.1.23.17	ip-10-1-31-131.eu-west-2.compute.internal	<none>	<none>
management-unit-studio-server-9856d7646-qs7dv	1/1	Running	0	2d7h	10.1.76.22	ip-10-1-115-9.eu-west-2.compute.internal	<none>	<none>
master-live-server-6bdd97cf5d-hzrds	1/1	Running	0	2d7h	10.1.115.101	ip-10-1-115-9.eu-west-2.compute.internal	<none>	<none>
press-association-feeder-6bf4c5f746-rgrh9	1/1	Running	0	2d7h	10.1.111.251	ip-10-1-115-9.eu-west-2.compute.internal	<none>	<none>
user-changes-8df678fb5-gpqrk	1/1	Running	0	2d7h	10.1.86.41	ip-10-1-115-9.eu-west-2.compute.internal	<none>	<none>
workflow-server-8558679f56-n9pzg	1/1	Running	0	2d7h	10.1.86.108	ip-10-1-115-9.eu-west-2.compute.internal	<none>	<none>

```
[cloudcontrol@44122a889b7b preprod2]$
```

coremedia & kubernetes

coremedia-10

```
$ kubectl get namespace coremedia
```

NAME	STATUS	AGE
coremedia	Active	24a

- „abgehangene bewährte“ Architektur => horizontal skalierbar
- docker workspace => Images => „kubernetes ready“

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konzepte-und-architektur-entscheidungen

```
$ kubectl describe pod content-management-server
```

```
Name:          content-management-server-6c4f76b5f-8sx8n
```

```
...
```

```
Containers:
```

```
  content-management-server:
```

```
    Container ID: docker://21ddbfb50479c4d63e9d1f57f1729...
```

```
    Image:       778787.dkr.ecr.eu-west-2.amazonaws.com/content-server:prod
```

- => Image Tags für jeweiligen Cluster – dev, qa, preprod, prod
- => Image PullPolicy „Always“
- => Deployment => \$ kubectl delete pod ...

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konzepte-und-architektur-entscheidungen

```
$ kubectl describe pod content-management-server
```

Blobs: S3 oder RDS ?

=> Blobs in die DB

=> Vereinfachung des Backups

=> kein Performance-Gewinn durch S3

=> Blobdaten zwischen CMS/CAE => Optimierungspotential: CMS teilt CAE lediglich den S3-URL mit => Coremedia?

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konzepte-und-architektur-entscheidungen

```
$ kubectl -n coremedia-delivery get pods
```

NAME	READY	STATUS	RESTARTS	AGE
delivery-unit1-cae-7cdc8	1/1	Running	0	21d7h
delivery-unit1-cae-aefc3	1/1	Running	0	21d7h
delivery-unit1-rls-0	1/1	Running	0	21d7h

=> Vereinfachung Deployment

=> Anti-Affinity Rules auf „Unit“ Ebene

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```
$ kubectl -n coremedia-delivery describe svc delivery-unit1
```

```
Name:                delivery-unit1-cae
Namespace:           coremedia-delivery
Labels:              app.kubernetes.io/instance=delivery-unit1
                    app.kubernetes.io/managed-by=Helm
```

...

```
Name:                delivery-unit1-rls
Namespace:           coremedia-delivery
Labels:              app.kubernetes.io/instance=delivery-unit1
                    app.kubernetes.io/managed-by=Helm
```

...

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konzepte-und-architektur-entscheidungen

```
$ kubectl -n management-unit get pods
```

NAME	READY	STATUS	RESTARTS
management-tools-shell-...	1/1	Running	0
management-unit-studio-client-...	1/1	Running	0
management-unit-studio-server-...	1/1	Running	0
management-unit-studio-server-...	1/1	Running	0

=> Vereinfachung des Deployments

=> Skalierung über spec.replicas der studio-server pods

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konzepte-und-architektur-entscheidungen

```
$ kubectl -n management-unit describe ingress management-unit
```

```
Name:                management-unit-server
```

```
Namespace:          management-unit
```

```
Default backend:    default-http-backend:80
```

```
Rules:
```

```
...
```

```
nginx.ingress.kubernetes.io/configuration-snippet: gzip off;
```

```
nginx.ingress.kubernetes.io/upstream-hash-by:
```

```
$cookie_CM_SESSIONID
```

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probleme-und-learnings

```
$ kubectl exec delivery-unit1-cae -- cat /proc/1/cmdline  
java -XX:-UsePerfData -Xss512k -XX:+UseContainerSupport -  
XX:MaxRAMPercentage=70.0 ...
```

=> Java/JVM's und Container

=> Java 11 Features nutzen – Aber Vorsicht!

-XX:UseContainerSupport

-XX:MinRAMPercentage=70 -XX:MaxRAMPercentage=70

=> Coremedia 10 & Java 11 in AWS => Corretto JVM

=> coremedia/java-application-base:2.2.1-corretto-11

=> Performance Metriken „enablen“

-XX:-UsePerfData -XX:+UsePerfData ?!?

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probleme-und-learnings

