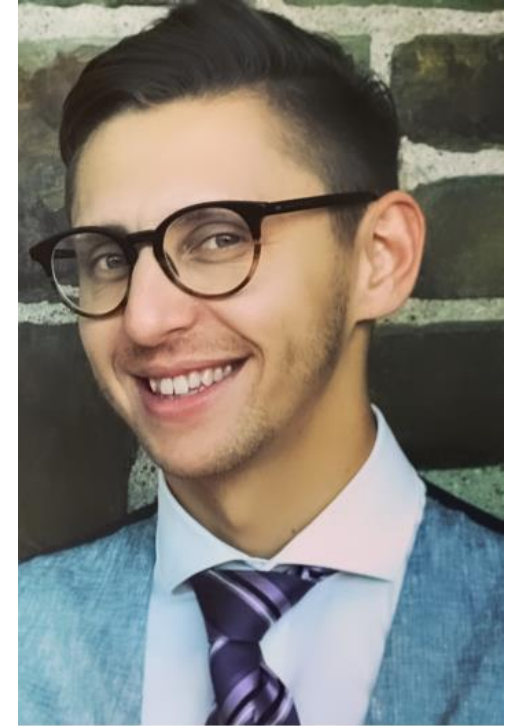




Provisionierung und Firmware Rollout mit Docker Swarm

Alexander Fugmann

Trainer Automation
Ing. & M.Eng



Agenda

Swarm....?

Introduction & Wording

Use Cases

WAGO Automation Products

Edge Controller
Swarm Manager

Live

Q&A

alexander.fugmann@wago.com

Swarm...?





Docker

Docker Compose

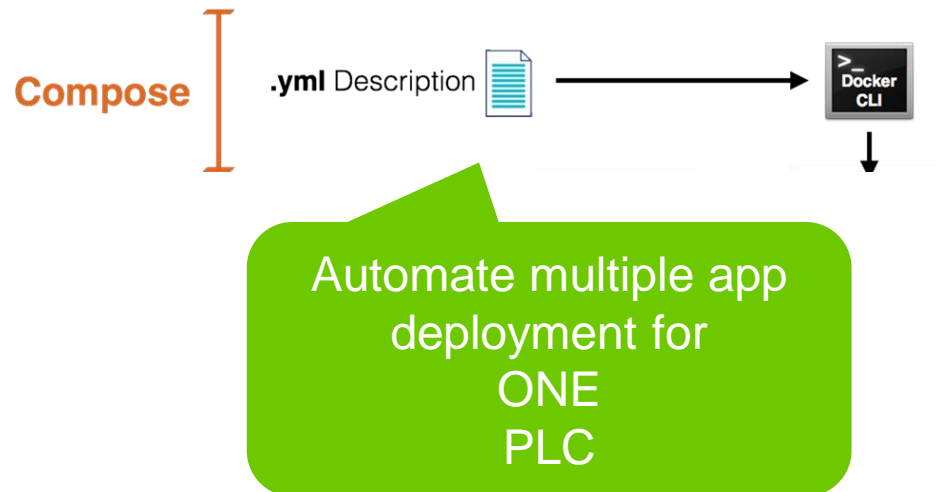
Docker Swarm

Docker



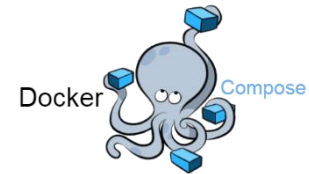
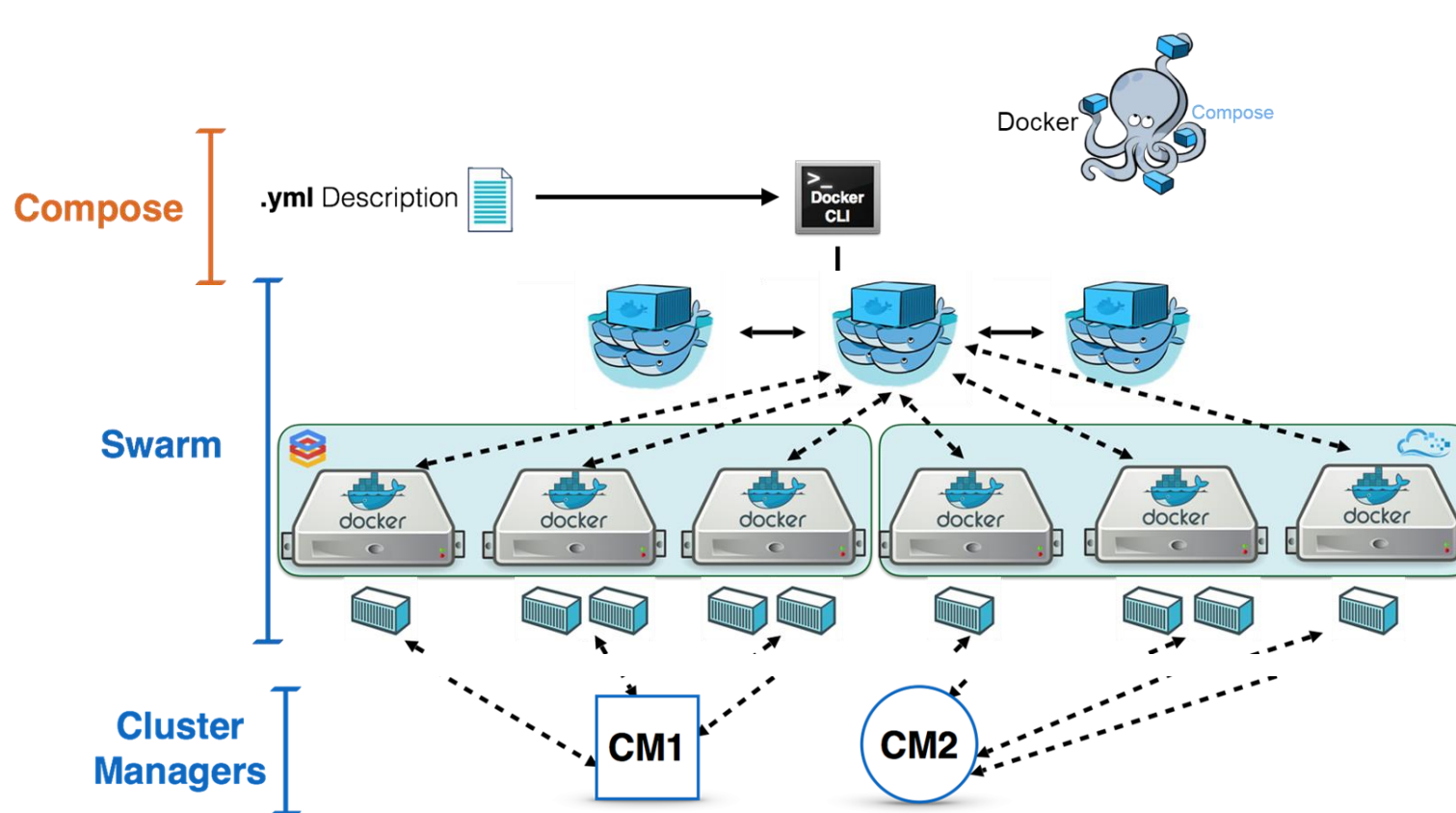
Container „App-Store“
for PLC

Docker Compose



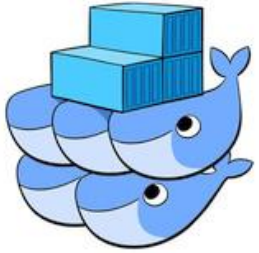
```
docker-compose.yml x
1  version: '3.5'
2
3  services:
4      nodered:
5          depends_on:
6              - db
7          image: wagoautomation/node-red:latest
8          container_name: nodered
9          volumes:
10             - node_red_user_data:/data
11             - node_red_user_datacgroup:/sys/fs/cgroup
12          ports:
13             - "1880:1880"
14          restart: always
15      db:
16          image: influxdb:latest
17          volumes:
18             - db_data:/var/lib/influxdb
19          restart: always
20          container_name: influxdb
21          ports:
22             - "8083:8083"
23             - "8086:8086"
24             - "8090:8090"
25      db2:
26          image: turgon37/armhf-mariadb
```

Docker Swarm



Manage multiple
app deployment for
ALL
PLCs

Cluster Manager



kubernetes

k3s



Properties

- Stateful
 - Information storage not by default
- Load balancing included
 - Application „shift“ is technically an „destroy and recreate“ of a container



