Adding Self-service Analytics with Elasticsearch and Kibana

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DEVELOPER ADVOCATE

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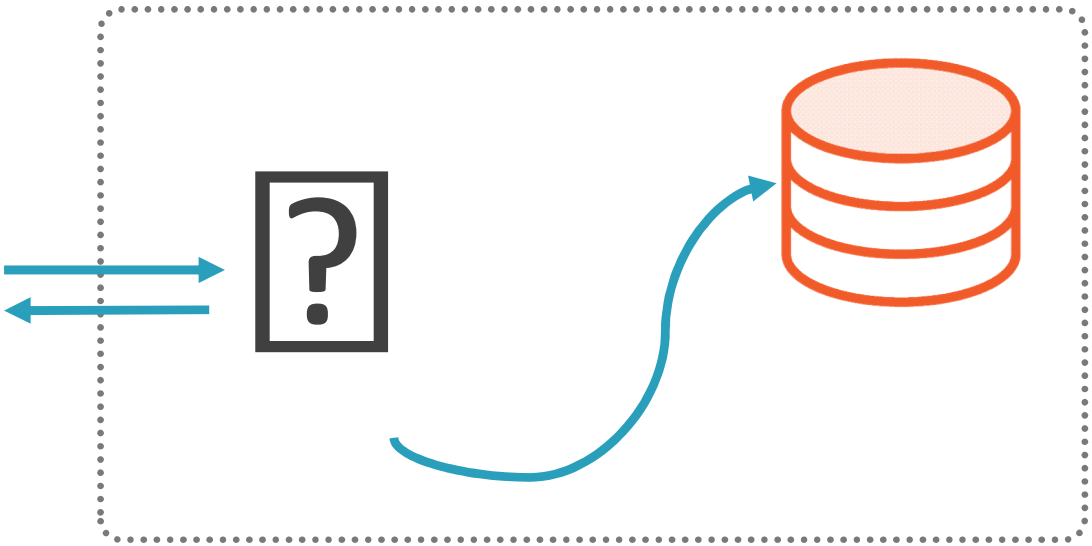

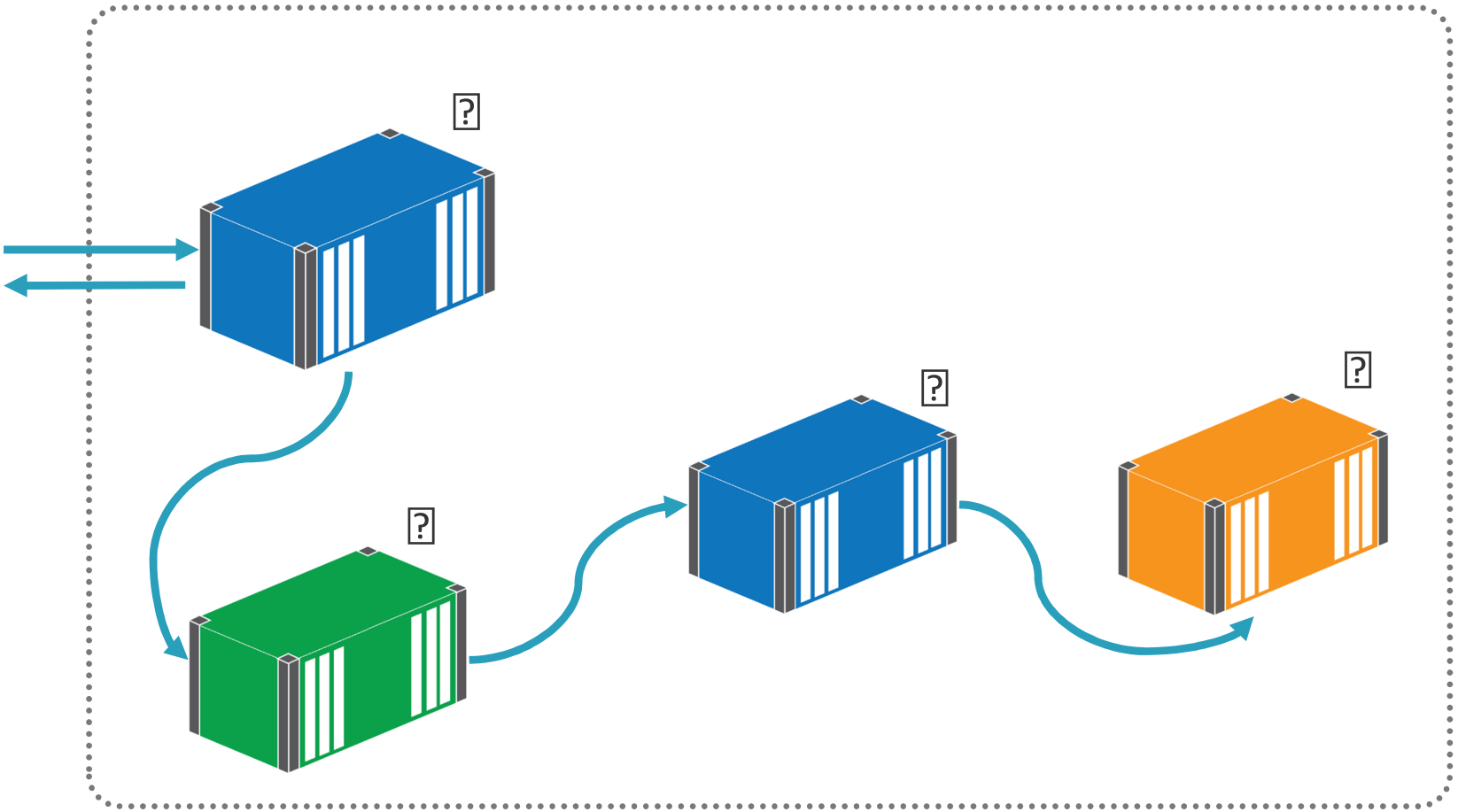

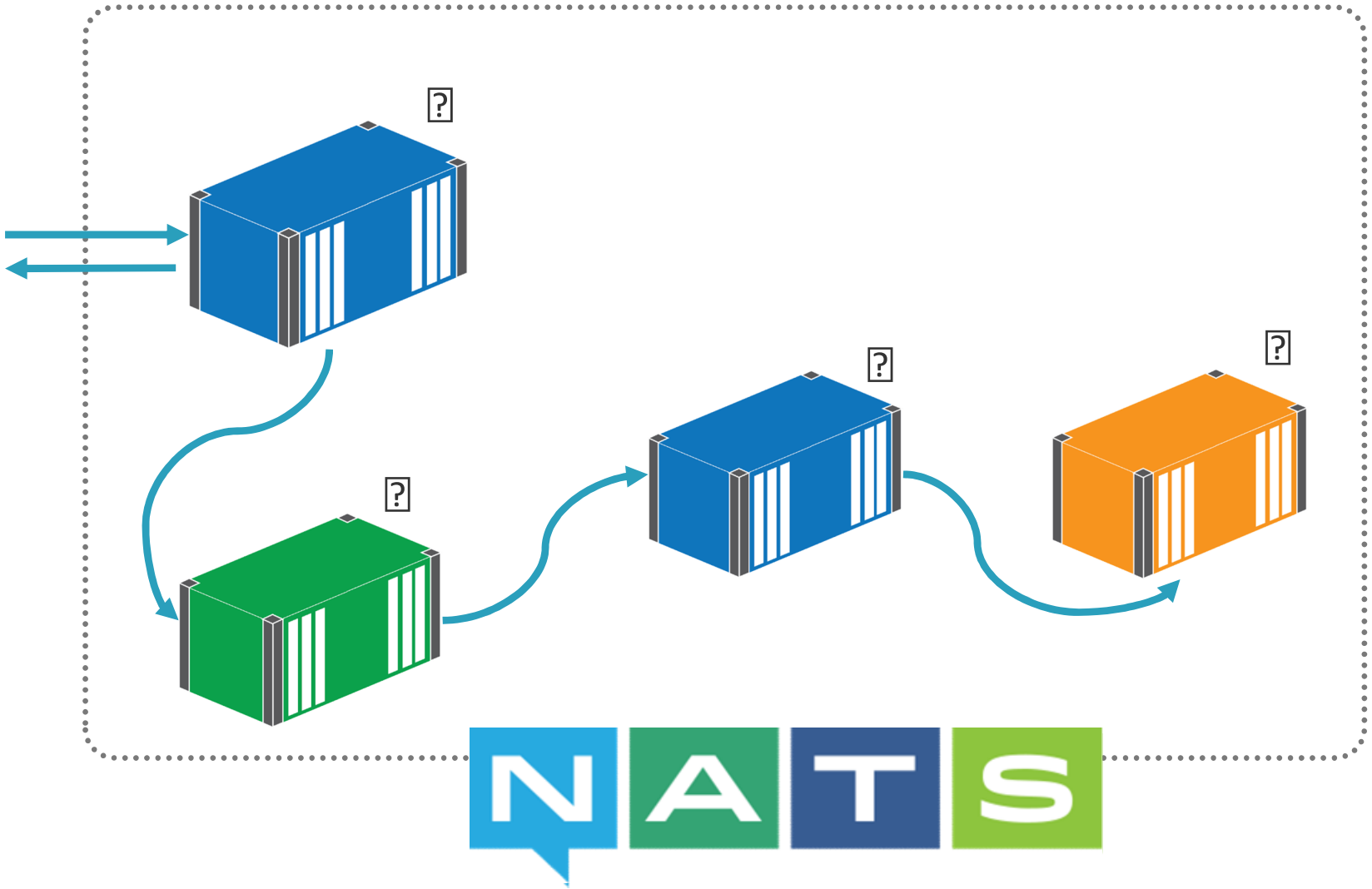
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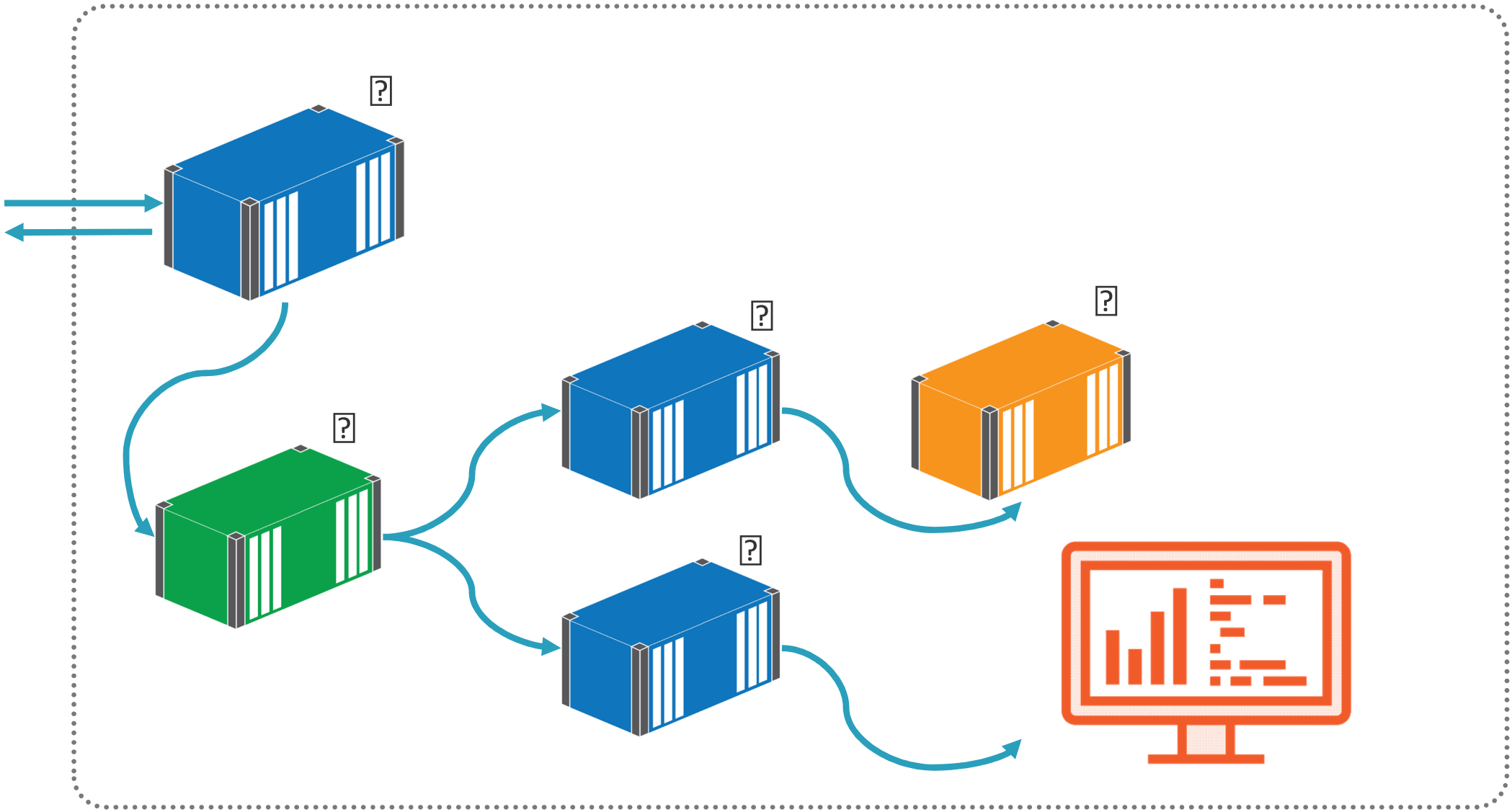
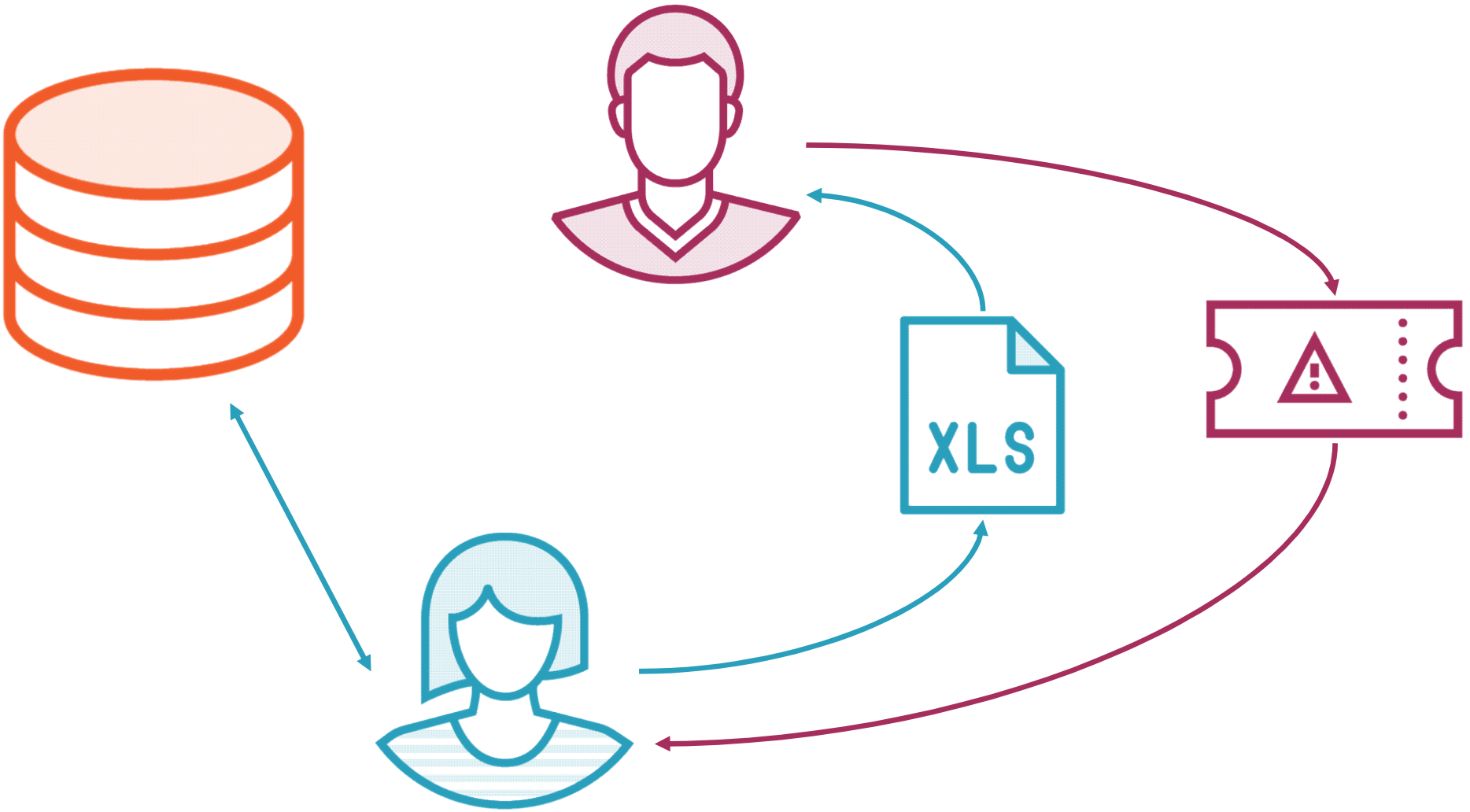
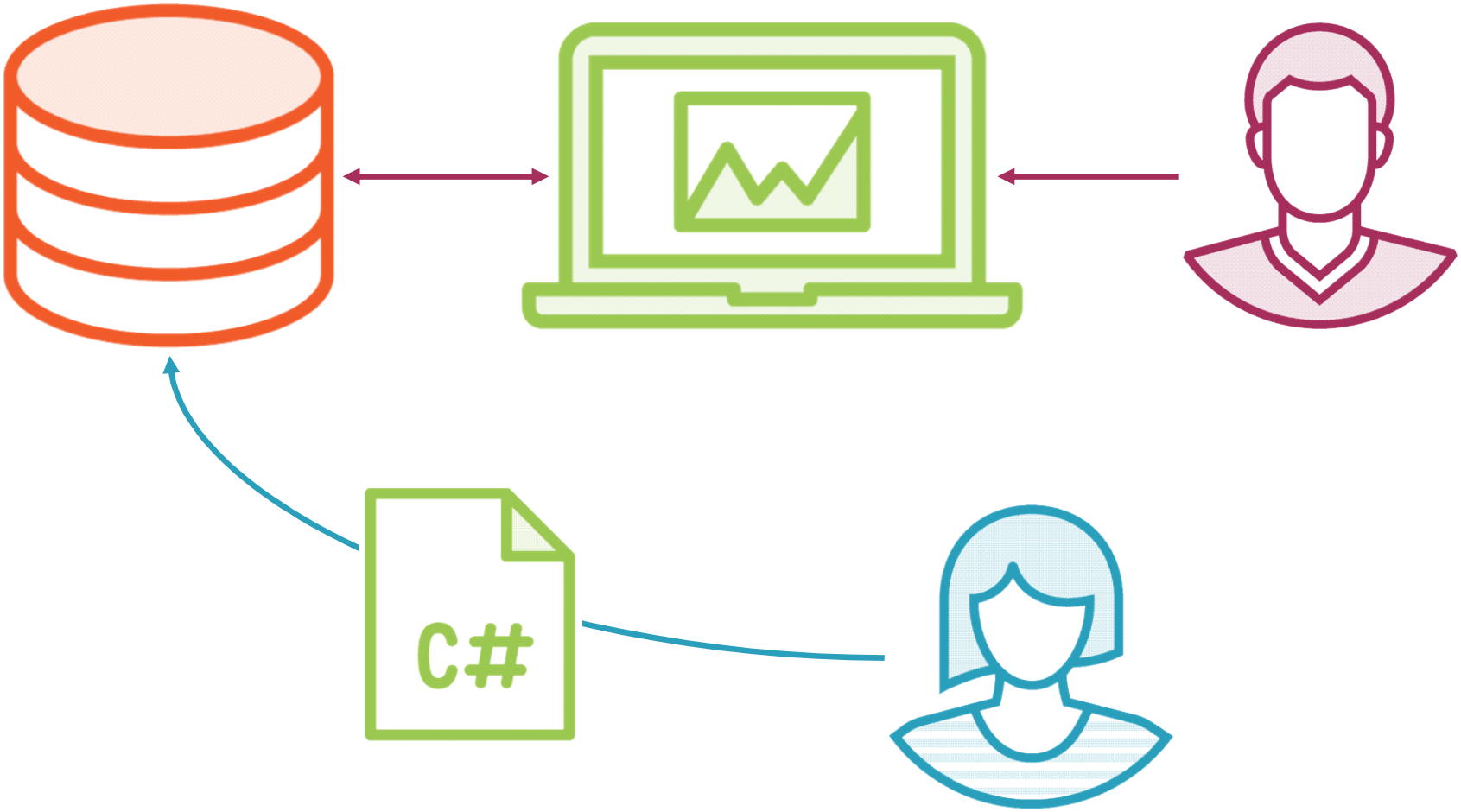



