Running FME Flow on Kubernetes

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FME by Safe Software

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Agenda

- Enterprise integration patterns, then and now
- How does FME fit in?
- FME Flow on Kubernetes?
- Conclusion & discussion

Enterprise integration, then and now

Then

- File transfer
- Ad-hoc; scheduled batch jobs
- Coding/scripts
- On-premise

Now

- APIs, webhooks, queues, streams
- Event-driven
- No-code/low-code tools
- On-premise, hybrid, cloud-only

How does FME fit into this?

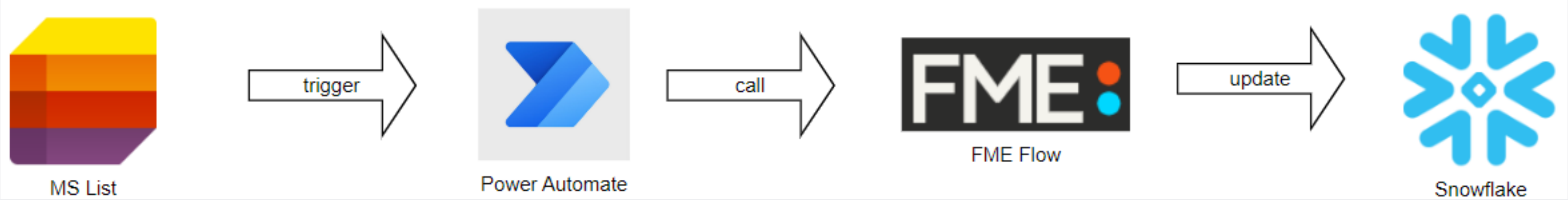
Then

- Desktop only (FME Workbench)
- Run interactively or via batch files
- Files, databases

Now

- FME Form (build & test, run ad-hoc)
- FME Flow (automate)
- Act as a client or server for: Web apps, webhooks, queues, streams

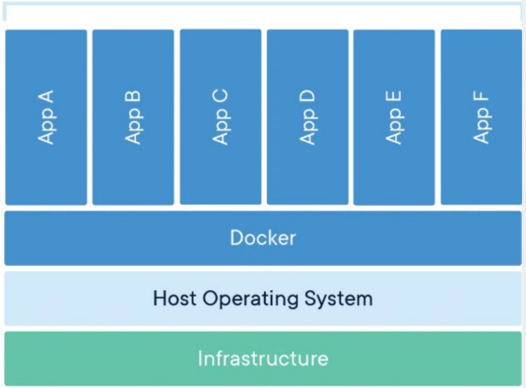
How does FME fit into this (cont’d) ?

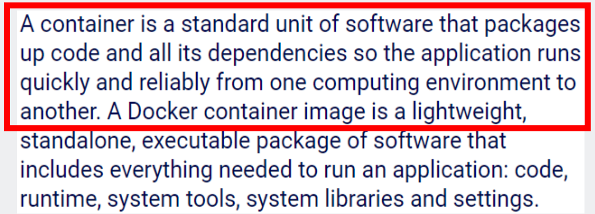


1. Availability
2. Scalability
3. Disaster Recovery
4. Security

What is Kubernetes?

- Open-source container orchestration platform
- Originally developed by Google
- Manage containers at scale
- Address non-functionals





A container is a standard unit of software that packages up code and all its dependencies so the application runs quickly and reliably from one computing environment to another. A Docker container image is a lightweight, standalone, executable package of software that includes everything needed to run an application: code, runtime, system tools, system libraries and settings.