Use cases

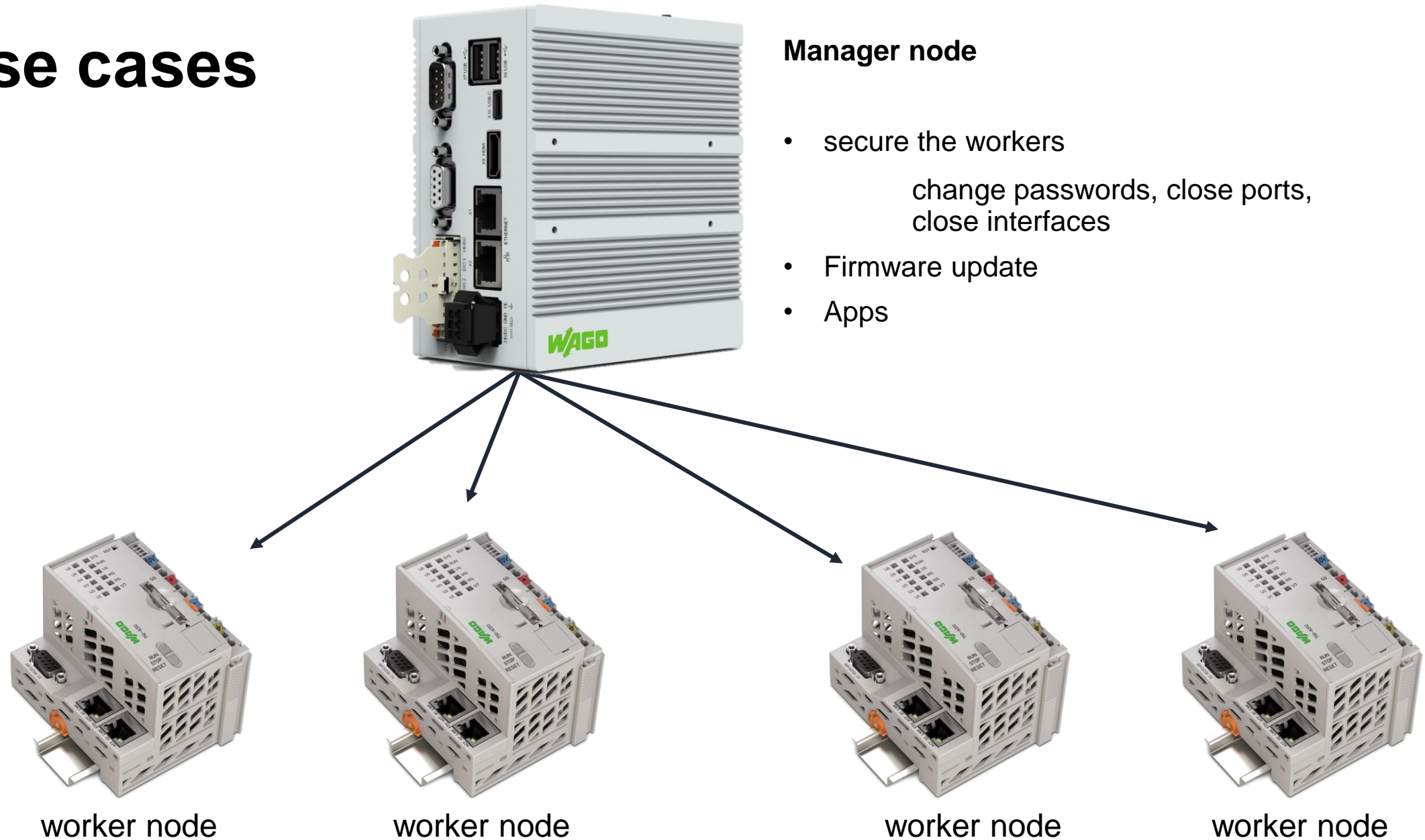
2

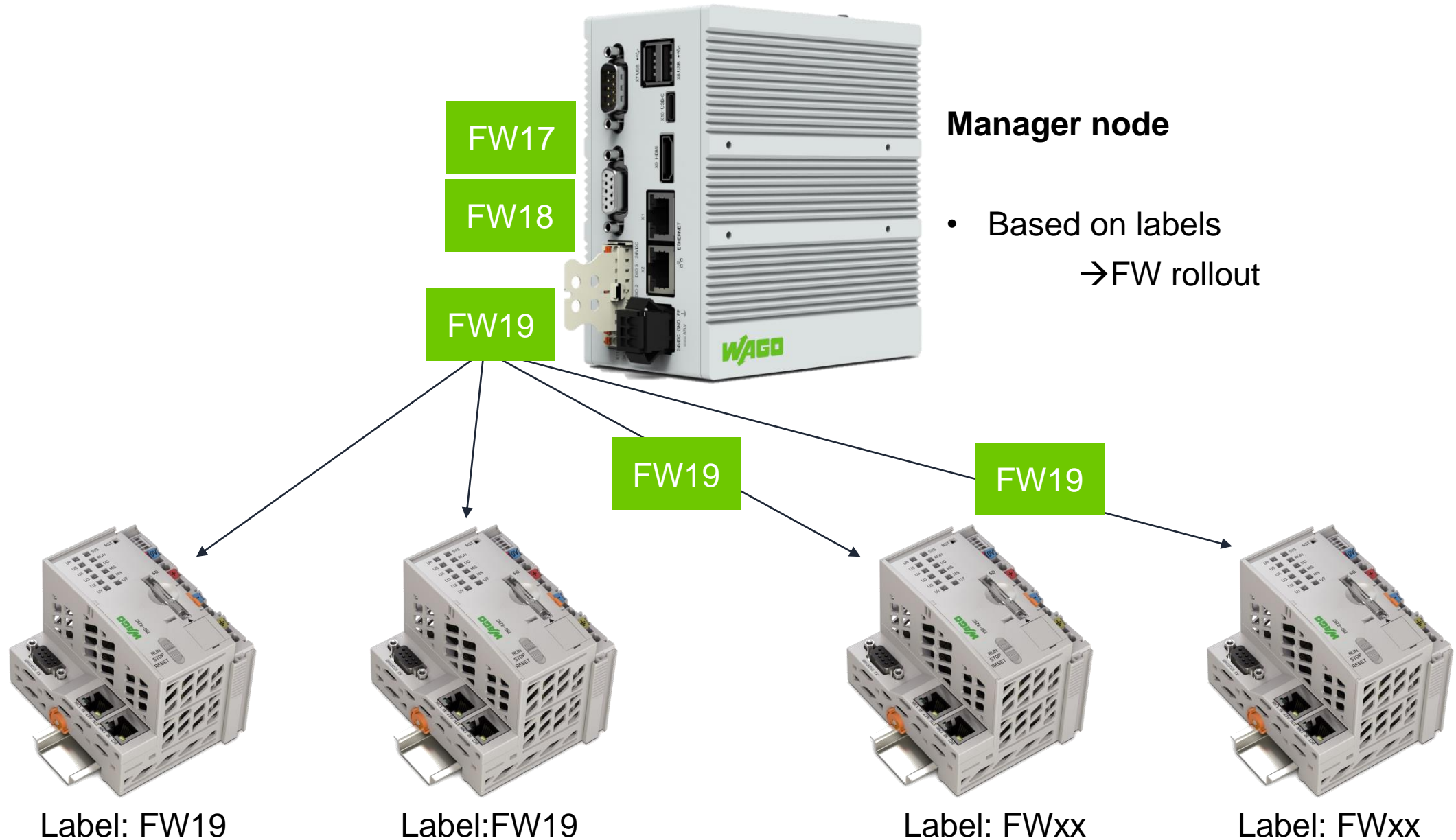
Use cases

- Lot of PFCs are installed and are running the same program
 - In a ship for controlling a cabin (1000 – 1500 PFCs)
 - In a building for controlling bureaus (300 – 2000 PFCs)
 - In an industrial building controlling light of the production lines