XLS


SQL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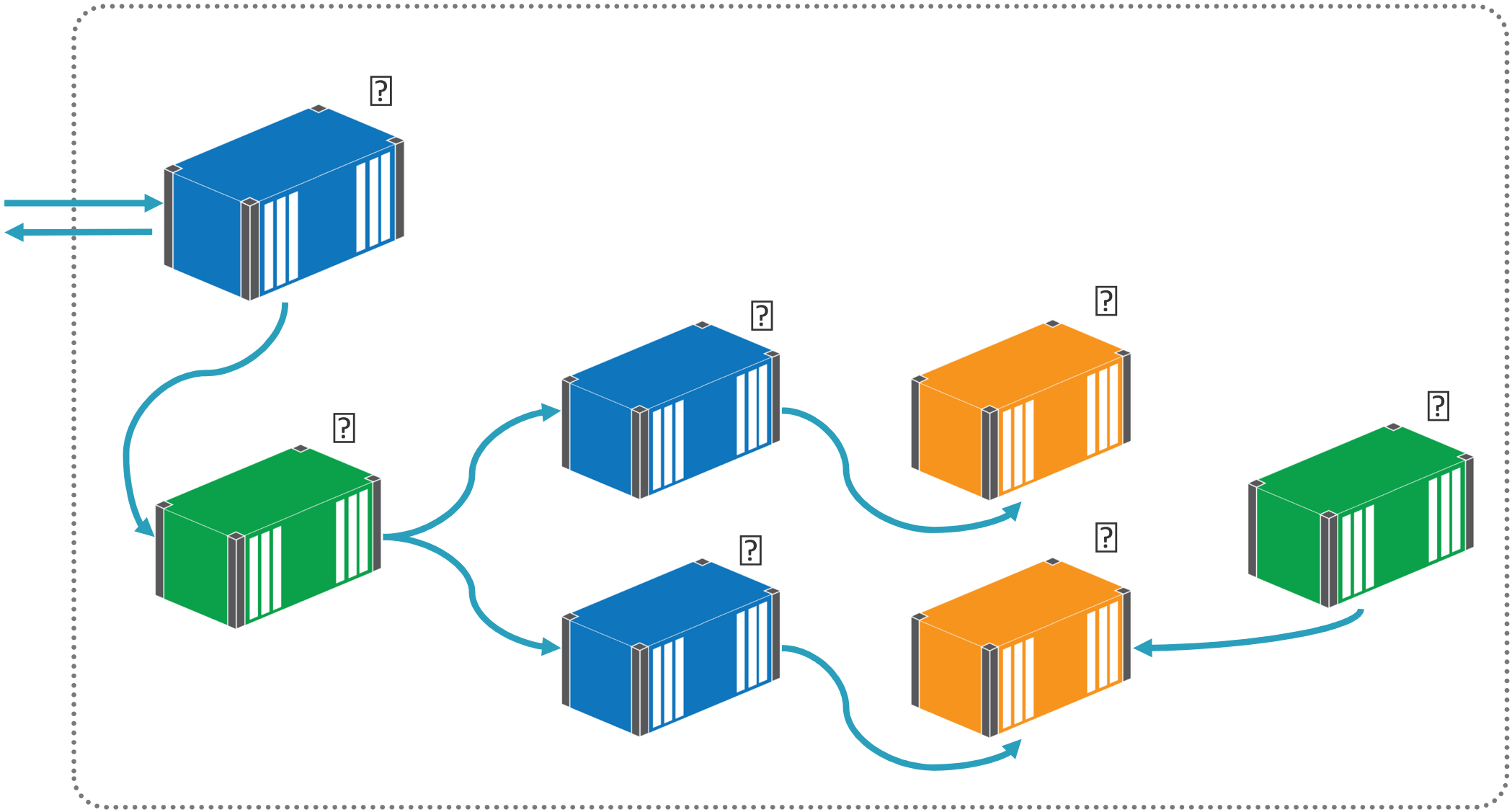
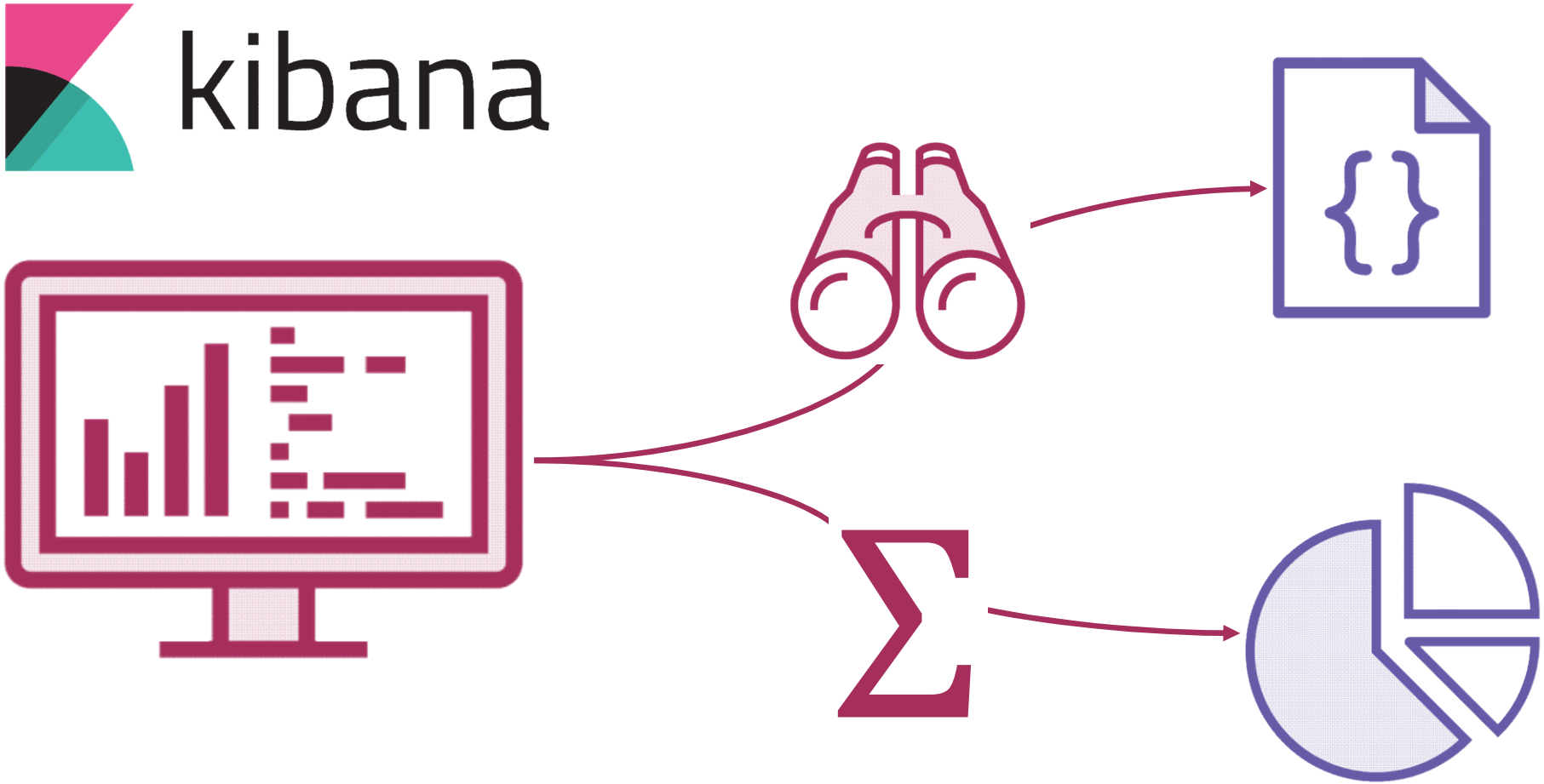
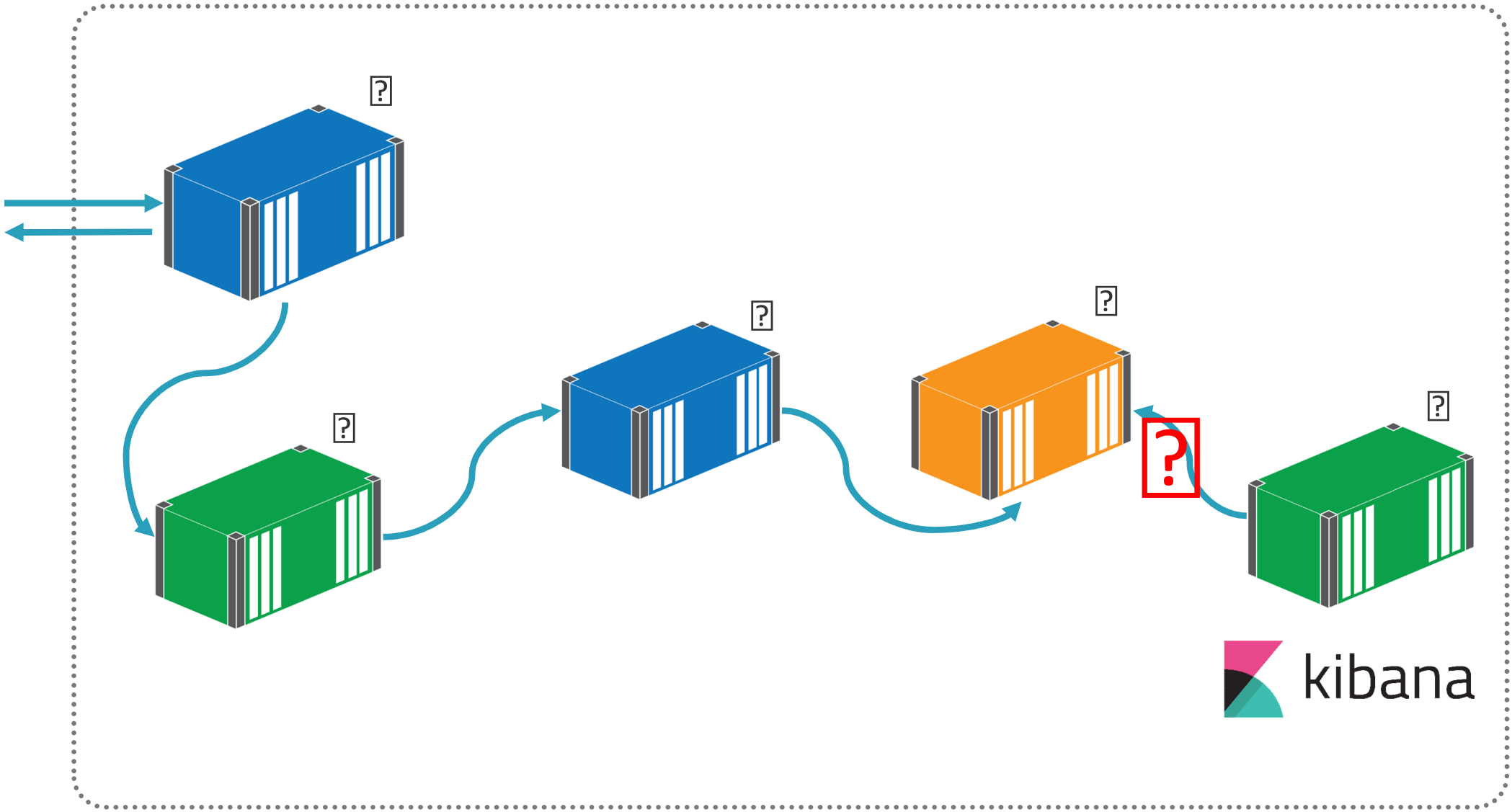