https://www.docker.com/

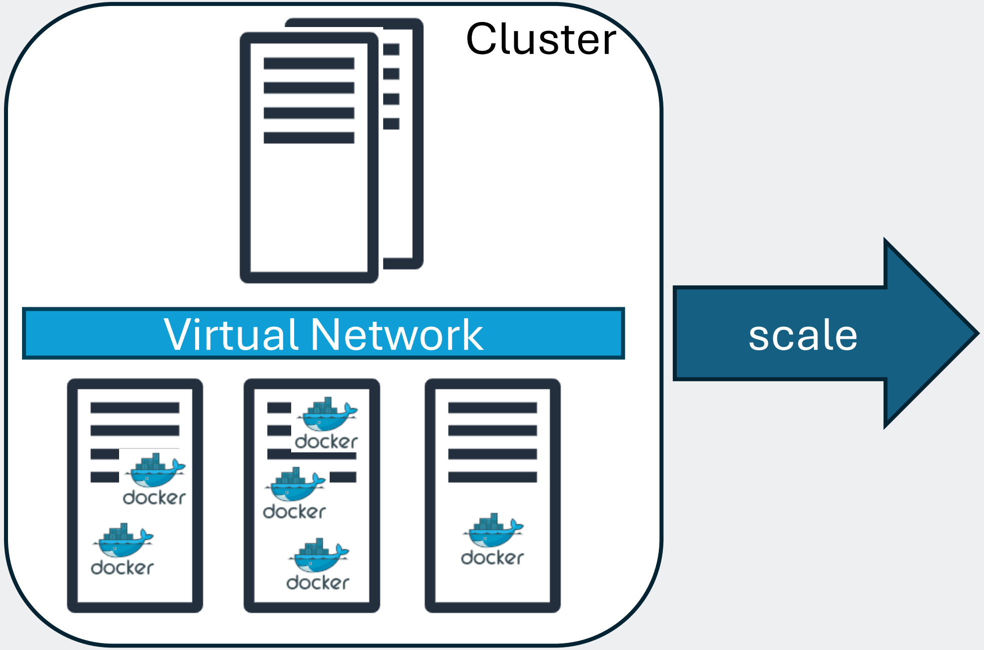
How does it work?

Master node(s) / Control plane

- ○ API Server
- ○ Controller Manager
- ○ Scheduler
- ○ etc

Worker node(s)