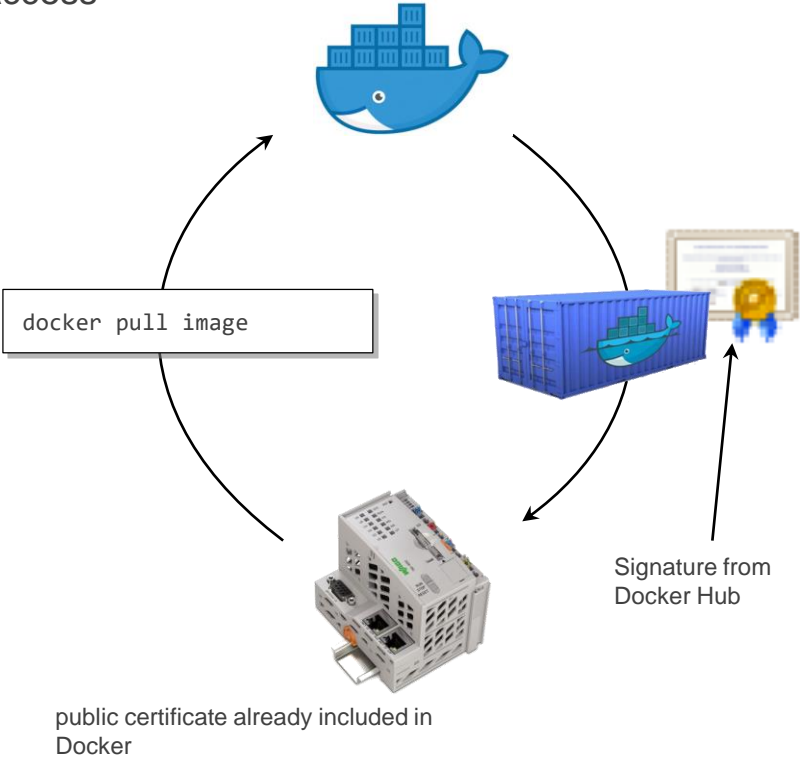
Use cases



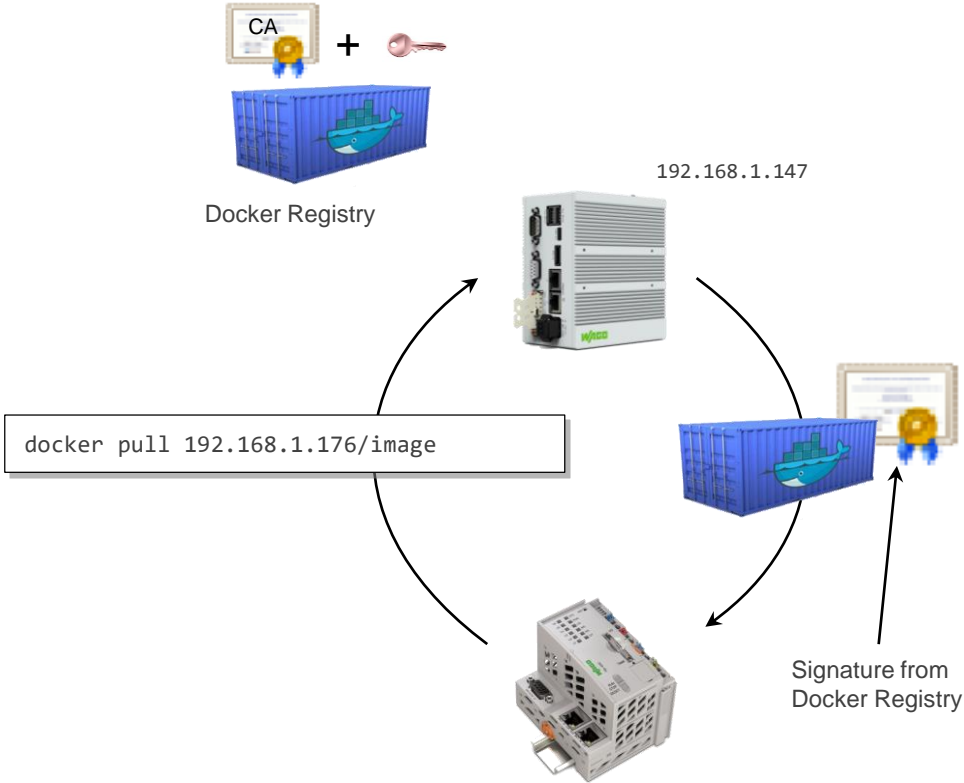


Only signed images

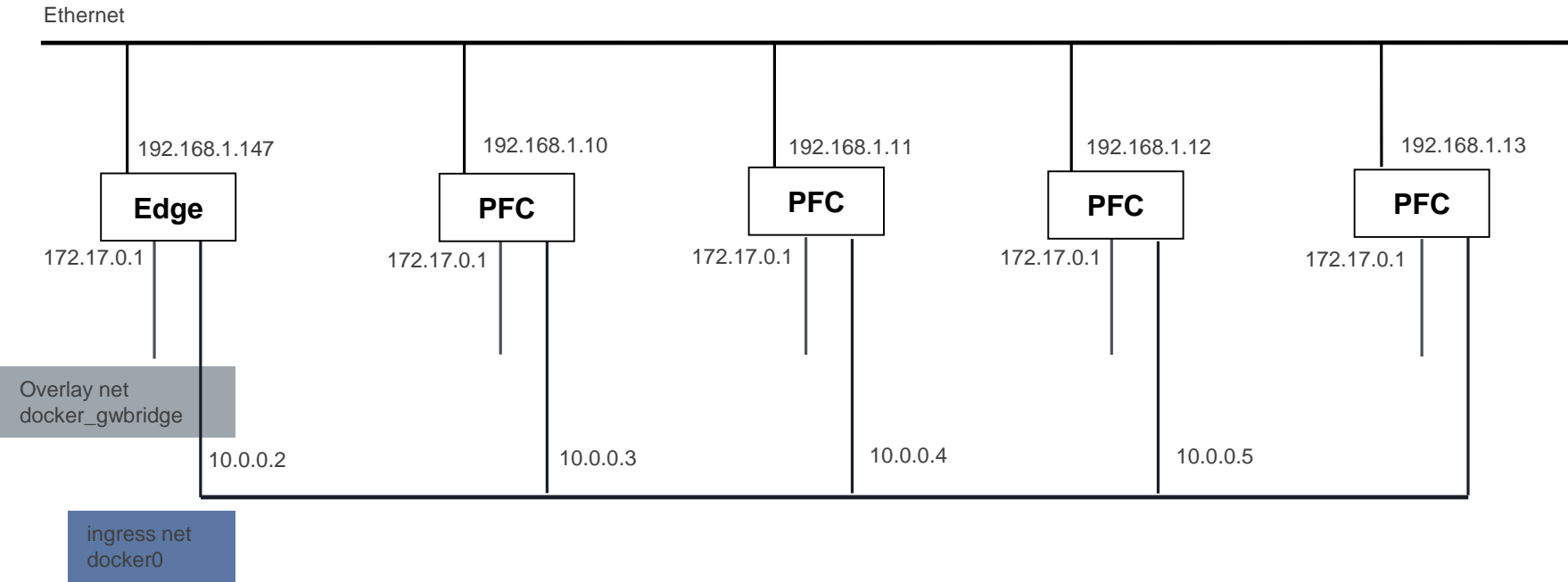
Internet Access



No internet access:



Docker



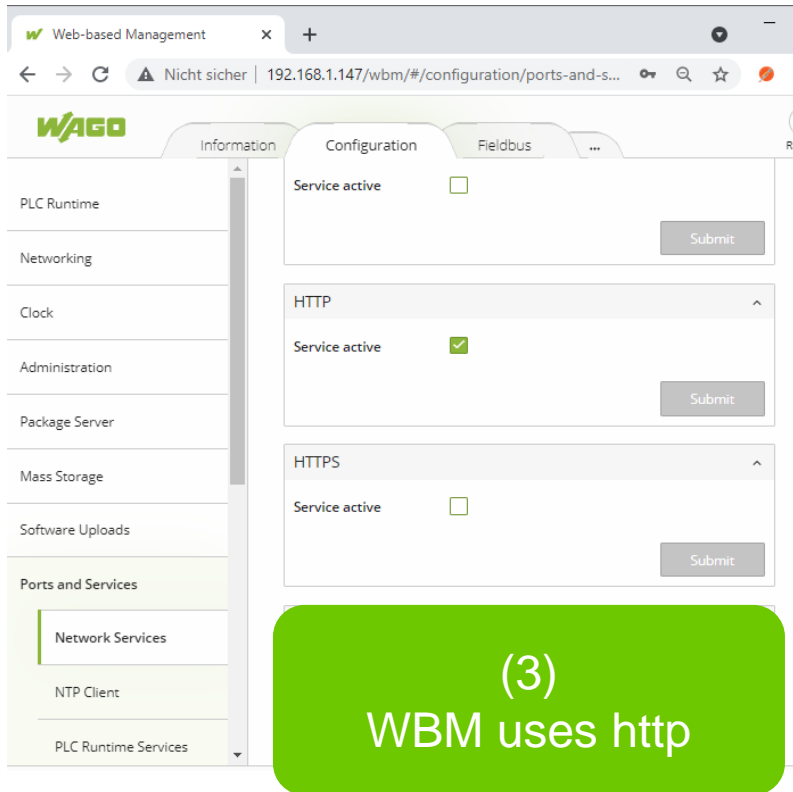
Edge Controller

Docker Swarm Manager



Prerequisites

Docker Manager – Edge Controller



Docker Worker – PFC200G2



(1)
docker ipk installed

(2)
Clock is updated

(3)
WBM uses http

Setup – Manager

```
root@edge:~# docker swarm init --advertise-addr 192.168.1.147
```

Edge Controller as
manager node

- First PLC has to join manually
- Following are managed via GUI

```
root@PFC200V3-46E8E0:~ docker swarm join --token SWMTKN-1-2yi6azru1ps17p0kodaexoqh5uy3pphm880cn0sfjx5cbsk0qb-dpg1x5nx0p9kj98ootk43m8jp 192.168.1.147:2377  
This node joined a swarm as a worker.
```