kibana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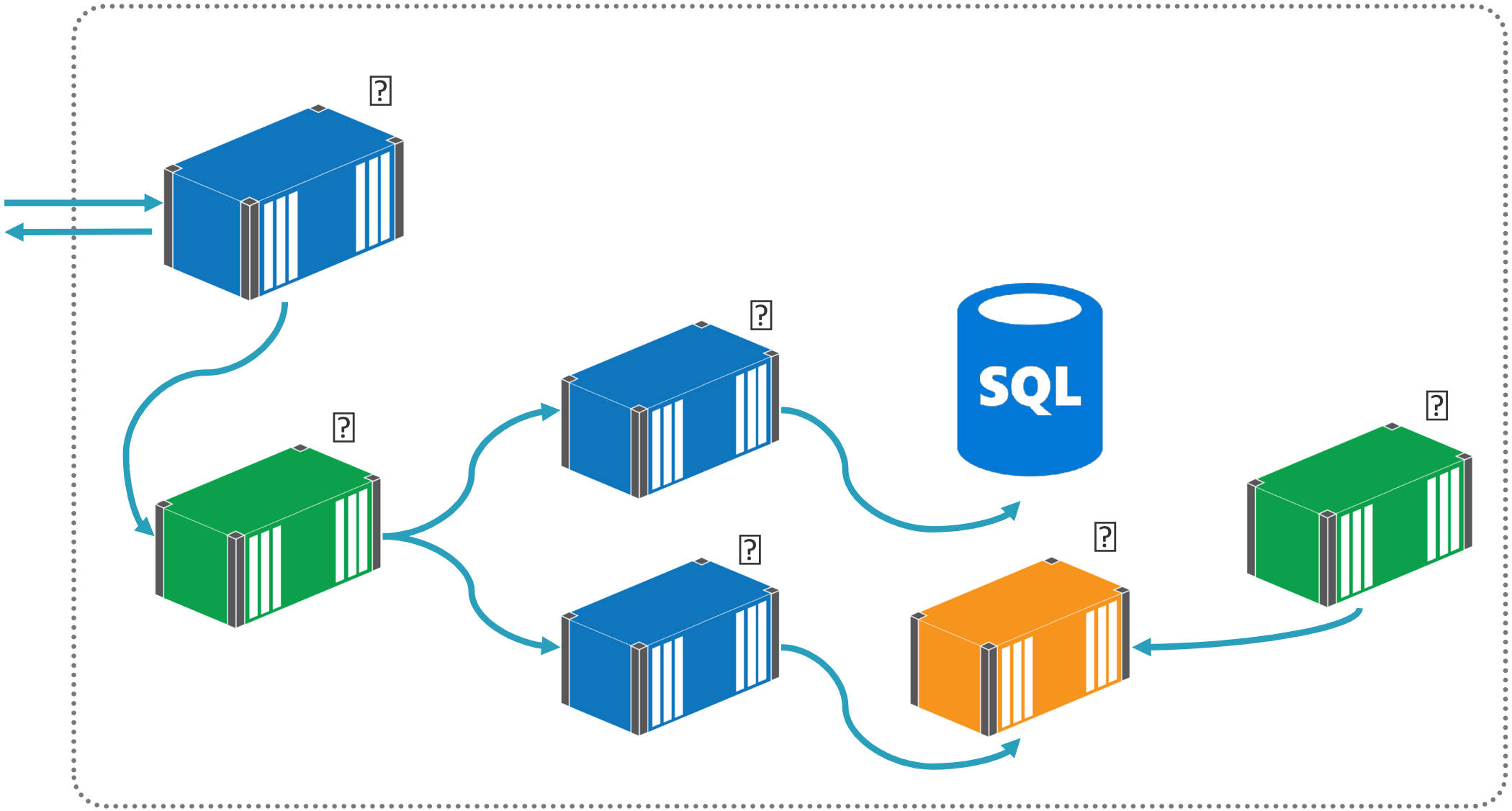
kibana