- ○ Kubelet
- ○ Kube-Proxy



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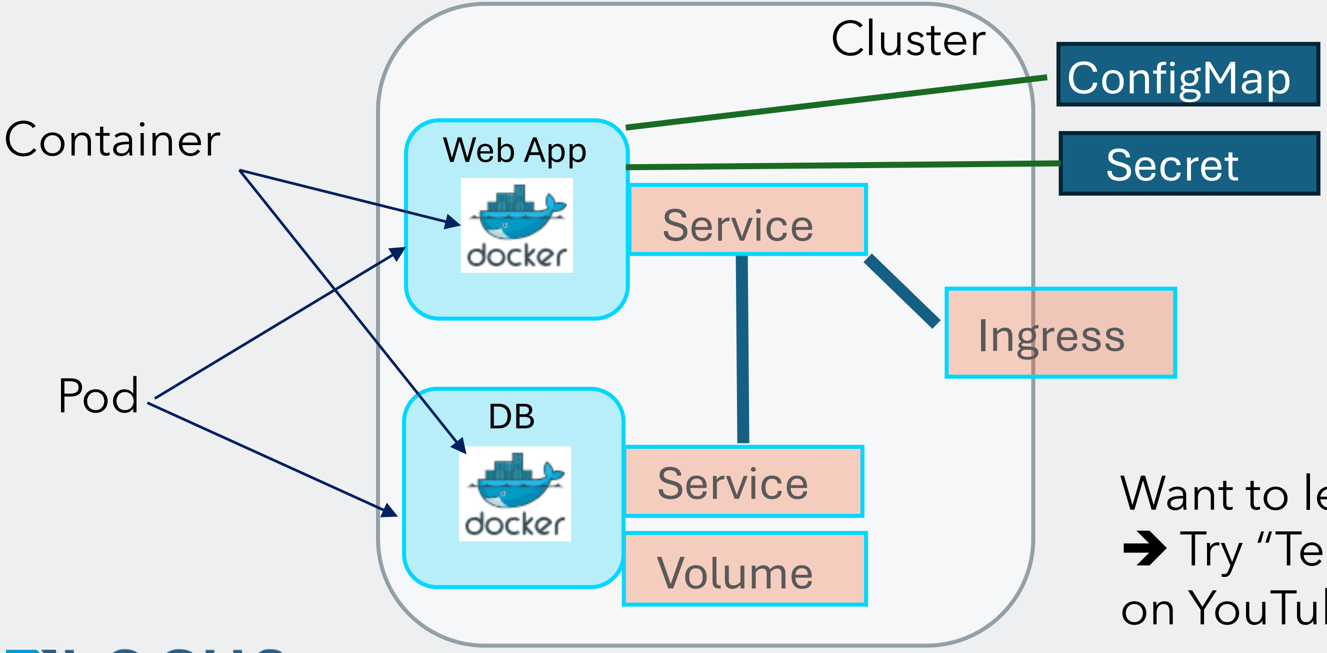
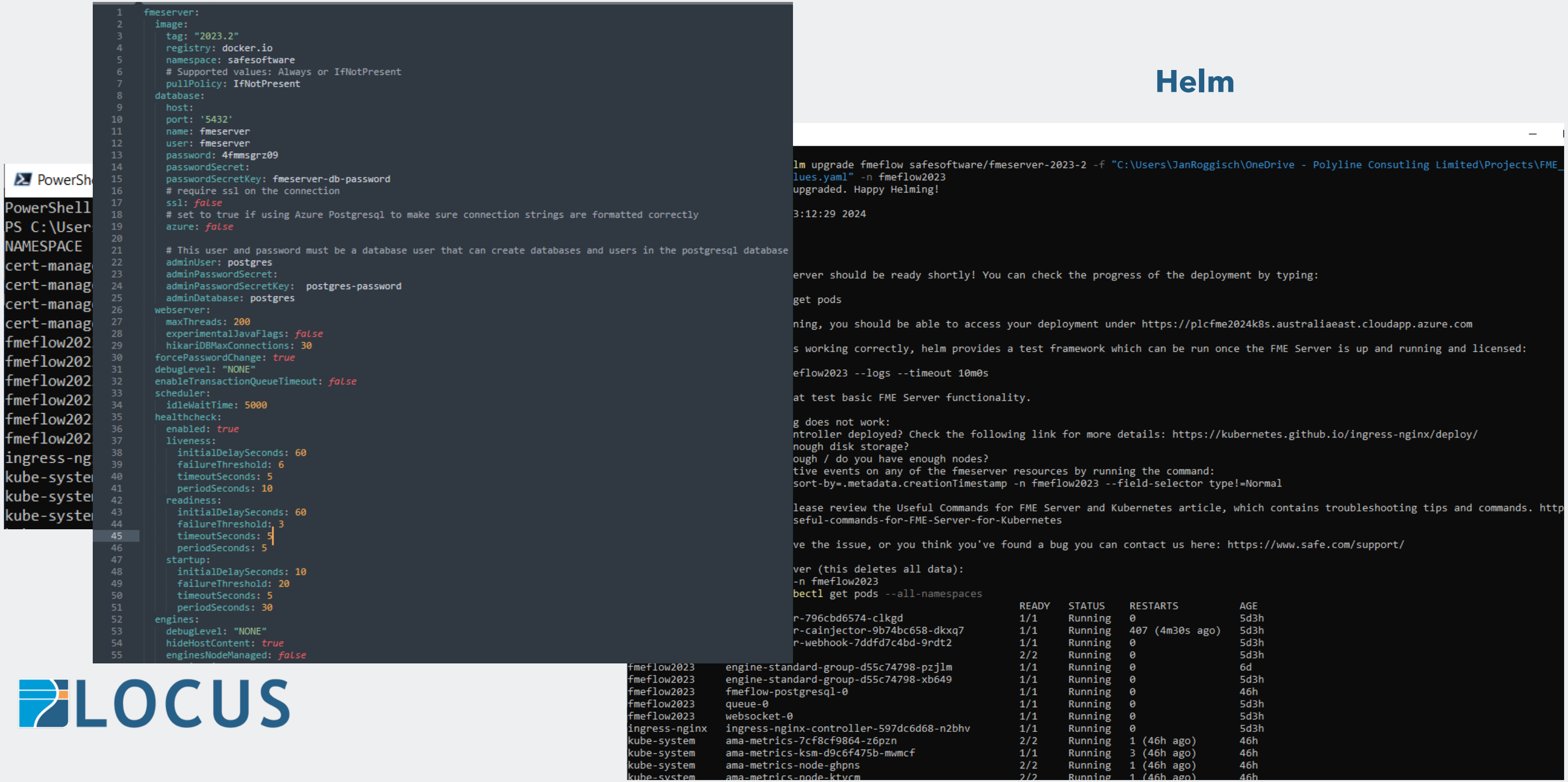
How does it work?



Want to learn about DevOps?
➔ Try “TechWorld with Nana” on YouTube

How do we work with it?