Setup

with `docker node ls` you have an overview of the swarm

```
root@edge:~# docker node ls
ID                                HOSTNAME                STATUS    AVAILABILITY    MANAGER STATUS    ENGINE VERSION
tfi0ci0oos27frhutdalcgre3       PFC200V3-46E8DD        Ready    Active           19.03.8
jqcuywkanfjxgw9cucfg2b844       PFC200V3-46E8E0        Ready    Active           19.03.8
k1gxh2nuq1zulbjwzjxi2i3tz       PFC200V3-46E8E3        Ready    Active           19.03.8
lg950xhehk6d0mduf333o4za1       PFC200V3-430F82        Ready    Active           19.03.8
a172npkqms69daukv1gn26193 *    edge                   Ready    Active           Leader            20.10.2
root@edge:~#
```

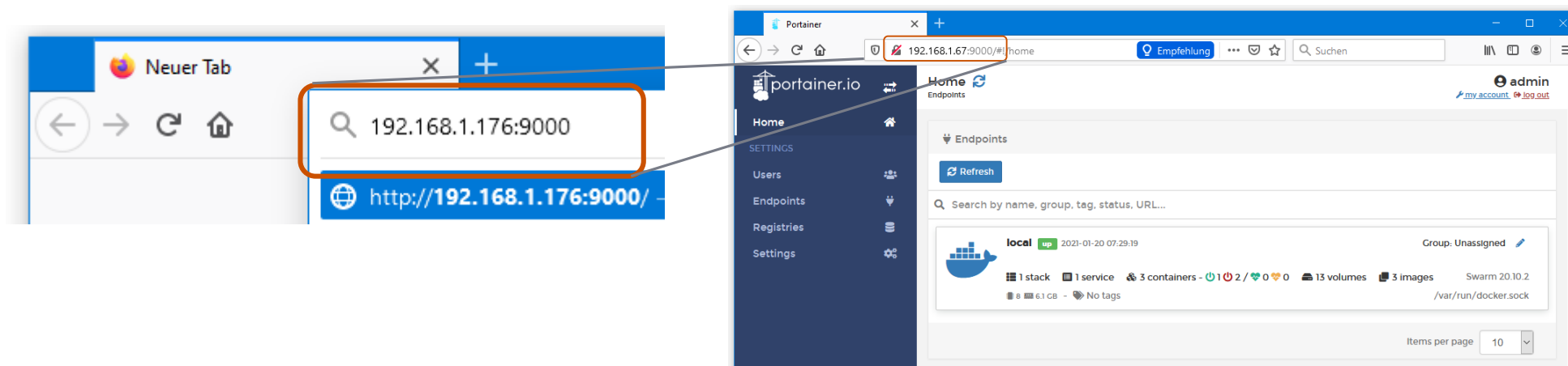
Show running nodes

There is a graphical tool for monitoring containers: portainer.io

```
root@edge:~# docker run -d --restart always -p 9000:9000 -v /var/run/docker.sock:/var/run/docker.sock portainer/portainer-ce
```

Install GUI:

Portainer



Portainer

The screenshot displays the Portainer web interface. On the left is a dark blue sidebar with the Portainer logo and a list of navigation items: Home, LOCAL (selected), Dashboard, App Templates, Stacks, Services, Containers, Images, Networks, Volumes, Configs, Secrets, Swarm, SETTINGS, Users, Endpoints, Registries, and Settings. The main content area is titled 'Dashboard' and 'Endpoint summary'. It features a user profile 'admin' with links for 'my account' and 'log out'. An 'Information' box contains a warning about Swarm cluster resources. Below this is a table for 'Endpoint info' with fields for Endpoint (local), URL (/var/run/docker.sock), and Tags (-). A 'Go to cluster visualizer' link is also present. The dashboard includes six summary cards: Stacks (5), Service (1), Containers (4, with 0 healthy, 0 unhealthy, 2 running, and 2 stopped), Images (18, 3.2 GB), Volumes (5), and Networks (6). An orange banner at the bottom left indicates 'A new version is available'. The footer shows 'portainer.io 2.1.1'.

portainer.io

Home

LOCAL

Dashboard

App Templates

Stacks

Services

Containers

Images

Networks

Volumes

Configs

Secrets

Swarm

SETTINGS

Users

Endpoints

Registries

Settings

A new version is available

portainer.io 2.1.1

Dashboard

Endpoint summary

admin
[my account](#) [log out](#)

Information

Portainer is connected to a node that is part of a Swarm cluster. Some resources located on other nodes in the cluster might not be available for management, have a look at [our agent setup](#) for more details.

Endpoint info

Endpoint	local 7 3.7 GB - Swarm 19.03.8
URL	/var/run/docker.sock
Tags	-

[Go to cluster visualizer](#)

5 Stacks

1 Service

4 Containers
0 healthy 0 unhealthy 2 running 2 stopped

18 Images
3.2 GB

5 Volumes

6 Networks

Docker Swarm

Local Registry with „XCA“

Registry

X Certificate and Key management

File Import Token Extra Help

Private Keys | Certificate signing requests | **Certificates** | Templates | Revocation lists

Internal n

X Certificate and Key management

Create x509 Certificate

Source | Subject | Extensions | Key usage | Netscape | Advanced | Comment

Signing request

☐ Sign this Certificate signing request

☒ Copy extensions from the request

☐ Modify subject of the request

Signing

☒ Create a self signed certificate

☐ Use this Certificate for signing

Signature algorithm

SHA 256

Template for the new certificate

[default] CA

Apply extensions Apply subject Apply all

OK Cancel

Create x509 Certificate

Source | Subject | Extensions | Key usage | Netscape | Advanced | Comment

Internal Name ca

Distinguished name

countryName de organizationalUnitName automation

stateOrProvinceName nrw commonName ca

localityName mi emailAddress a.b@wago.com

organizationName wago

Type	Content	Add
		Delete

X Certificate and Key management

New Key

Please give a name to the new key and select the desired keysize

Private key

Key properties

Name ca

Keytype RSA

Keysize 2048 bit

Remember as default

Generate a new key

OK Cancel

Create Cancel

Registry (2)

Private Keys					
Certificate signing requests					
Certificates					
Templates					
Revocation lists					
Internal name	/	commonName	CA	Serial	Expiry date
ca		ca	✓ Yes	1BE05ABF186B3071	3/12/31

Private Keys					
Certificate signing requests					
Certificates					
Templates					
Revocation lists					
Internal name	/	Type	Size	Use	Password
ca		RSA	2048 bit	1 Common	

Create x509 Certificate

Source | Subject | Extensions | Key usage | Netscape | Advanced | Comment

X509v3 Basic Constraints

Type: Certification Authority ★

Path length: ☐ Critical

Key identifier

☐ Subject Key Identifier

☐ Authority Key Identifier

Validity

Not before: 2021-03-18 15:52 GMT

Not after: 2022-03-18 15:52 GMT

Time range

10 ★ Years

☐ Midnight ☐ Local time ☐ No well-defined expiration

Apply ★

X509v3 Subject Alternative Name: Edit

X509v3 Issuer Alternative Name: Edit

X509v3 CRL Distribution Points: Edit

Authority Information Access: OCSP Edit

OK Cancel

Create x509 Certificate

Source | Subject | Extensions | Key usage | Netscape | Advanced | Comment

X509v3 Key Usage

☐ Critical

Digital Signature ★

Non Repudiation

Key Encipherment

Data Encipherment ★

Key Agreement

Certificate Sign

CRL Sign

Encipher Only

Decipher Only

X509v3 Extended Key Usage

☐ Critical

TLS Web Server Authentication

TLS Web Client Authentication

Code Signing

E-mail Protection

Time Stamping

Microsoft Individual Code Signing

Microsoft Commercial Code Signing

Microsoft Trust List Signing

Microsoft Server Gated Crypto

Microsoft Encrypted File System

Netscape Server Gated Crypto

Microsoft EFS File Recovery

IPSec End System

IPSec Tunnel

IPSec User

IP security end entity

Microsoft Smartcardlogin

OCSP Signing

EAP over PPP

EAP over Lan

Signing KDC Response

OK Cancel

Registry (3)

X Certificate and Key management

Create x509 Certificate

Source | Subject | Extensions | Key usage | Netscape | Advanced | Comment

Signing request

☐ Sign this Certificate signing request

☒ Copy extensions from the request

☐ Modify subject of the request

Signing

☐ Create a self signed certificate

☒ Use this Certificate for signing

Signature algorithm

SHA 256

Template for the new certificate

[default] TLS_server

Apply extensions | Apply subject | Apply all

OK | Cancel

X Certificate and Key management

Create x509 Certificate

Source | Subject | Extensions | Key usage | Netscape | Advanced | Comment

Internal Name | wago

Distinguished name

countryName	de	organizationalUnitName	automation
stateOrProvinceName	nrv	commonName	Docker-Repository
localityName	mi	emailAddress	
organizationName	wago		