elasticsearch
kibana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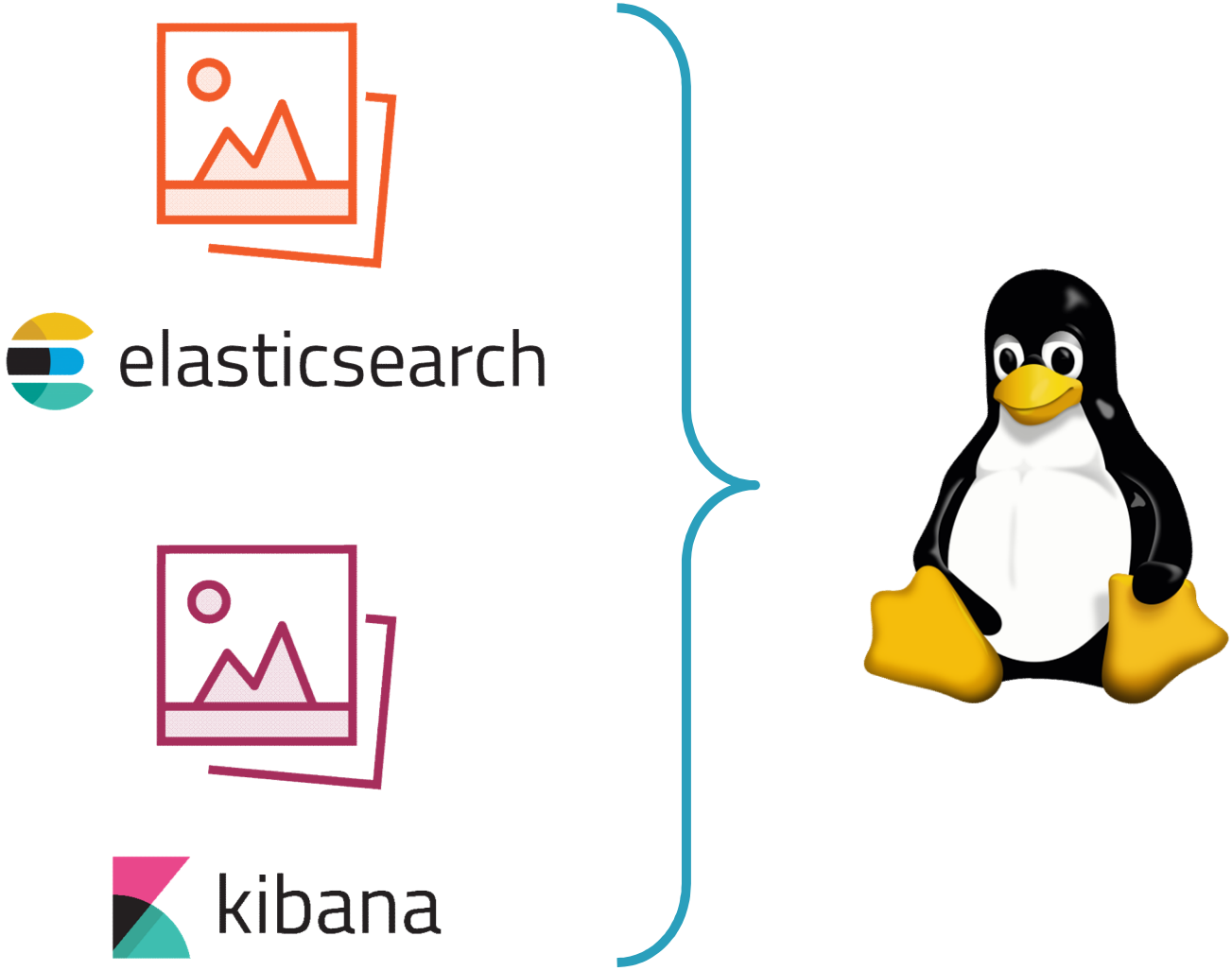
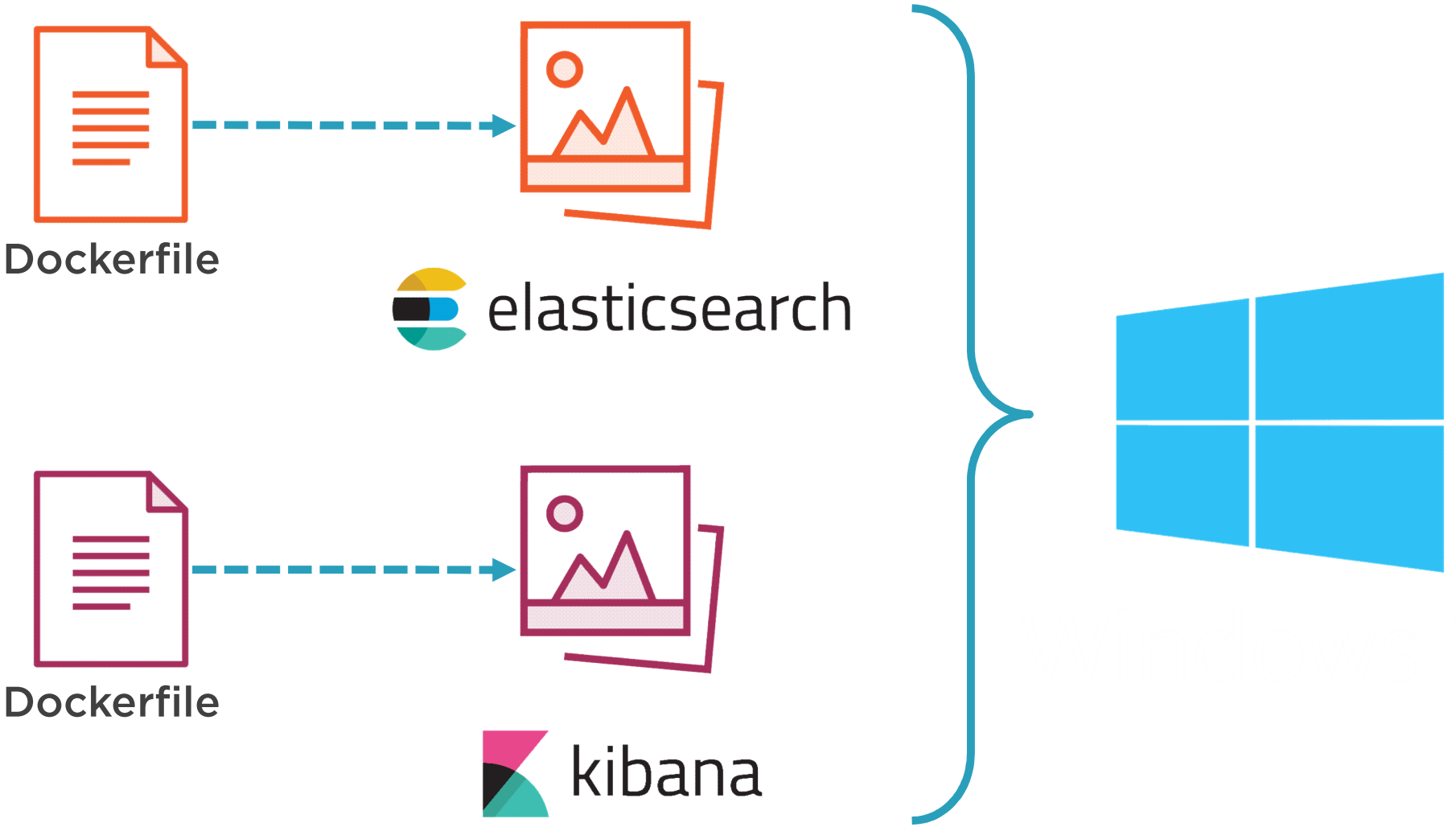
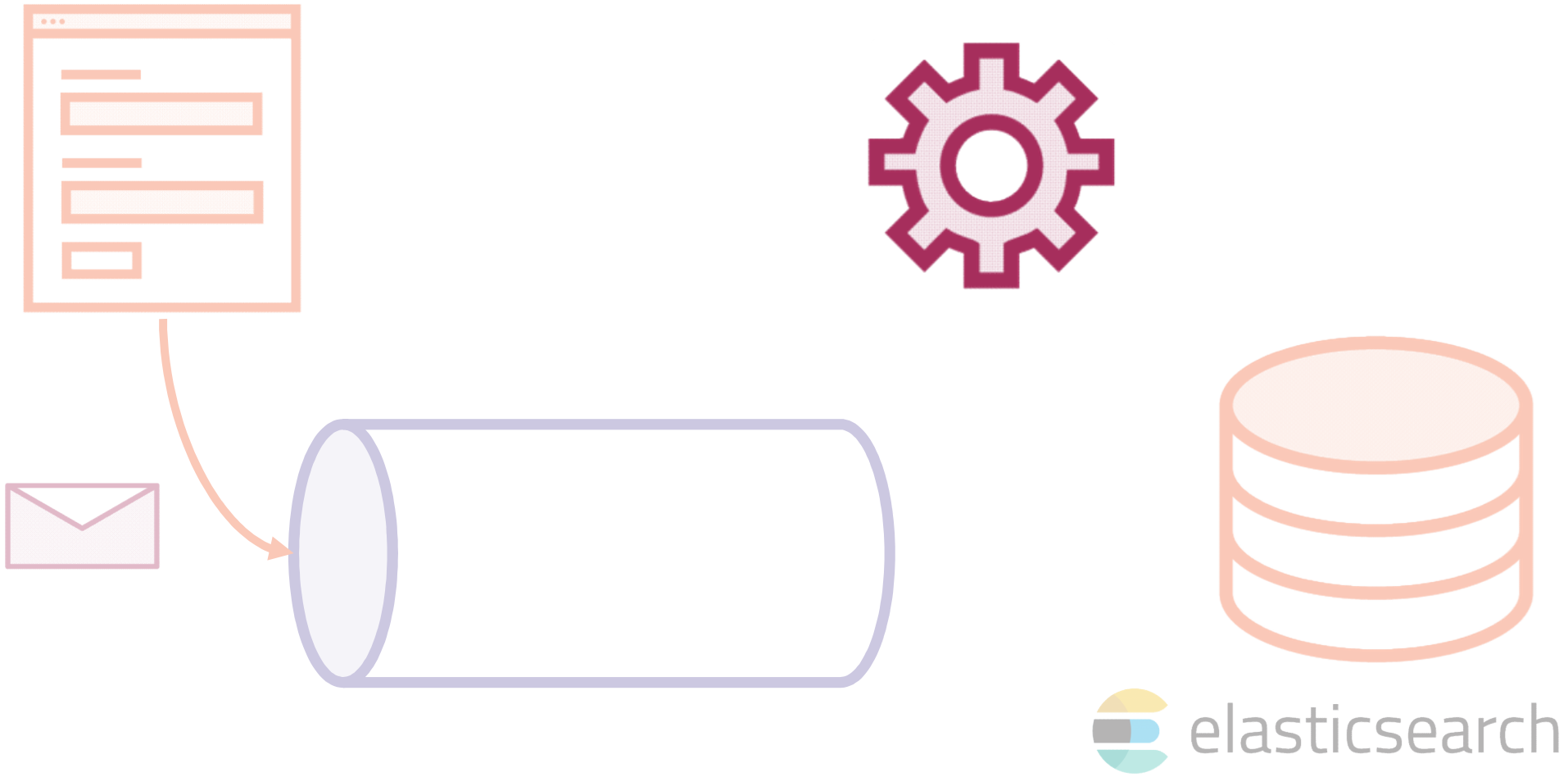
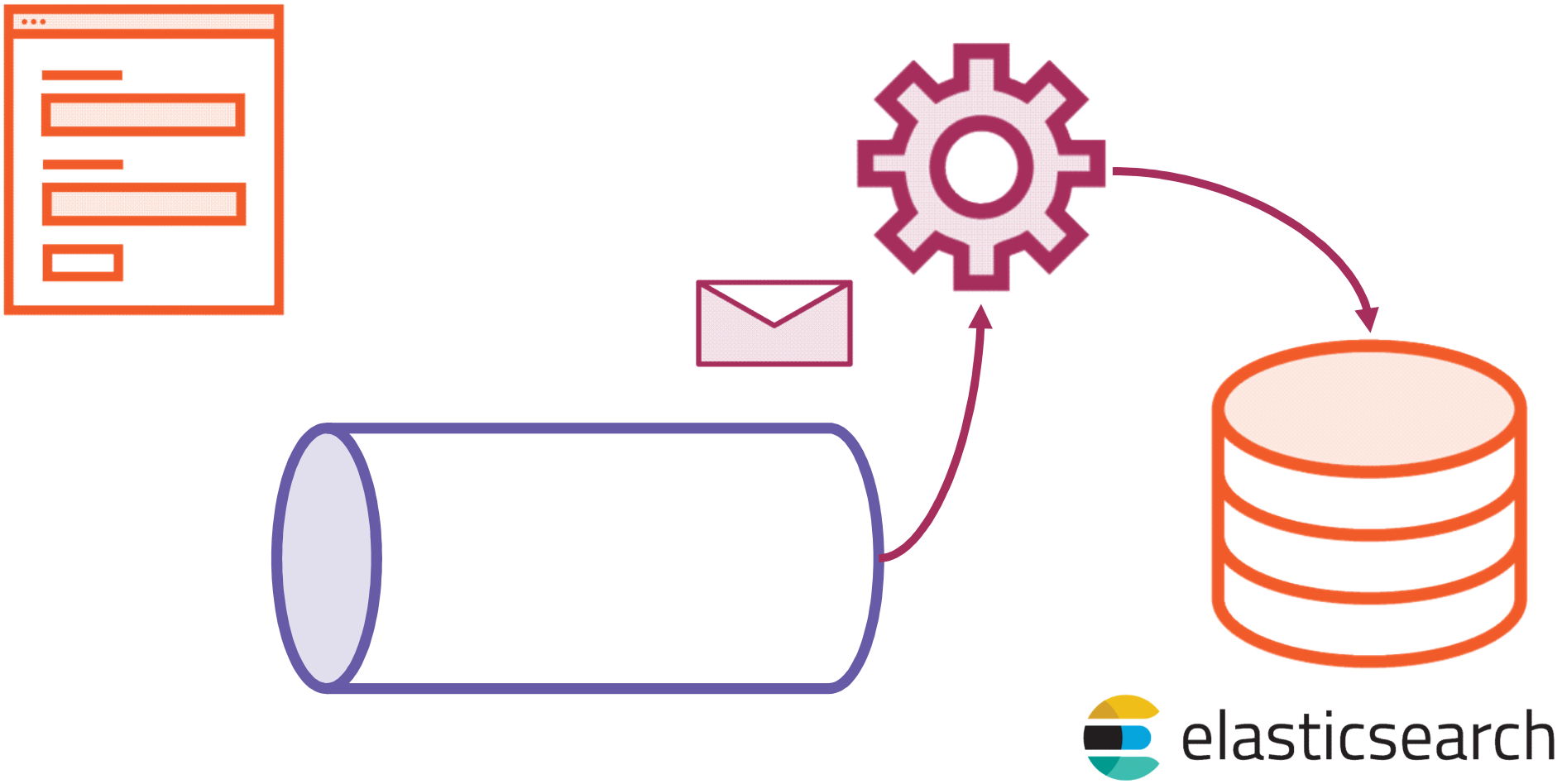
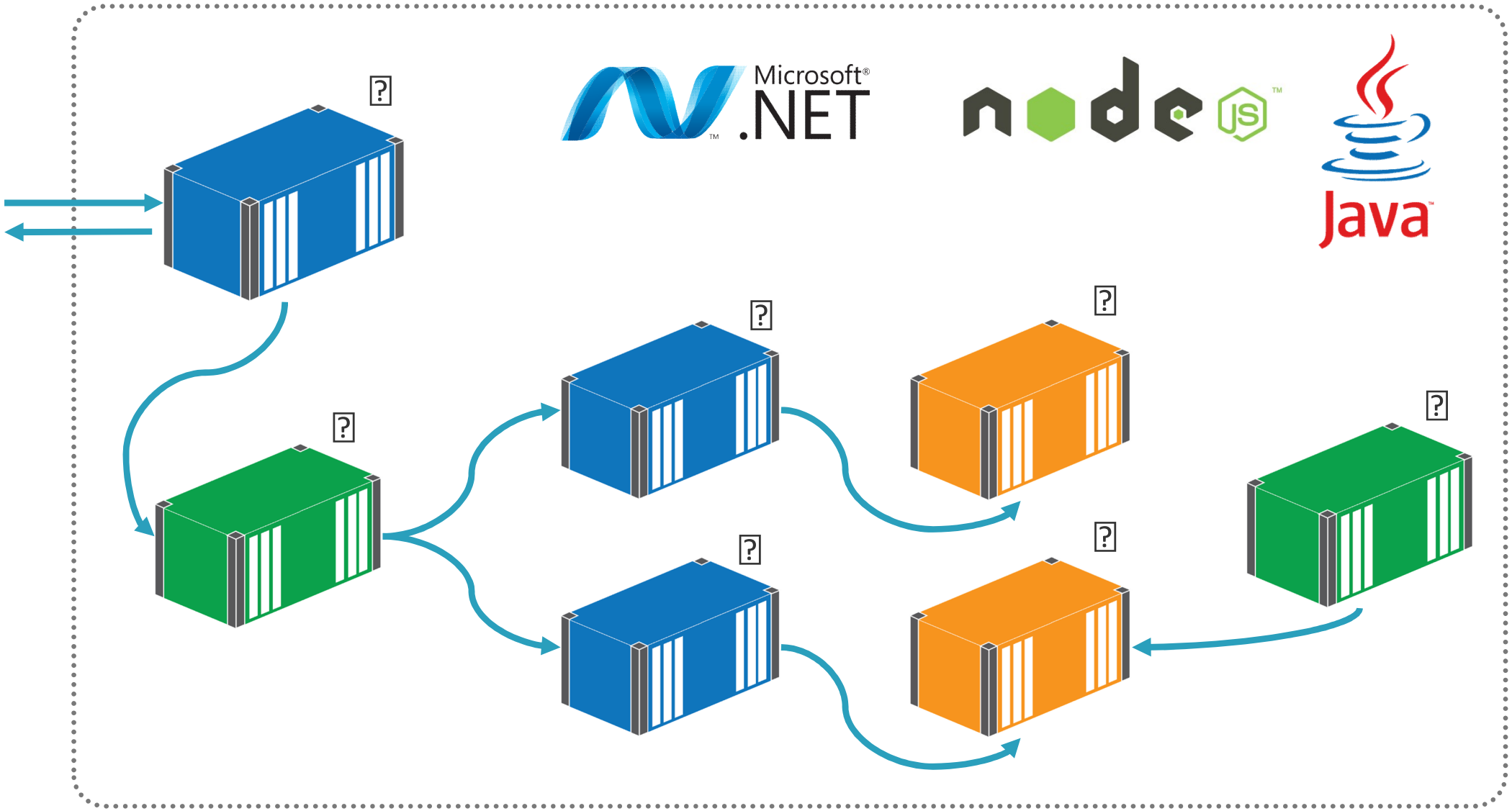