```
$ kubectl exec delivery-unit1-cae-... -- jstat -gcutil 1 10000
```

S0	S1	E	O	M	CCS	YGC	YGCT	FGC	FGCT	CGC	CGCT	GCT
60.40	0.00	2.82	51.33	95.21	86.29	36029	553.184	193	165.415	-	-	718.599
60.40	0.00	45.00	51.33	95.21	86.29	36029	553.184	193	165.415	-	-	718.599
60.40	0.00	81.22	51.33	95.21	86.29	36029	553.184	193	165.415	-	-	718.599
60.40	0.00	94.57	51.33	95.21	86.29	36029	553.184	193	165.415	-	-	718.599
0.00	77.96	31.54	51.33	95.21	86.29	36030	553.195	193	165.415	-	-	718.610
0.00	77.96	37.36	51.33	95.21	86.29	36030	553.195	193	165.415	-	-	718.610

S0	S1	E	O	M	CCS	YGC	YGCT	FGC	FGCT	CGC	CGCT	GCT
0.00	99.34	51.49	84.98	95.21	86.29	36126	554.670	193	165.415	-	-	720.085
59.14	0.00	93.76	84.99	95.21	86.29	36127	554.685	193	165.415	-	-	720.100
0.00	16.46	40.46	46.42	95.20	86.28	36133	554.865	194	166.331	-	-	721.196
32.16	0.00	22.02	46.42	95.20	86.28	36134	554.877	194	166.331	-	-	721.209
32.16	0.00	95.00	46.42	95.20	86.28	36134	554.877	194	166.331	-	-	721.209

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probleme-und-learnings

```
$ kubectl describe pod delivery-unit1-cae-8684fd84d4-rqgcg
```

```
....  
Limits:  
  cpu:      2  
  memory:   2Gi  
Requests:  
  cpu:      500m  
  memory:   1Gi  
-XX:InitialRAMPercentage=70.0 -XX:MaxRAMPercentage=70.0
```

```
$ kubectl exec delivery-unit1-cae-65d865b5b8-jjs2h -- cat /sys/fs/cgroup/memory/memory.limit_in_bytes  
2147483648
```

```
$ kubectl exec delivery-unit1-cae-65d865b5b8-jjs2h -it -- jinfo -flags 1
```

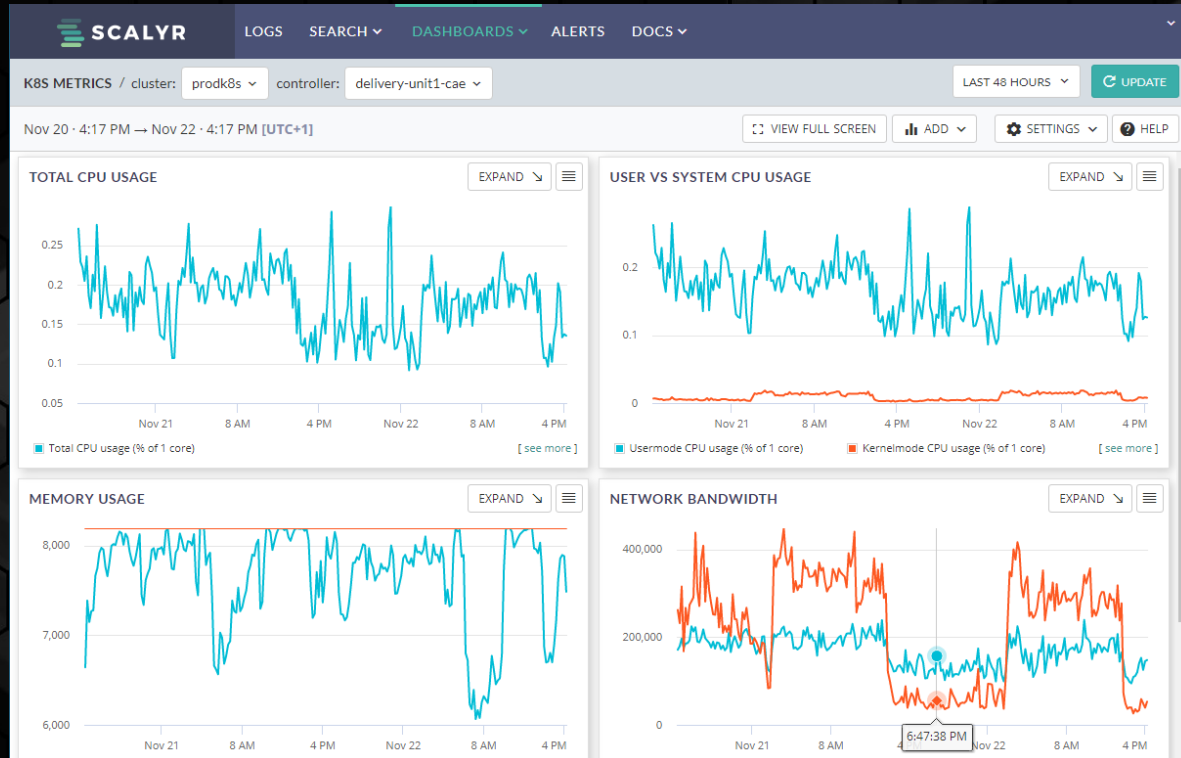
```
VM Flags:
```

```
... -XX:MaxHeapSize=1503657984 -XX:MaxNewSize=501219328 -XX:MaxRAMPercentage=70.000000  
-XX:NewSize=501219328 -XX:OldSize=1002438656
```

coremedia & kubernetes

monitoring

```
$ kubectl -n default describe pod scalyr-k8snode-manager
```



coremedia & kubernetes

infrastructure-as-code

```
$ terraform apply -target=cmug.to-be-continued
```

Do you want to perform these actions?

Apply yes/no: yes