Type	Content

Private key

Generate a new key

OK | Cancel

X Certificate and Key management

New Key

Please give a name to the new key and select the desired keysize

Key properties

Name | wago

Keytype | RSA

Keysize | 2048 bit

☐ Remember as default

Create | Cancel

„commonName“ must be equal to „Hostname“

WAGO

Hostname: Docker-Repository

Description: Edge Controller PIO3

Username


Registry (4)

X Certificate and Key management

Create x509 Certificate

Source | Subject | Extensions | Key usage | Netscape | Advanced | Comment

X509v3 Basic Constraints

Type: End Entity 
Path length: ☐ Critical



Key identifier



☒ Subject Key Identifier
☐ Authority Key Identifier

Validity

Not before: 2021-03-18 16:01 GMT
Not after: 2031-03-18 16:01 GMT

Time range

10  Years  Apply
☐ Midnight ☐ Local time ☐ No well-defined expiration

X509v3 Subject Alternative Name  IP: 192.168.1.147  Edit
X509v3 Issuer Alternative Name Edit
X509v3 CRL Distribution Points Edit
Authority Information Access: OCSP Edit



OK Cancel

X Certificate and Key management



Create x509 Certificate

Source | Subject | Extensions | Key usage | Netscape | Advanced | Comment

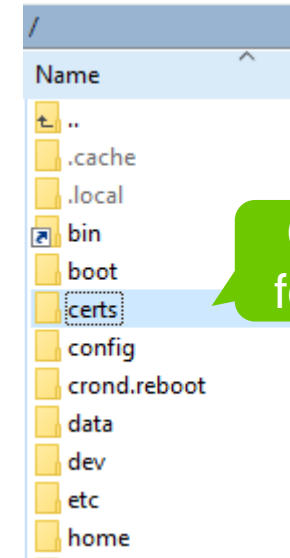
X509v3 Key Usage

☐ Critical 
Digital Signature 
Non Repudiation
Key Encipherment
Data Encipherment
Key Agreement
Certificate Sign
CRL Sign
Encipher Only
Decipher Only

X509v3 Extended Key Usage

☐ Critical 
TLS Web Server Authentication 
TLS Web Client Authentication
Code Signing
E-mail Protection
Time Stamping
Microsoft Individual Code Signing
Microsoft Commercial Code Signing
Microsoft Trust List Signing
Microsoft Server Gated Crypto
Microsoft Encrypted File System
Netscape Server Gated Crypto
Microsoft EFS File Recovery
IPSec End System
IPSec Tunnel
IPSec User
IP security end entity
Microsoft Smartcardlogin
OCSP Signing
EAP over PPP
EAP over Lan
Signing KDC Response

OK Cancel



Create new folder „certs“

Registry (4)

X Certificate and Key management

File Import Token Extra Help

Private Keys | Certificate signing requests | Certificates | Templates | Revocation lists

Internal name	commonName	CA	Serial	Expiry date
ca	ca	Yes	1BE05ABE186B2071	3/12/31
wagosever	Docker-Repos...	No	3BD3F0AEE7AA97C	3/12/26

X Certificate and Key management

File Import Token Extra Help

Internal name	Type	Size	Use	Password
ca	RSA	2048 bit	1 Common	
wagosever	RSA	1024 bit	1 Common	

Export & SFTP

Docker Worker = PFC

/etc/ssl/certs/

Name	Größe	Geändert
..		16.11.2020 15:08:47
ca.crt	2 KB	18.03.2021 10:06:25
ca-certificates.crt	228 KB	13.11.2020 13:29:36

Docker Manager = Edge Controller

/certs/

Name
wagosever.crt
wagosever.pem

Ports and Services

Network Services

NTP Client

PLC Runtime Services

SSH

TFTP

DHCP Server

DNS

Cloud Connectivity

SNMP

FTPS

Service active



HTTP

Service active



enable

HTTPS

Service active



disable

Docker Swarm

Shell & GUI

Registry (5)

Docker Manager – Edge Controller

```
docker pull registry
```

```
docker run -d \  
  --restart=always \  
  --name wago-local-repository \  
  -v /certs:/certs \  
  -v wago-registry:/var/lib/registry \  
  -e REGISTRY_HTTP_ADDR=0.0.0.0:443 \  
  -e REGISTRY_HTTP_TLS_CERTIFICATE=/certs/wago-server.crt \  
  -e REGISTRY_HTTP_TLS_KEY=/certs/wago-server.pem \  
  -p 443:443 \  
  registry:2
```

```
docker pull debian:10.3-slim
```

```
docker tag debian:10.3-slim localhost/wagobian
```

```
docker push localhost/wagobian
```

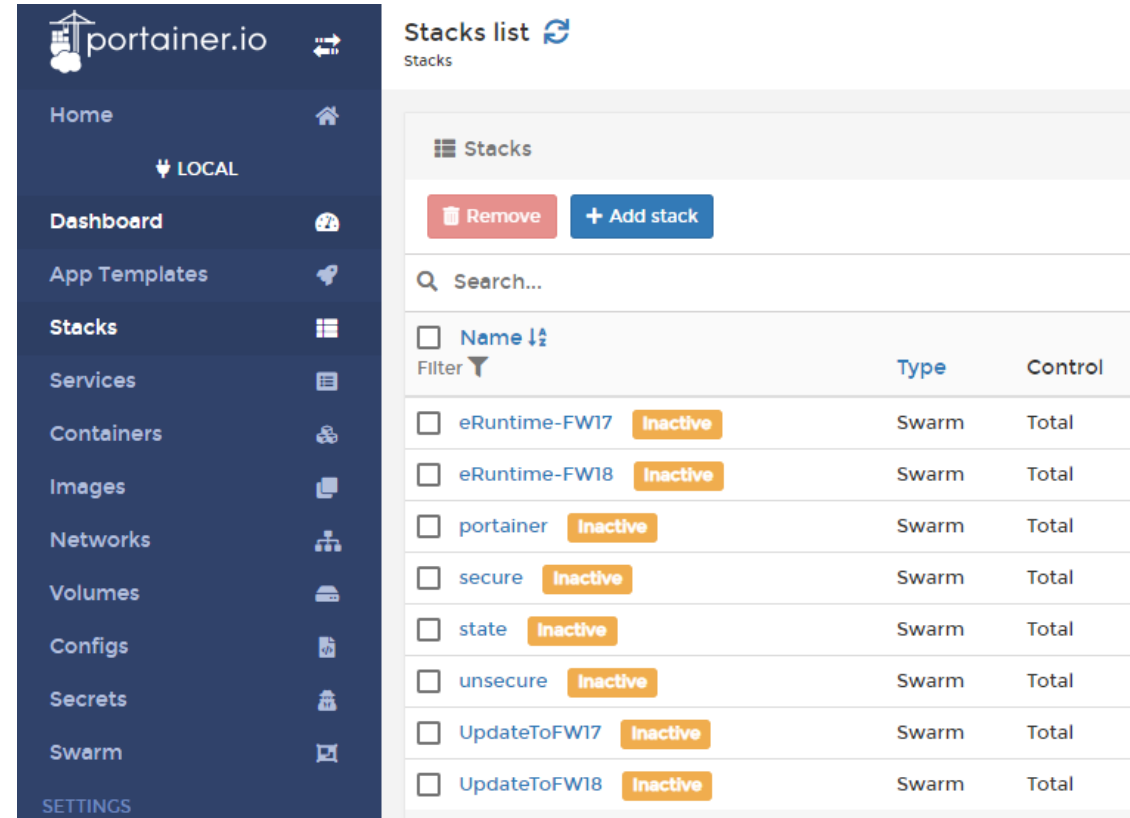
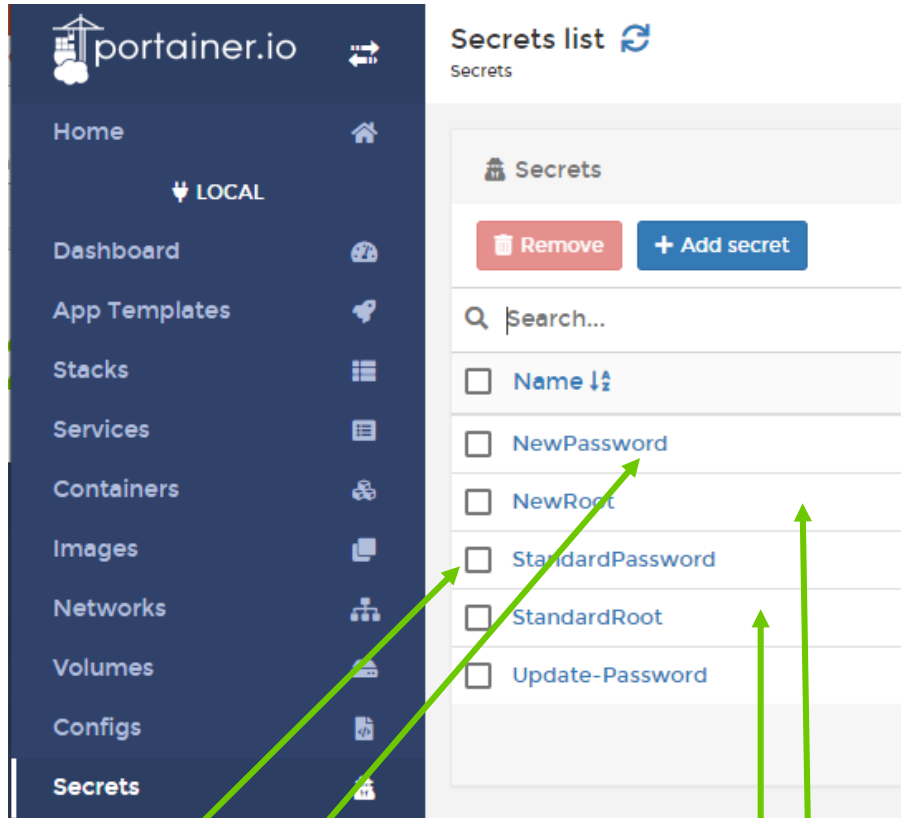
Docker Worker – PFC200G2

```
docker swarm init
```

```
docker pull 192.168.1.147/wagobian
```