elasticsearch
kibana

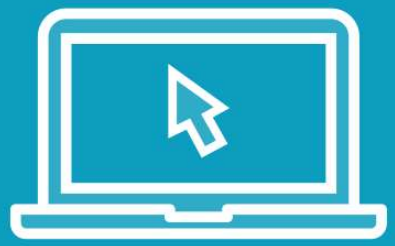

Dockerfile
elasticsearch
Dockerfile
kibana


elasticsearch


elasticsearch


Microsoft®
.NET
node
JS
Java

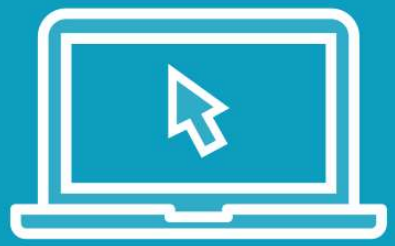
Demo



Elasticsearch in Docker on Windows

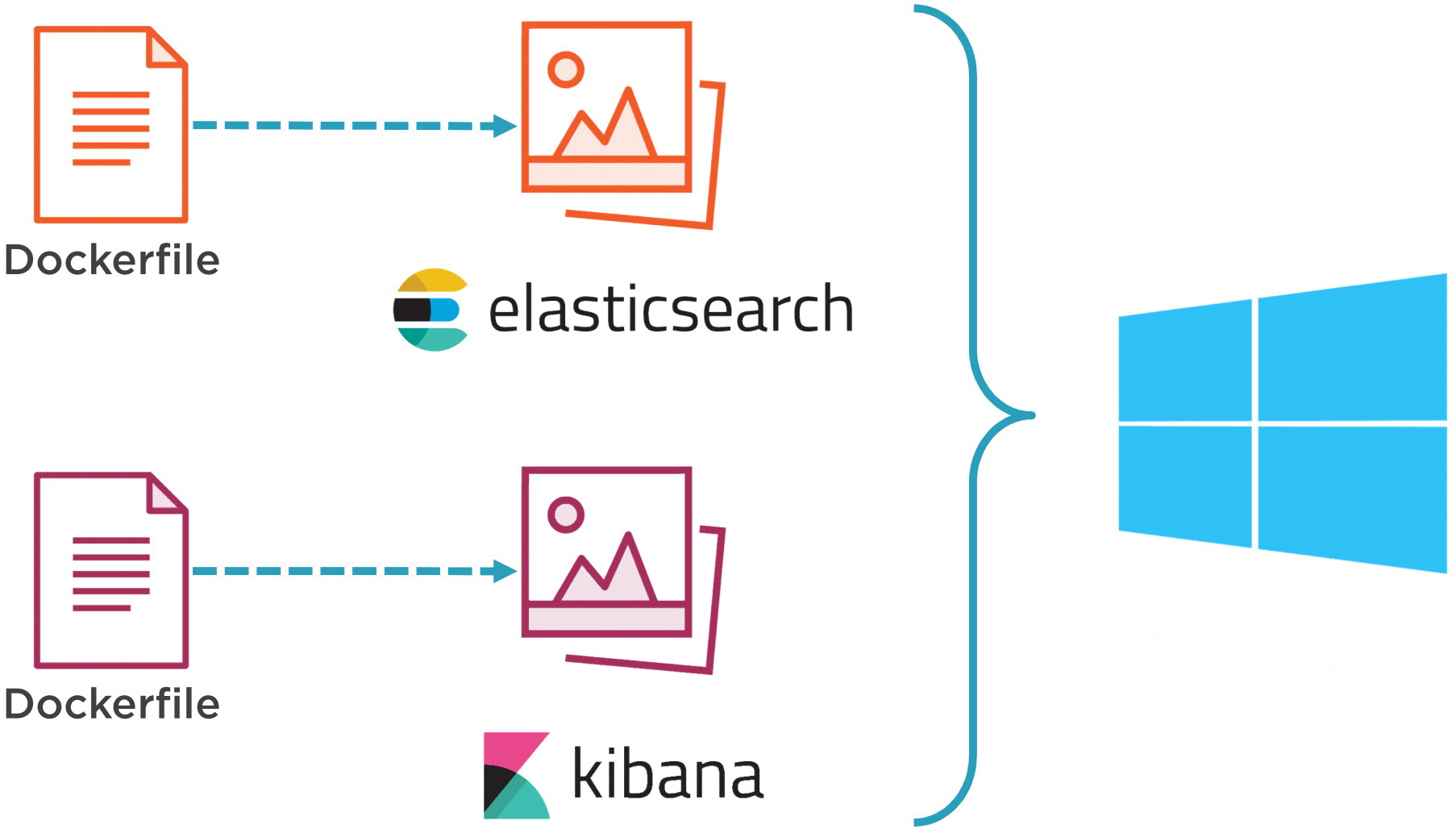
- Java on Nano Server
- Multi-stage Dockerfile
- Installation via download

Demo



Kibana in Docker on Windows

- Node.js on Nano Server
- Multi-stage Dockerfile
- Container connects to Elasticsearch


Dockerfile
elasticsearch
Dockerfile
kibana

```
RUN Invoke-WebRequest -outfile elasticsearch...; `
if ((Get-FileHash elasticsearch.zip -Algorithm sha1).Hash
   -ne $env:ES_SHA1) {exit 1} ; `
Expand-Archive elasticsearch.zip -DestinationPath C:\ ; `
Move-Item C:\elasticsearch-$($env:ES_VERSION) C:\...
```

Elasticsearch Installer

Download and security check

```
FROM openjdk:8-jdk-nanoserver

EXPOSE 9200 9300

WORKDIR C:\elasticsearch

CMD ".\bin\elasticsearch.bat"

COPY --from=installer C:\elasticsearch\ .
```

Elasticsearch Deployment

Copy from installer stage

```
RUN Invoke-WebRequest -outfile kibana.zip ...; `
if ((Get-FileHash kibana.zip -Algorithm sha1).Hash
   -ne $env:KIBANA_SHA1) {exit 1} ; `
Expand-Archive kibana.zip -DestinationPath C:\ ; `
Move-Item C:\kibana-$($env:KIBANA_VERSION) C:\...
```