Helm



```
PowerSh
PowerShell
PS C:\User
NAMESPACE
cert-manag
cert-manag
cert-manag
cert-manag
fmeflow202
fmeflow202
fmeflow202
fmeflow202
fmeflow202
fmeflow202
ingress-ng
kube-syste
kube-syste
kube-syste
```

```yaml
fmeserver:
  image:
    tag: "2023.2"
    registry: docker.io
    namespace: safesoftware
    # Supported values: Always or IfNotPresent
    pullPolicy: IfNotPresent
  database:
    host:
    port: '5432'
    name: fmeserver
    user: fmeserver
    password: 4fmmsgrz09
    passwordSecret:
    passwordSecretKey: fmeserver-db-password
    # require ssl on the connection
    ssl: false
    # set to true if using Azure Postgresql to make sure connection strings are formatted correctly
    azure: false

    # This user and password must be a database user that can create databases and users in the postgresql database
    adminUser: postgres
    adminPasswordSecret:
    adminPasswordSecretKey:  postgres-password
    adminDatabase: postgres
  webserver:
    maxThreads: 200
    experimentalJavaFlags: false
    hikariDBMaxConnections: 30
  forcePasswordChange: true
  debugLevel: "NONE"
  enableTransactionQueueTimeout: false
  scheduler:
    idleWaitTime: 5000
  healthcheck:
    enabled: true
    liveness:
      initialDelaySeconds: 60
      failureThreshold: 6
      timeoutSeconds: 5
      periodSeconds: 10
    readiness:
      initialDelaySeconds: 60
      failureThreshold: 3
      timeoutSeconds: 5
      periodSeconds: 5
    startup:
      initialDelaySeconds: 10
      failureThreshold: 20
      timeoutSeconds: 5
      periodSeconds: 30
  engines:
    debugLevel: "NONE"
    hideHostContent: true
    enginesNodeManaged: false
```

```
lm upgrade fmeflow safesoftware/fmeserver-2023-2 -f "C:\Users\JanRoggisch\OneDrive - Polyline Consutling Limited\Projects\FME_
lues.yaml" -n fmeflow2023
upgraded. Happy Helming!

3:12:29 2024



erver should be ready shortly! You can check the progress of the deployment by typing:

get pods

ning, you should be able to access your deployment under https://plcfme2024k8s.australiaeast.cloudapp.azure.com

s working correctly, helm provides a test framework which can be run once the FME Server is up and running and licensed:

eflow2023 --logs --timeout 10m0s

at test basic FME Server functionality.

g does not work:
ntroller deployed? Check the following link for more details: https://kubernetes.github.io/ingress-nginx/deploy/
nough disk storage?
ough / do you have enough nodes?
tive events on any of the fmeserver resources by running the command:
sort-by=.metadata.creationTimestamp -n fmeflow2023 --field-selector type!=Normal

lease review the Useful Commands for FME Server and Kubernetes article, which contains troubleshooting tips and commands. http
seful-commands-for-FME-Server-for-Kubernetes

ve the issue, or you think you've found a bug you can contact us here: https://www.safe.com/support/

ver (this deletes all data):
-n fmeflow2023
bectl get pods --all-namespaces
                                      READY   STATUS    RESTARTS          AGE
r-796cbd6574-clkgd                    1/1     Running   0                 5d3h
r-cainjector-9b74bc658-dkxq7          1/1     Running   407 (4m30s ago)   5d3h
r-webhook-7ddfd7c4bd-9rdt2            1/1     Running   0                 5d3h
                                      2/2     Running   0                 5d3h
fmeflow2023     engine-standard-group-d55c74798-pzjlm        1/1     Running   0                 6d
fmeflow2023     engine-standard-group-d55c74798-xb649        1/1     Running   0                 5d3h
fmeflow2023     fmeflow-postgresql-0                         1/1     Running   0                 46h
fmeflow2023     queue-0                                      1/1     Running   0                 5d3h
fmeflow2023     websocket-0                                  1/1     Running   0                 5d3h
ingress-nginx   ingress-nginx-controller-597dc6d68-n2bhv     1/1     Running   0                 5d3h
kube-system     ama-metrics-7cf8cf9864-z6pzn                 2/2     Running   1 (46h ago)       46h
kube-system     ama-metrics-ksm-d9c6f475b-mwmcf              1/1     Running   3 (46h ago)       46h
kube-system     ama-metrics-node-ghpns                       2/2     Running   1 (46h ago)       46h
kube-system     ama-metrics-node-ktvcm                       2/2     Running   1 (46h ago)       46h
```

Conclusion

Cons

- Steep learning curve
- Challenging to do on the side
- Forces you to adopt a DevOps approach

Pros

- Turns an FME Flow deployment into a cloud platform
- Upgrades are fast and reliable
- SSL config becomes a breeze
- Allows you to adopt a DevOps approach

Thank you!

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