Testing connection

Stacks: Secret



root:\$6\$W93mw7pDWcEFiRlq\$JPVBu.8pc1jUZKAUtpNWl/laGhZr4BgMO4a0WcW70eVEpFgChV1Jhg/vRUdpcrGFbDZT7ungzolsY3aP/cqal.:18698:0:99999:7:::
=wago

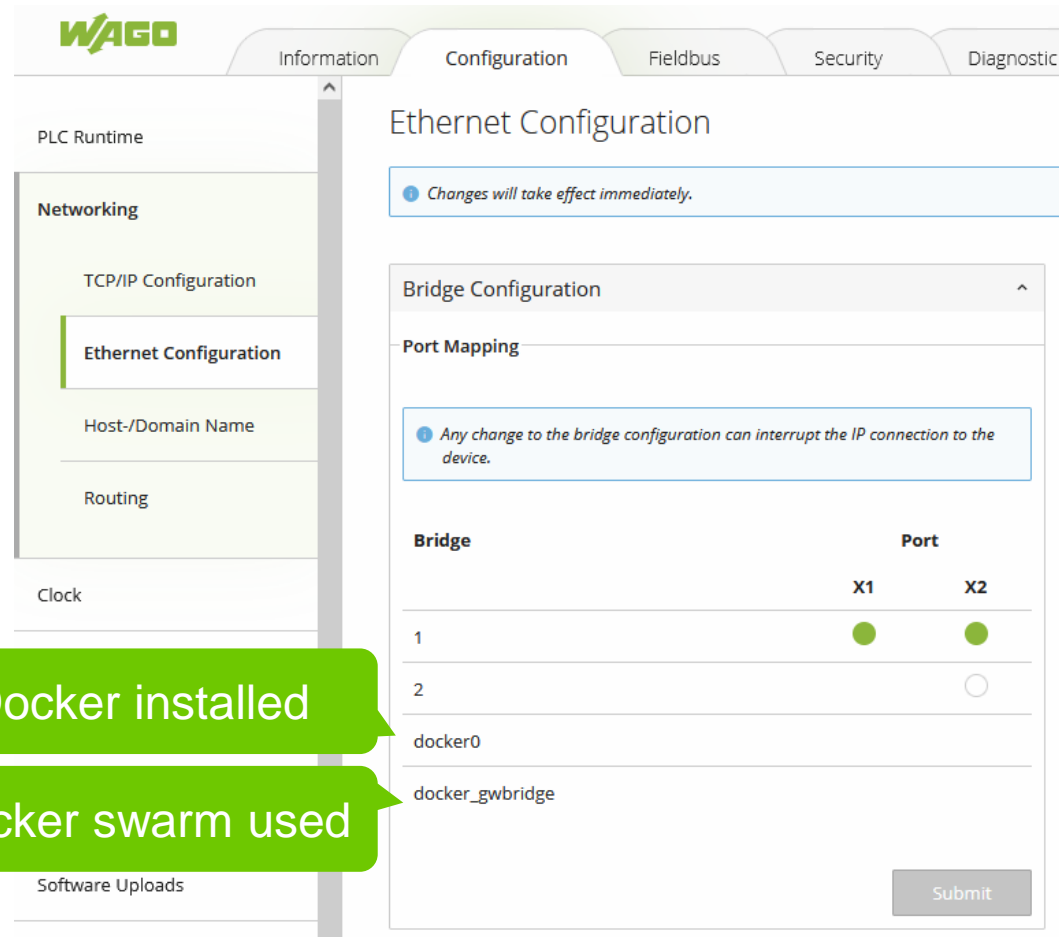
root:\$6\$jtG89kTUTxcGLHJQ\$5WADjFQjTknuYqVYEVUiFyu.yQrpXyXbHZ.ajP96TVbbxSmCGd8wdMHY.PNdcOUIgFUgGeMZ2VoqaHdeY0OnF/:18698:0:99999:7:::
=Master1!

/etc/shadow

Provisioning with template

```
C:\> PREPS > 2021 > docker swarm > {} provision.json > [ ] templates > {} 0 > [ ] e...
1 {
2   "version": "2",
3   "templates":
4   [
5     {
6       "type": 1,
7       "title": "provision pfc",
8       "logo": "http://192.168.1.147/swarm.png",
9       "description": "Add PFC to a swarm cluster and a local",
10      "image": "wagoautomation/provision-pfc-arm32v7:1.0.0",
11      "name": "provision-pfc",
12      "restart_policy": "no",
13      "command": "/home/provision-pfc.sh",
14      "platform": "linux",
15      "volumes": [
16        {
17          "bind": "/tmp",
18          "container": "/tmp"
19        }
20      ],
21      "env": [
22        {
23          "name": "WORKER_IP",
24          "label": "IP Address of new worker node.",
25          "default": "192.168.1.212"
26        },
27        {
28          "name": "MANAGER_IP",
29          "label": "IP Address of the manager node.",
30          "default": "192.168.1.147"
31        }
32      ]
33    }
34  ]
35 }
```

Provisioning check



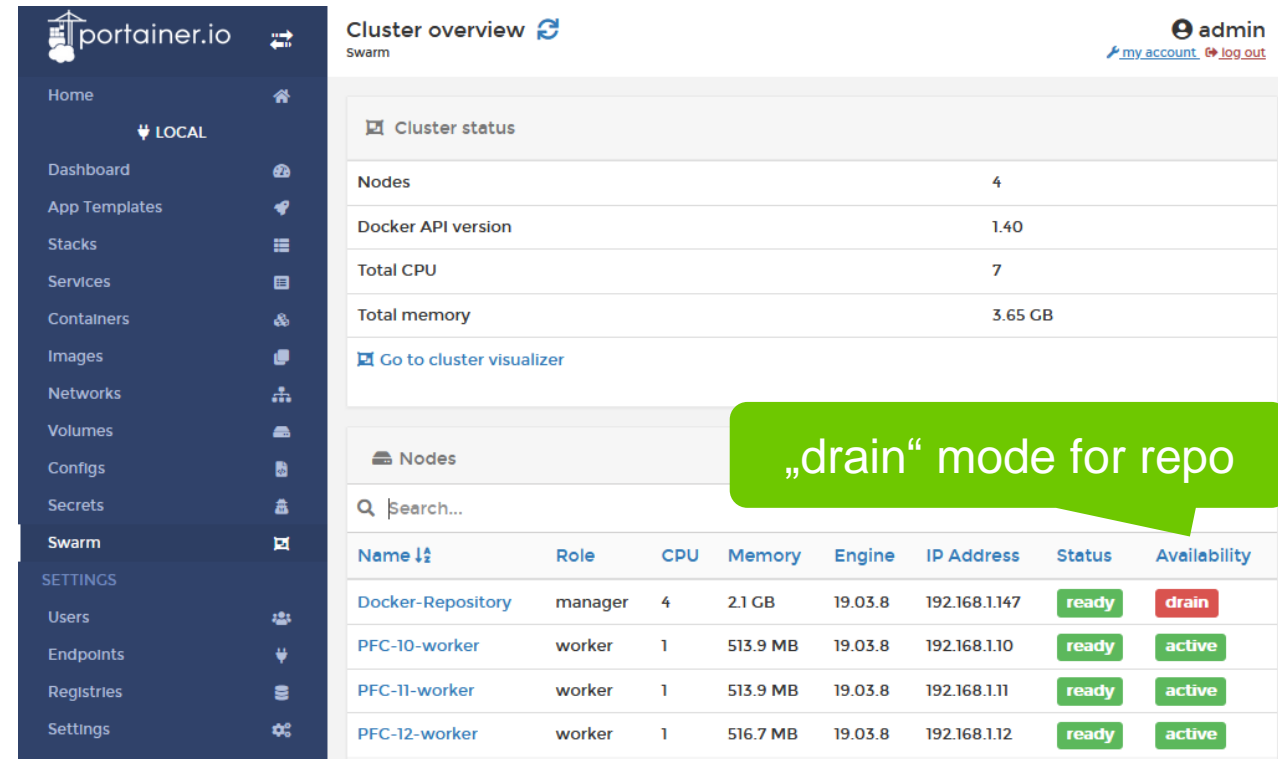
The screenshot shows the WAGO Configuration Manager interface. The 'Configuration' tab is active, displaying the 'Ethernet Configuration' section. A sidebar on the left contains a 'Networking' menu with 'Ethernet Configuration' highlighted. A 'Bridge Configuration' panel is open, showing 'Port Mapping' with a warning: 'Any change to the bridge configuration can interrupt the IP connection to the device.' Below this is a table for bridge configuration with columns 'Bridge' and 'Port' (X1, X2). The 'docker0' bridge is configured with port X1, and 'docker_gwbridge' is configured with port X2. A 'Submit' button is at the bottom right.