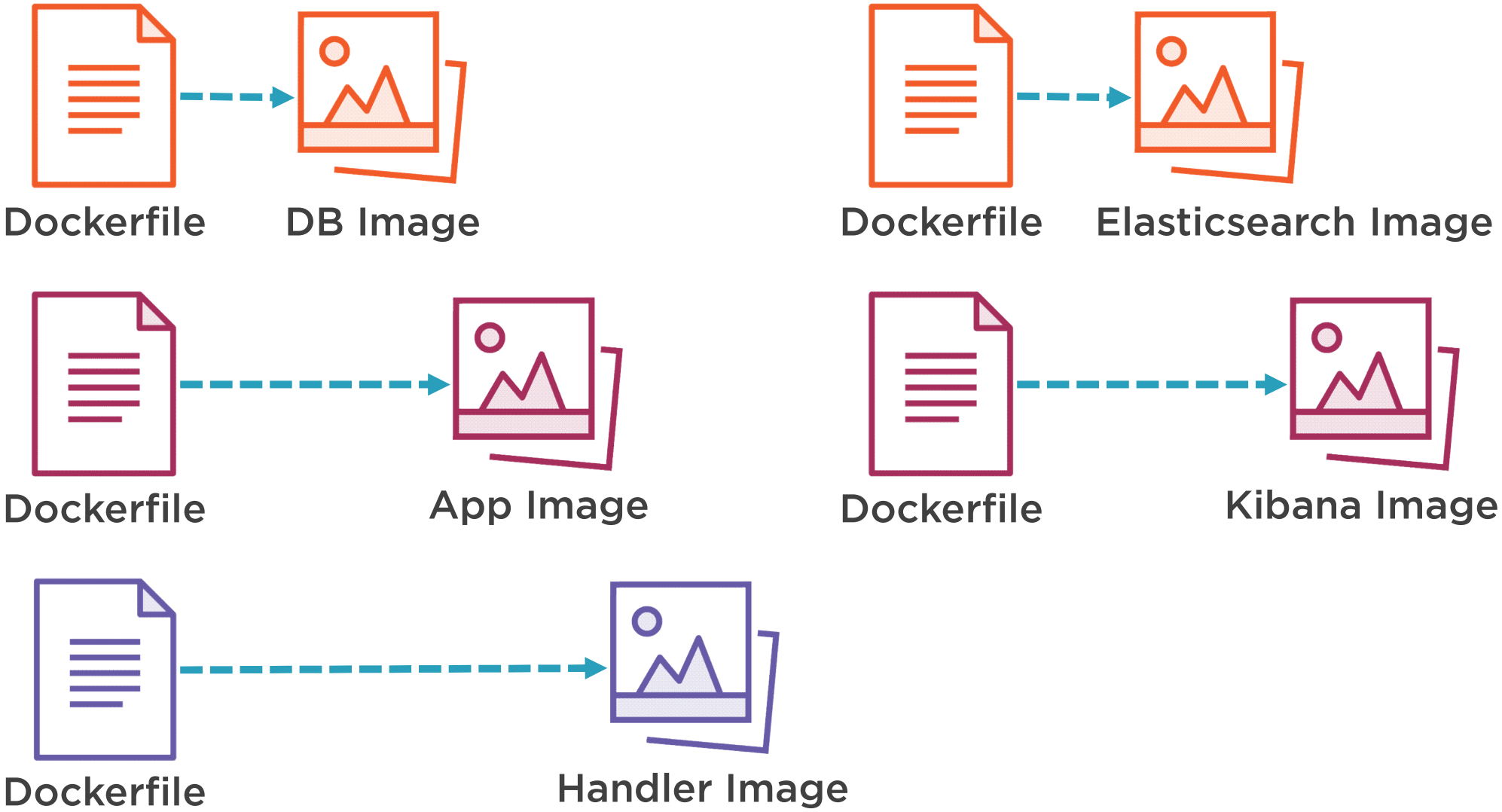
Kibana Installer

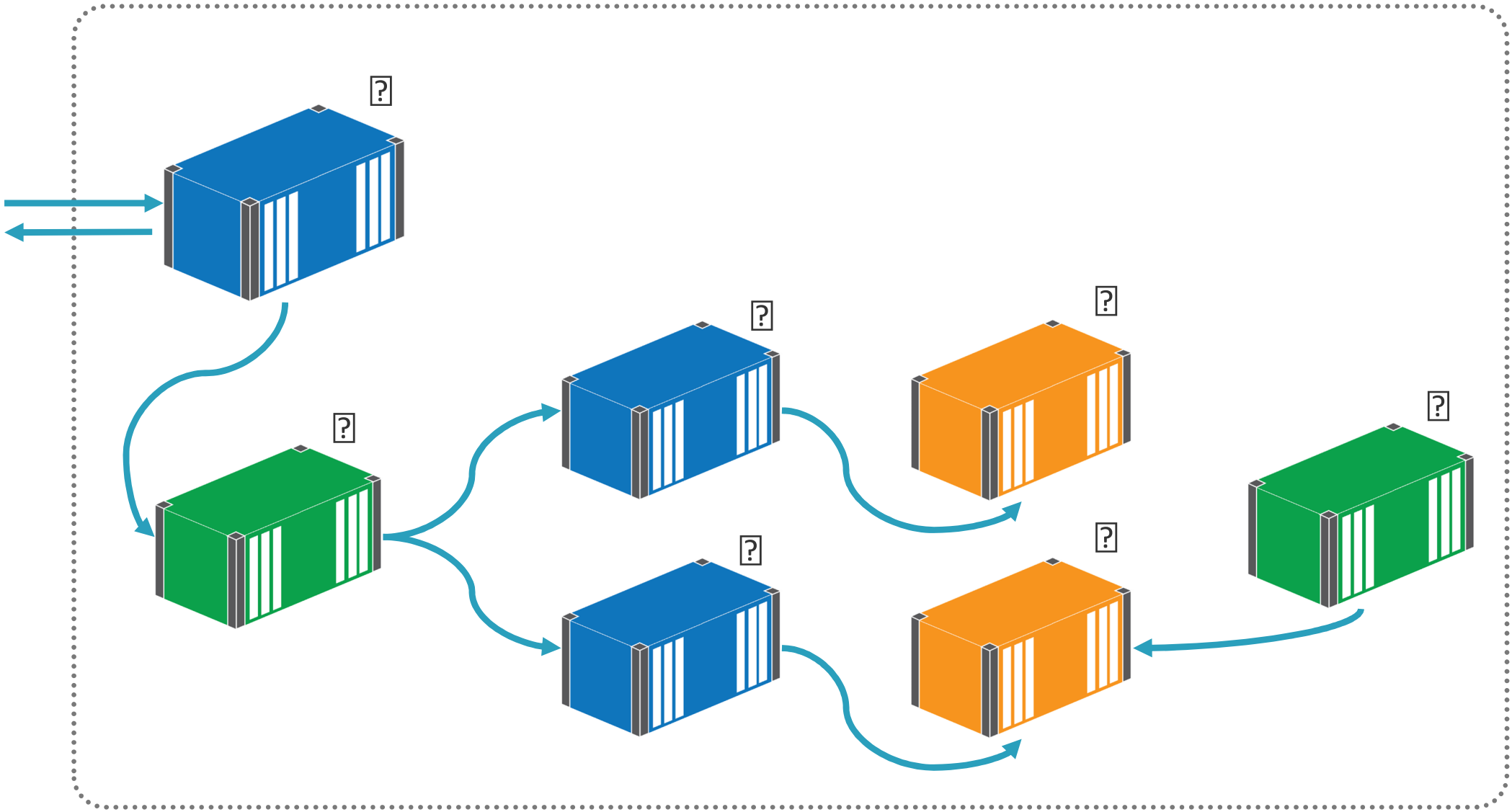
Download and security check

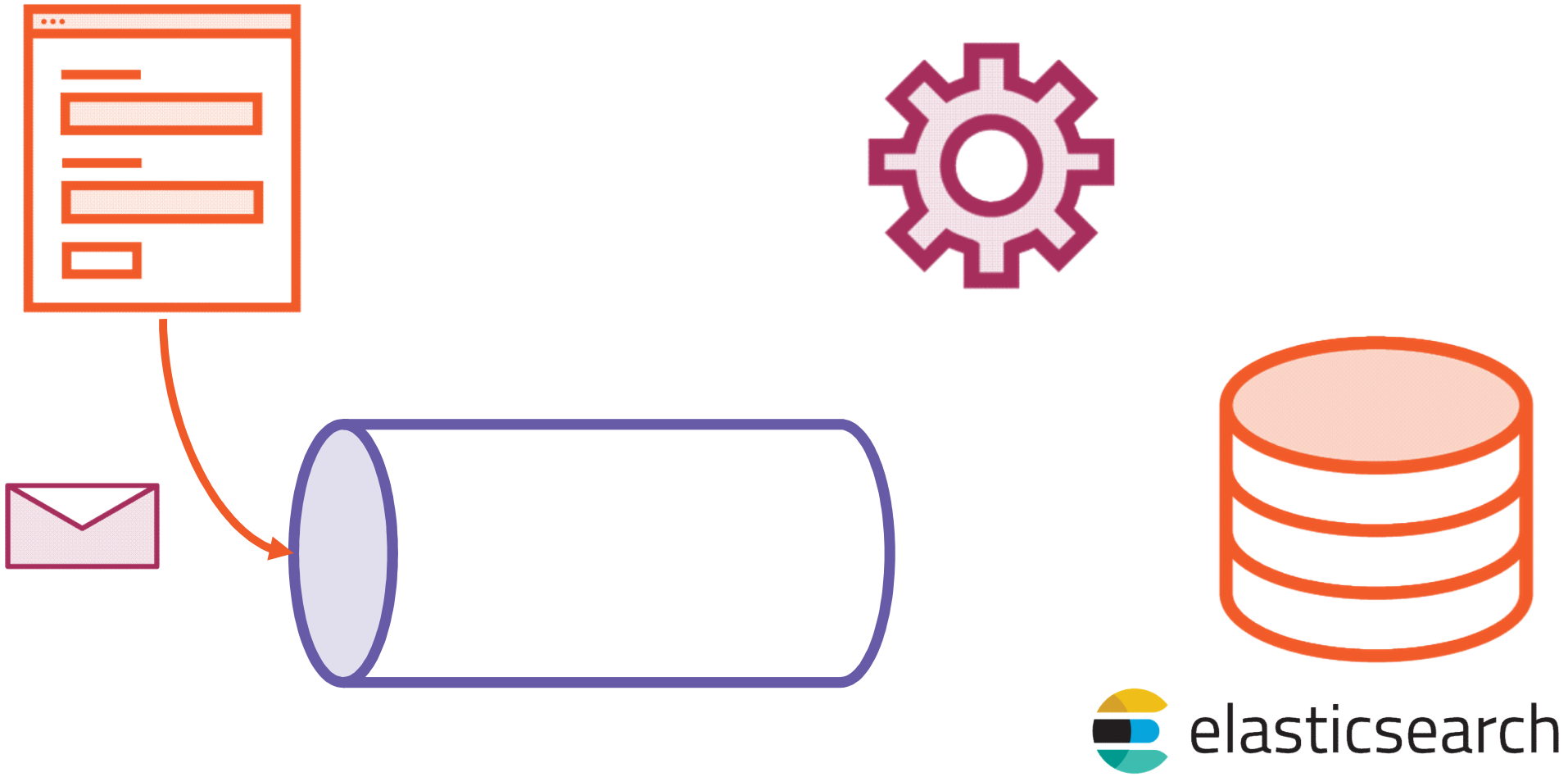
```
FROM microsoft/windowsservercore

EXPOSE 5601

WORKDIR C:\kibana

CMD ".\bin\kibana.bat"

COPY --from=installer C:\kibana\ .
```

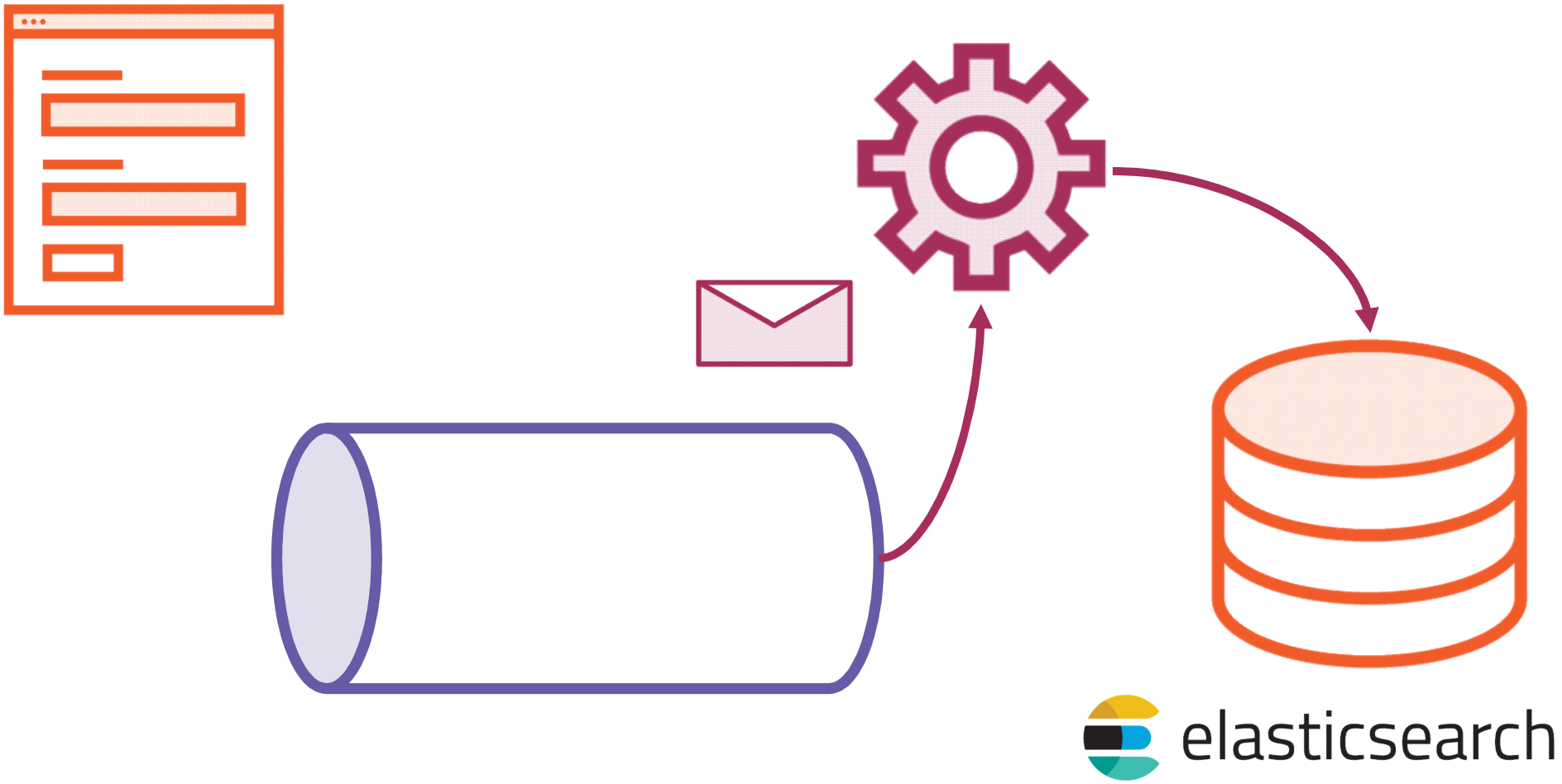
Kibana Deployment

Copy from installer stage

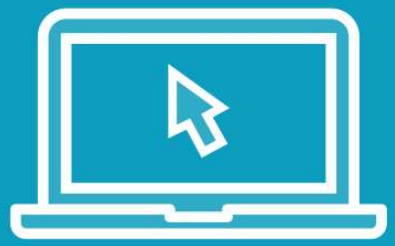

Dockerfile
DB Image
Dockerfile
Elasticsearch Image
Dockerfile
App Image
Dockerfile
Kibana Image
Dockerfile
Handler Image




elasticsearch


elasticsearch

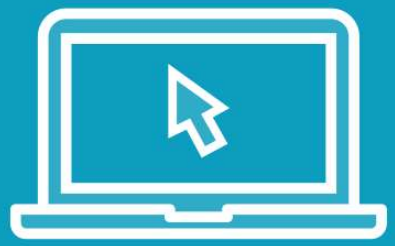
Demo



Elasticsearch Message Handler

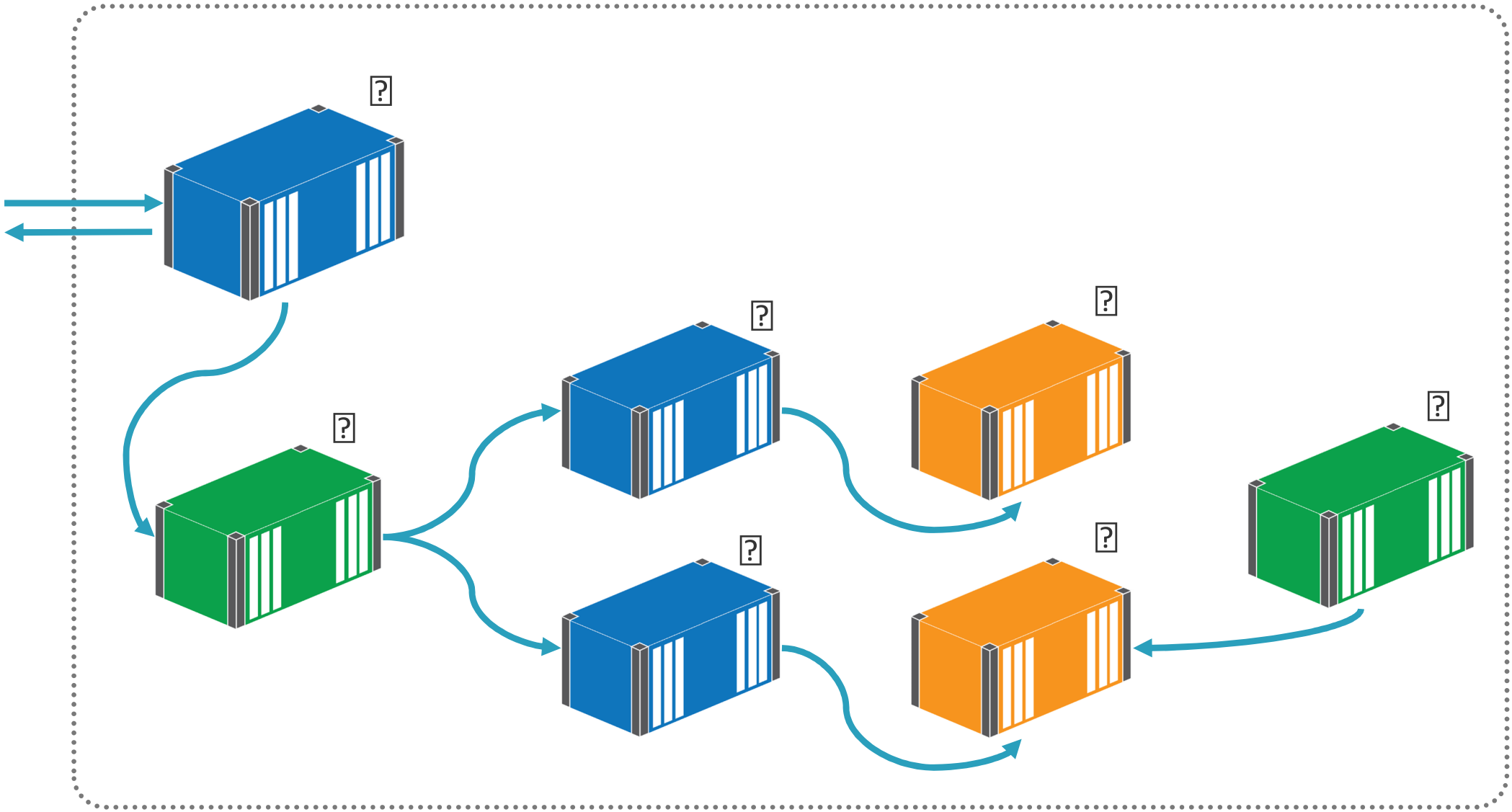
- .NET console app
- Subscribe to events
- Create documents in Elasticsearch