Bridge	Port	
	X1	X2
1	<input checked="" type="radio"/>	<input checked="" type="radio"/>
2	<input type="radio"/>	<input type="radio"/>
docker0	<input checked="" type="radio"/>	<input type="radio"/>
docker_gwbridge	<input type="radio"/>	<input checked="" type="radio"/>

Submit

Docker installed

Docker swarm used

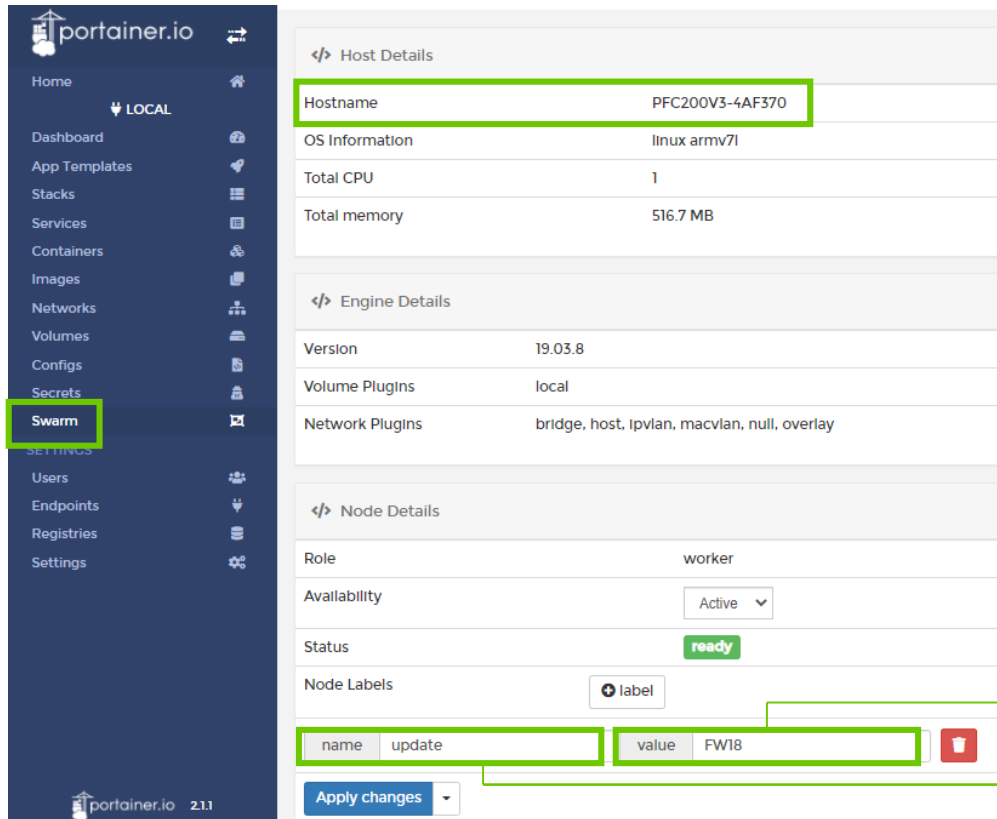


The screenshot shows the Portainer.io 'Cluster overview' page. The left sidebar lists navigation options like Home, Dashboard, App Templates, Stacks, Services, Containers, Images, Networks, Volumes, Configs, Secrets, and Swarm. The main area displays cluster status: 4 nodes, Docker API version 1.40, 7 total CPUs, and 3.65 GB total memory. Below this is a 'Nodes' table with columns: Name, Role, CPU, Memory, Engine, IP Address, Status, and Availability. A green callout bubble points to the 'Docker-Repository' node, which has a 'drain' button in its availability column.

Name	Role	CPU	Memory	Engine	IP Address	Status	Availability
Docker-Repository	manager	4	2.1 GB	19.03.8	192.168.1.147	ready	drain
PFC-10-worker	worker	1	513.9 MB	19.03.8	192.168.1.10	ready	active
PFC-11-worker	worker	1	513.9 MB	19.03.8	192.168.1.11	ready	active
PFC-12-worker	worker	1	516.7 MB	19.03.8	192.168.1.12	ready	active