Demo



Dockerizing the Index Message Handler

- Multi-stage Dockerfile
- Building the Docker image
- Running the solution with analytics



```
using (var cx = MessageQueue.CreateConnection()) {
  var subscription = cx.SubscribeAsync(
      ViewerSignedUpEvent.MessageSubject, QUEUE_GROUP);
  subscription.MessageHandler += IndexProspect;
  subscription.Start();
```

Subscribe to Events

Queue group for Viewer Signed Up events

```
var viewer = new Documents.Viewer {
  Country = eventMessage.Viewer.Country.CountryName,
  FullName = $"{eventMessage.Viewer.FirstName}...",
  Role = eventMessage.Viewer.Role.RoleName,
  //etc.
```

Build Elasticsearch Document

Data transform logic

```
FROM sixeyed/msbuild:netfx-4.5.2 AS builder

COPY packages.config .

RUN nuget restore

COPY src C:\src

RUN msbuild SignUp.MessageHandlers.IndexProspect.csproj
```

Message Handler Dockerfile

Builder stage

```
FROM microsoft/windowsservercore
ENV MESSAGE_QUEUE_URL="nats://message-queue:4222" `
    ELASTICSEARCH_URL="http://elasticsearch:9200"
CMD .\SignUp.MessageHandlers.IndexProspect.exe
COPY --from=builder C:\out\index-prospect\ .
```

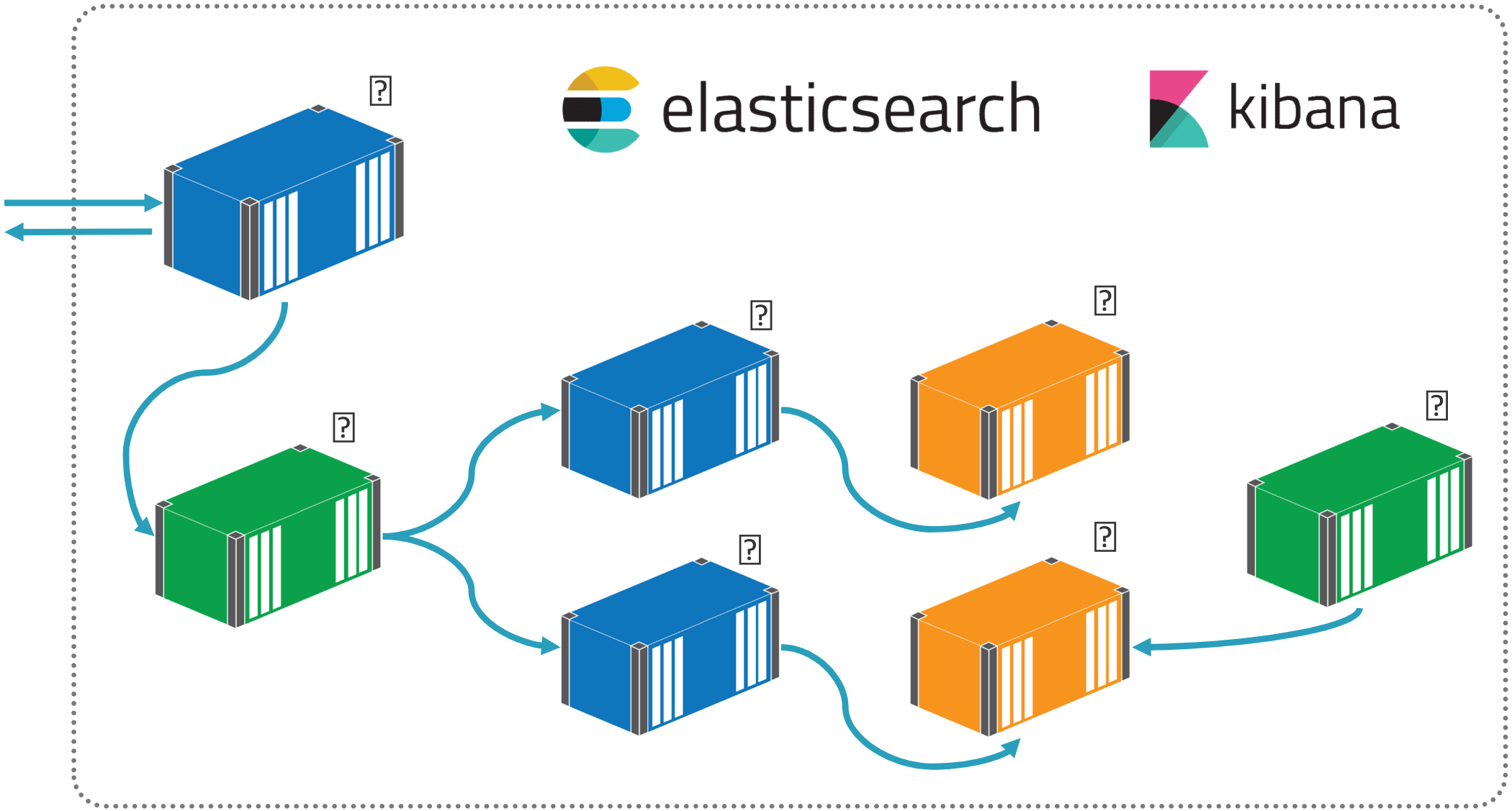
Message Handler Dockerfile

Packaging stage

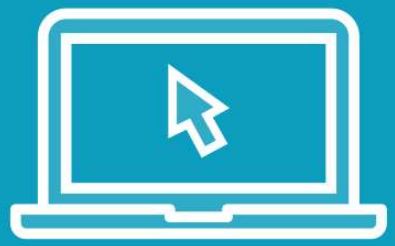
```
docker container run -d --name elasticsearch `
    elasticsearch
docker container run -d webinar-index-handler
docker container run -d -P kibana
```

Zero-Downtime Deployment

No change to existing containers

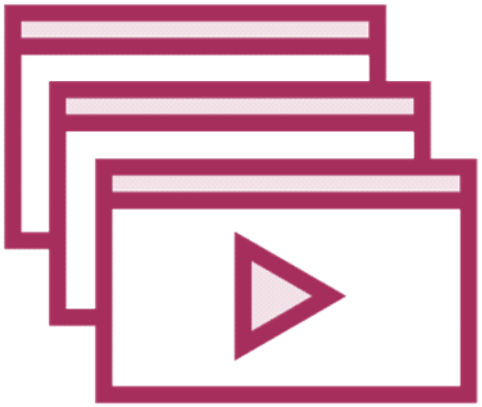

elasticsearch
kibana

Demo



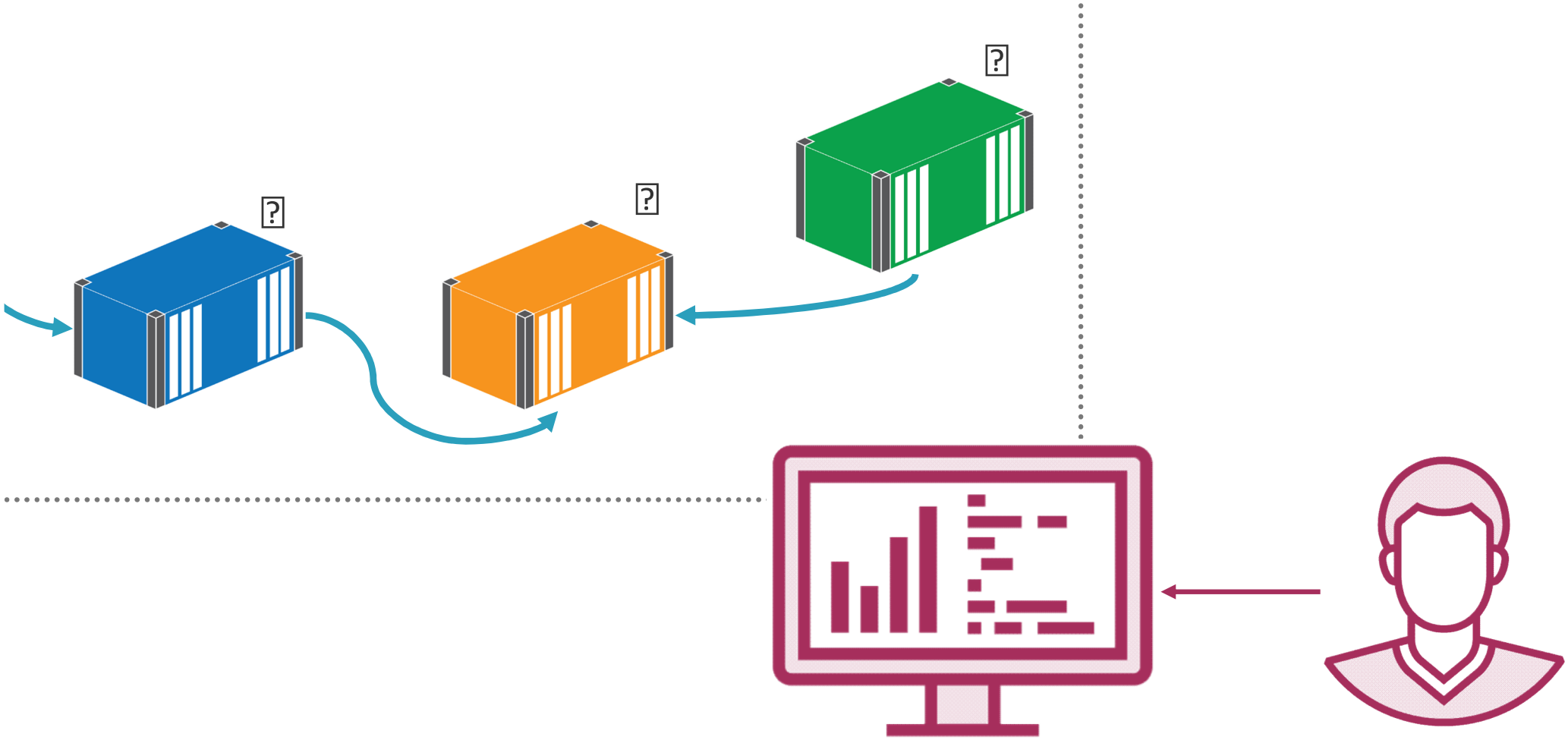
End-to-End Testing in Containers

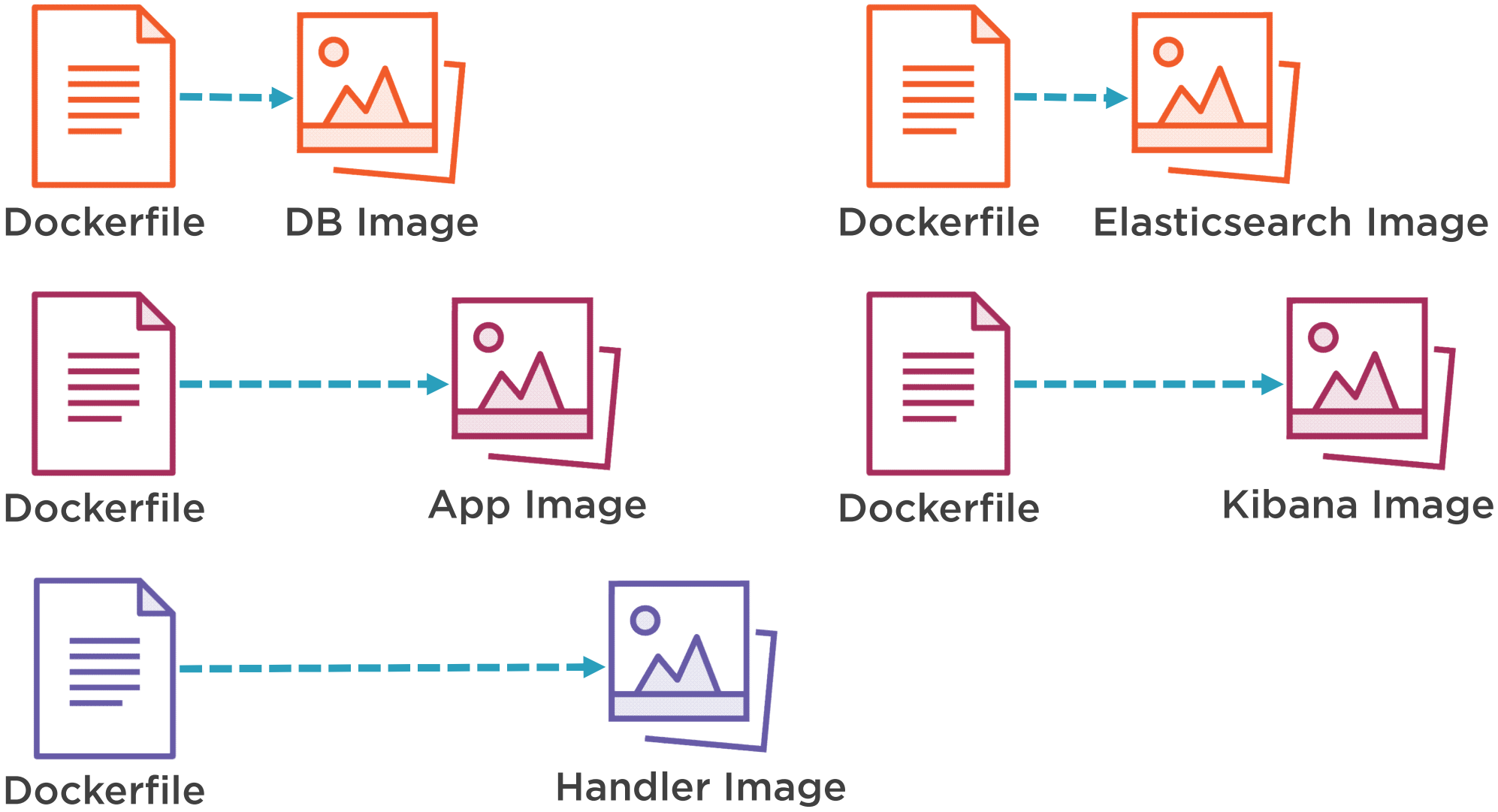
- SpecFlow tests simulate users
- Headless web browser
- Tests run in a container



Executable Specifications: End-to-End Acceptance Testing With SpecFlow

- Elton Stoneman




Dockerfile
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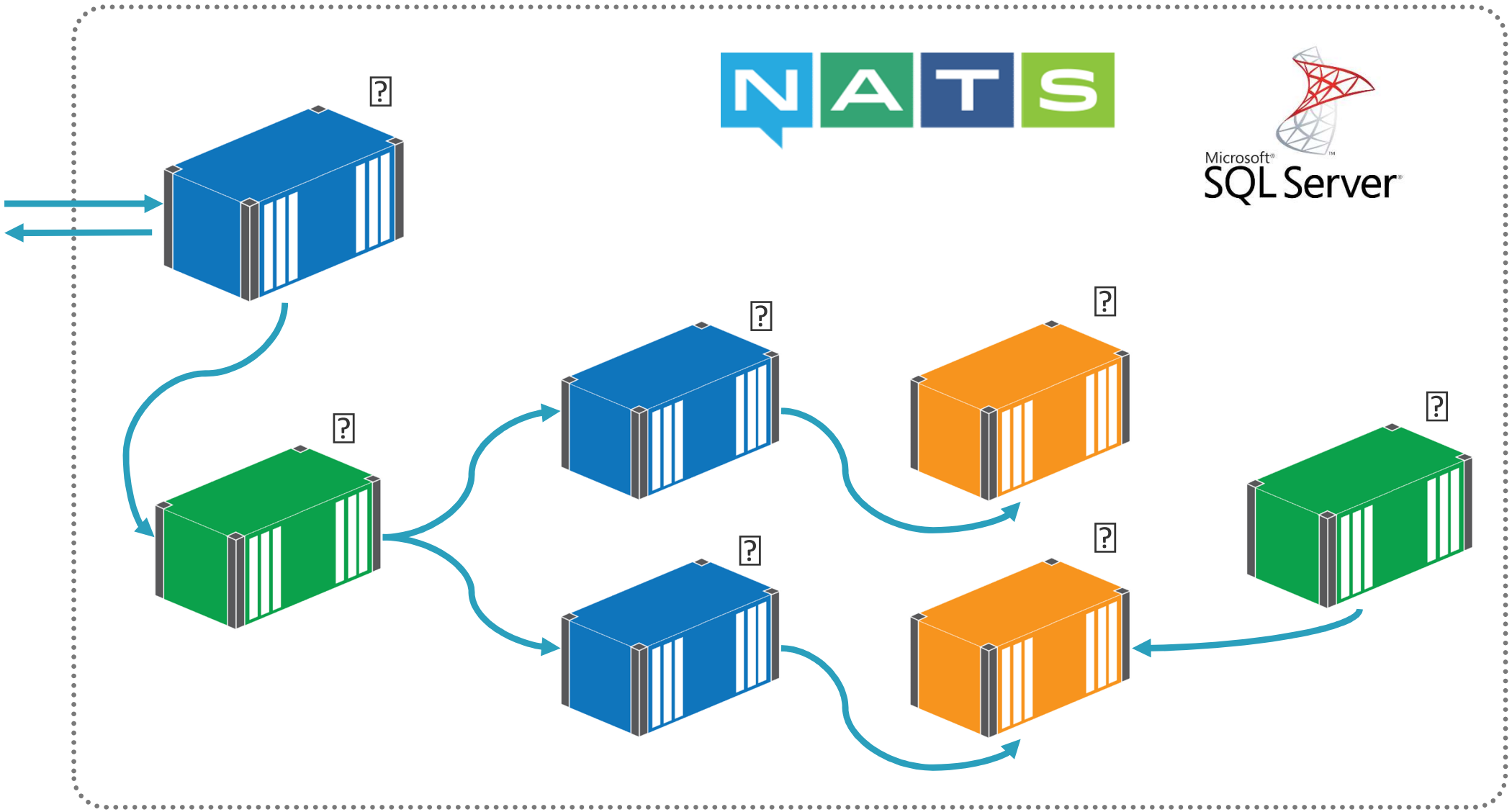
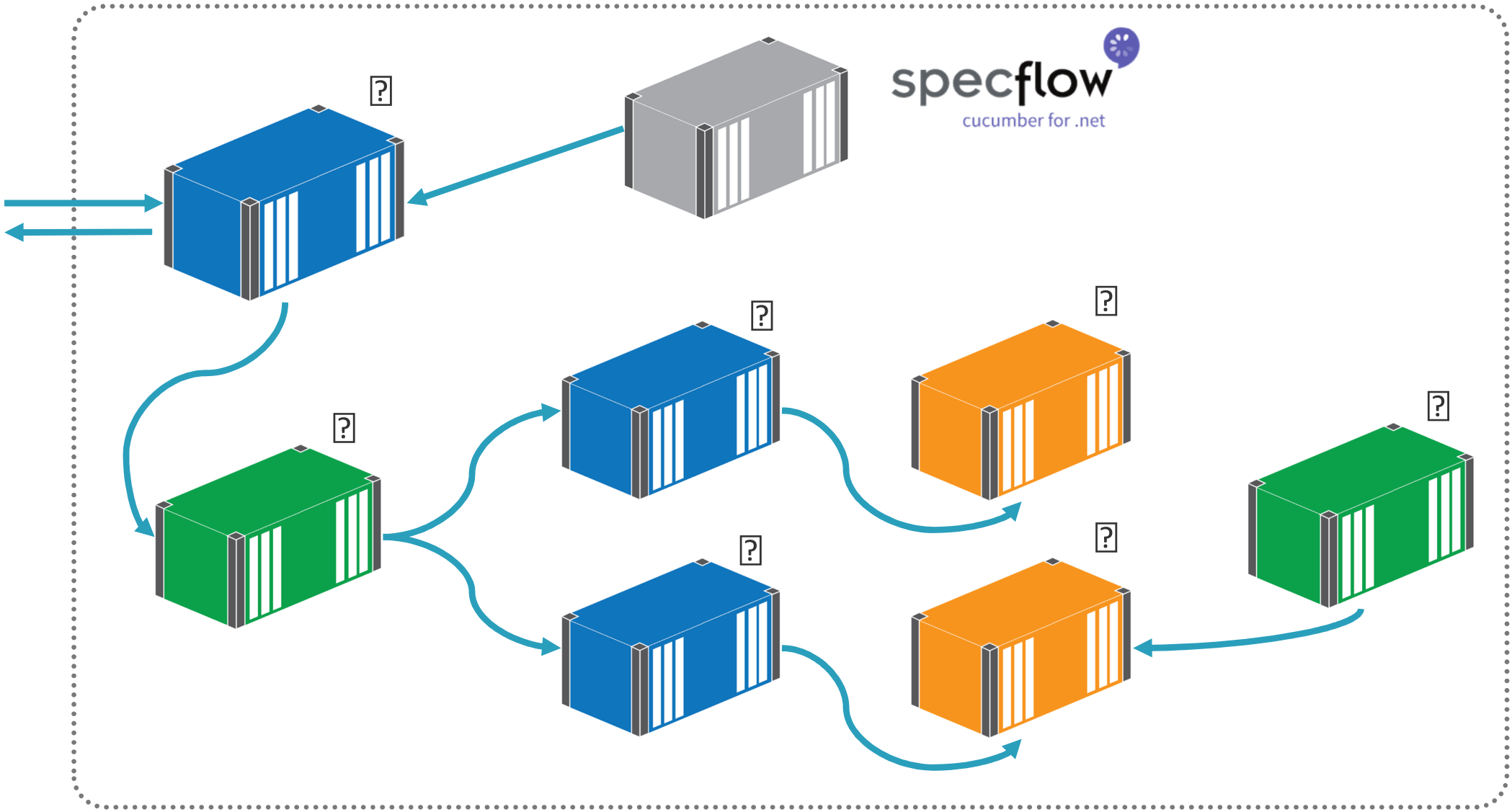
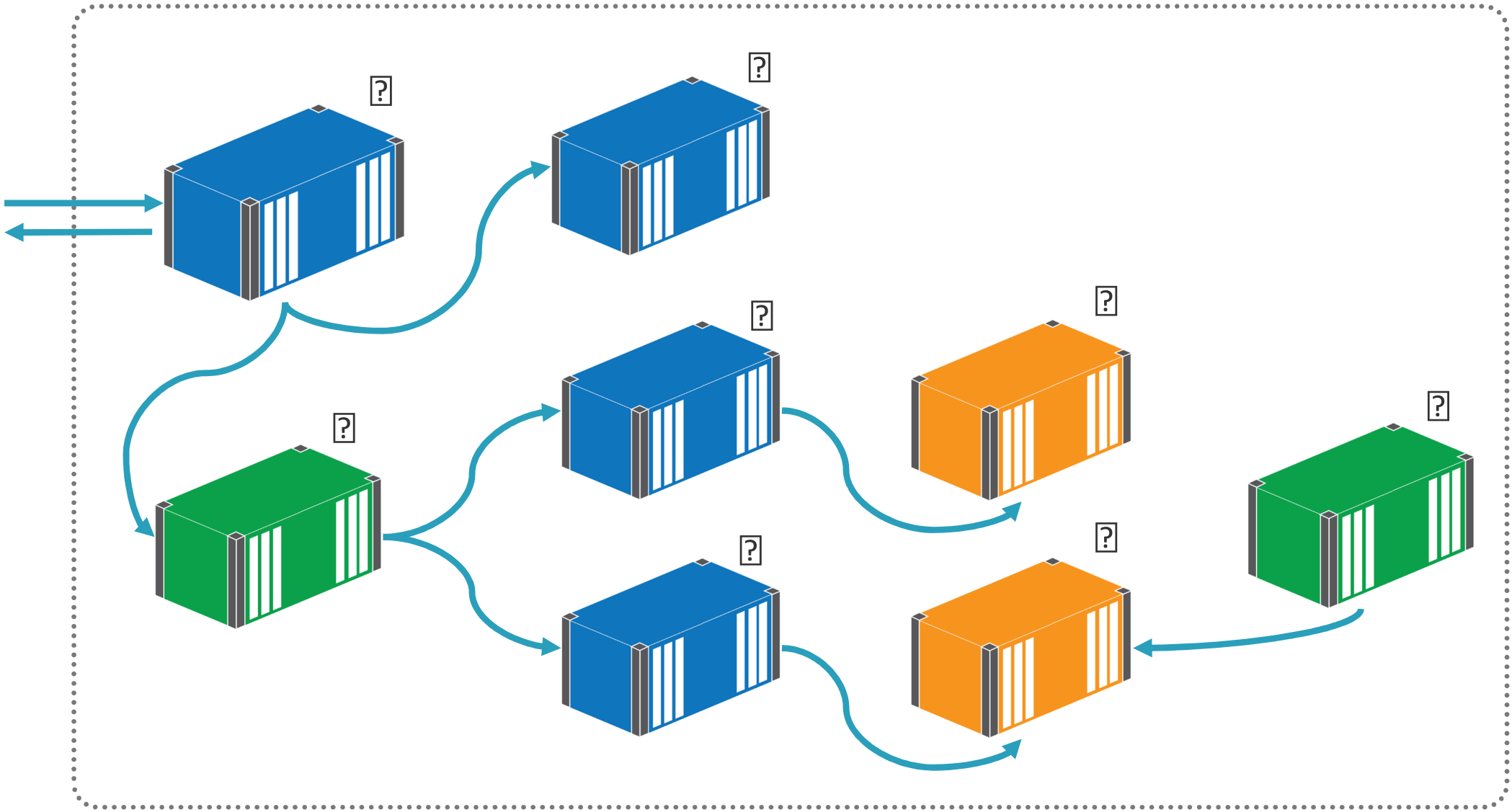

NATS
Microsoft
SQL Server


specflow
cucumber for .net

Container-first design

- End-to-end integration tests
- Verify the whole solution
- Easy, fast and reliable



Coming Next

UI Features

- Extracted into a separate component
- Using CMS for self-service content