„drain“ mode for repo

Stacks – Labels



portainer.io

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LOCAL

Dashboard

App Templates

Stacks

Services

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Images

Networks

Volumes

Configs

Secrets

Swarm

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Endpoints

Registries

Settings

Host Details

Hostname: PFC200V3-4AF370

OS Information: linux armv7l

Total CPU: 1

Total memory: 516.7 MB

Engine Details

Version: 19.03.8

Volume Plugins: local

Network Plugins: bridge, host, ipvlan, macvlan, null, overlay

Node Details

Role: worker

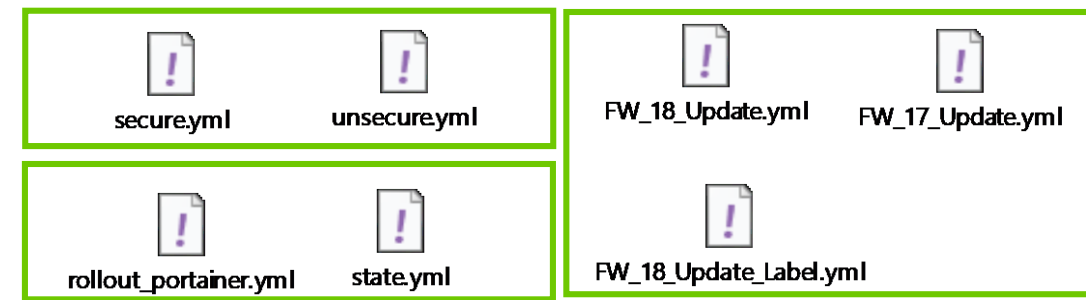
Availability: Active

Status: ready

Node Labels

name	update	value
		FW18

Apply changes



secure.yml

unsecure.yml

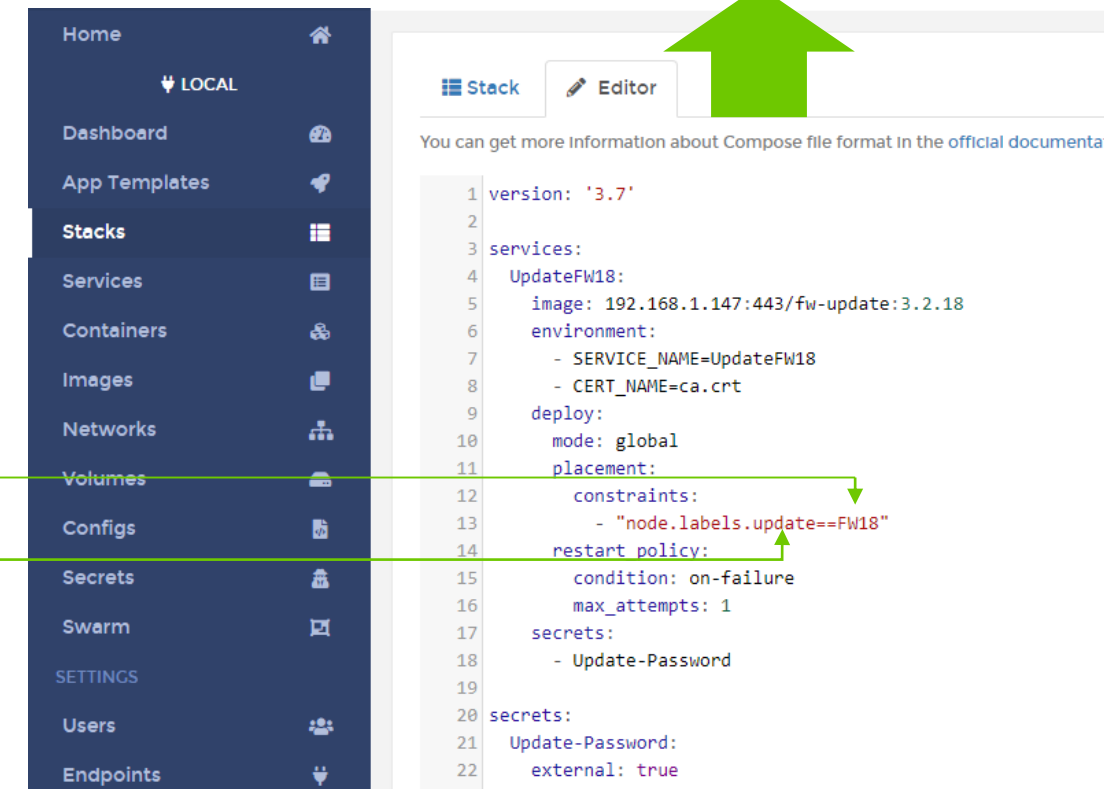
rollout_portainer.yml

state.yml

FW_18_Update.yml

FW_17_Update.yml

FW_18_Update_Label.yml



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Stack Editor

You can get more Information about Compose file format in the [official documenta](#)

```
1 version: '3.7'
2
3 services:
4   UpdateFW18:
5     image: 192.168.1.147:443/fw-update:3.2.18
6     environment:
7       - SERVICE_NAME=UpdateFW18
8       - CERT_NAME=ca.crt
9     deploy:
10      mode: global
11      placement:
12        constraints:
13          - "node.labels.update==FW18"
14      restart_policy:
15        condition: on-failure
16        max_attempts: 1
17      secrets:
18        - Update-Password
19
20 secrets:
21   Update-Password:
22     external: true
```

Stacks – in action



portainer.io

Home

LOCAL

Dashboard

App Templates

Stacks

Services

Containers

Images

Networks

Service list

Services

Update

Remove

+ Add service

Search...

<input type="checkbox"/>	Name	Stack	Image	Scheduling Mode	
<input type="checkbox"/>	FW18_UpdateFW18	FW18	192.168.1.147:443/fw-update:3.2.18	global 1 / 1	-

Status	Filter	Task	Actions	Slot	Node
running		m0bbmj7fc2pgif0n4f3heshf1		-	PFC-12-worker



Service list

Services

Update

Remove

+ Add service








Search...

<input type="checkbox"/>	Name	Stack	Image	Scheduling Mode	
<input type="checkbox"/>	FW18_UpdateFW18	FW18	192.168.1.147:443/fw-update:3.2.18	global 0 / 1	-

Status	Filter	Task	Actions	Slot	Node
failed		z0vc1vdmurd34i2j9uuqfm7pc		-	PFC-12-worker
starting		b5p9nmjungy4gzgejmmutg6k0		-	PFC-12-worker

Stacks – in action (2)

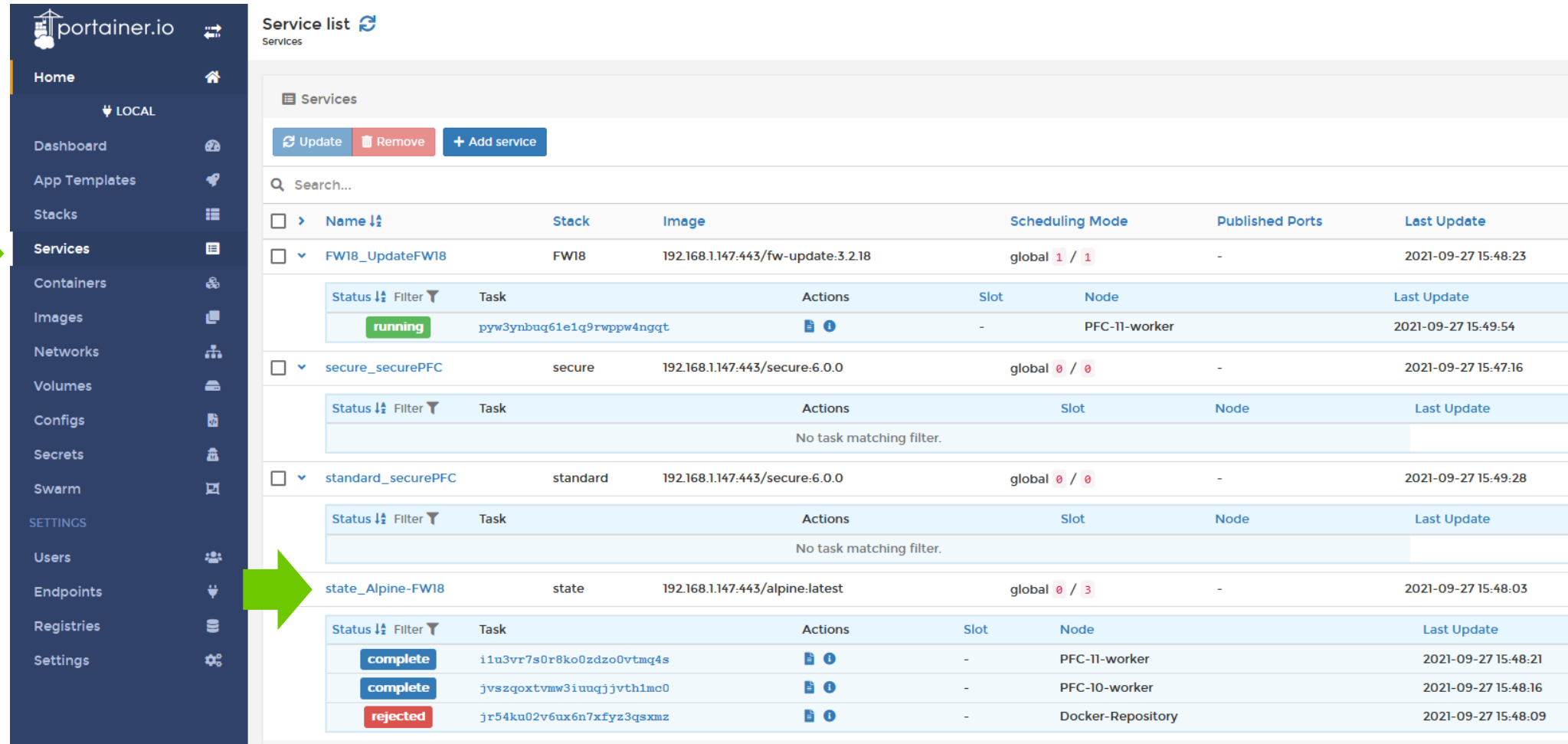
Service list 
Services


Services				
<div> Update  Remove  Add service</div>				
Q Search...				
<input type="checkbox"/> Name ↓	Stack	Image	Scheduling Mode	
<input type="checkbox"/> FW18_UpdateFW18	FW18	192.168.1.147:443/fw-update:3.2.18	global 0 / 1	
Status ↓ Filter	Task	Actions	Slot	Node
<div><div>complete</div></div>	b5p9nmjungy4gzgejmmutg6k0	 		
<div><div>failed</div></div>	z0vc1vdmurd3412j9auqfm7pc	 	-	PFC-12-worker

logs




```
+++++
Start Firmware update via Docker System.....
<<<!!Do not turn off the device!!>>>
+++++
Fetching Host IP Address.....
Actual Host IP= 172.18.0.1
+++++
Decide what kind of password should be used.....
<Password is NOT set, using Docker Secret Password>
Checking Docker secret.... please wait.
Display Password fetched from Docker secret: wago.
+++++
Fetching "RAUC" status
Start Configuration remote.
Get FW Update State. Connect Hostsystem directly via a ssh session, using password.
Pseudo-terminal will not be allocated because stdin is not a terminal.
Warning: Permanently added '172.18.0.1' (ECDSA) to the list of known hosts.
Actual State: unconfirmed
+++++
"RAUC" state is: unconfirmed, try to finish "RAUC" daemon
Finish update. Connect Hostsystem directly via a ssh session, using password.
Pseudo-terminal will not be allocated because stdin is not a terminal.
Warning: Permanently added '172.18.0.1' (ECDSA) to the list of known hosts.
Finish WAGO Firmware Update
Stop fwupdate timeout watcher with PIDs: 1152 1218
ear WAGO Firmware Update
Leave update mode
Stopping WAGO Firmware Update...
done
Wait for system start is done...
turn to normal operation
+++++
Start Configuration remote.
Get FW Update State. Connect Hostsystem directly via a ssh session, using password.
Pseudo-terminal will not be allocated because stdin is not a terminal.
Warning: Permanently added '172.18.0.1' (ECDSA) to the list of known hosts.
Actual State: inactive
+++++
<Restoring Cert for local Repository on the Hostsystem.>
Connect Hostsystem directly via a ssh session, using password.
Pseudo-terminal will not be allocated because stdin is not a terminal.
Warning: Permanently added '172.18.0.1' (ECDSA) to the list of known hosts.
Rebooting System to activate SSL Cert, <DON'T PANIC>, back in 2 minutes
+++++
```

Stacks – in action (3)















































Service list 

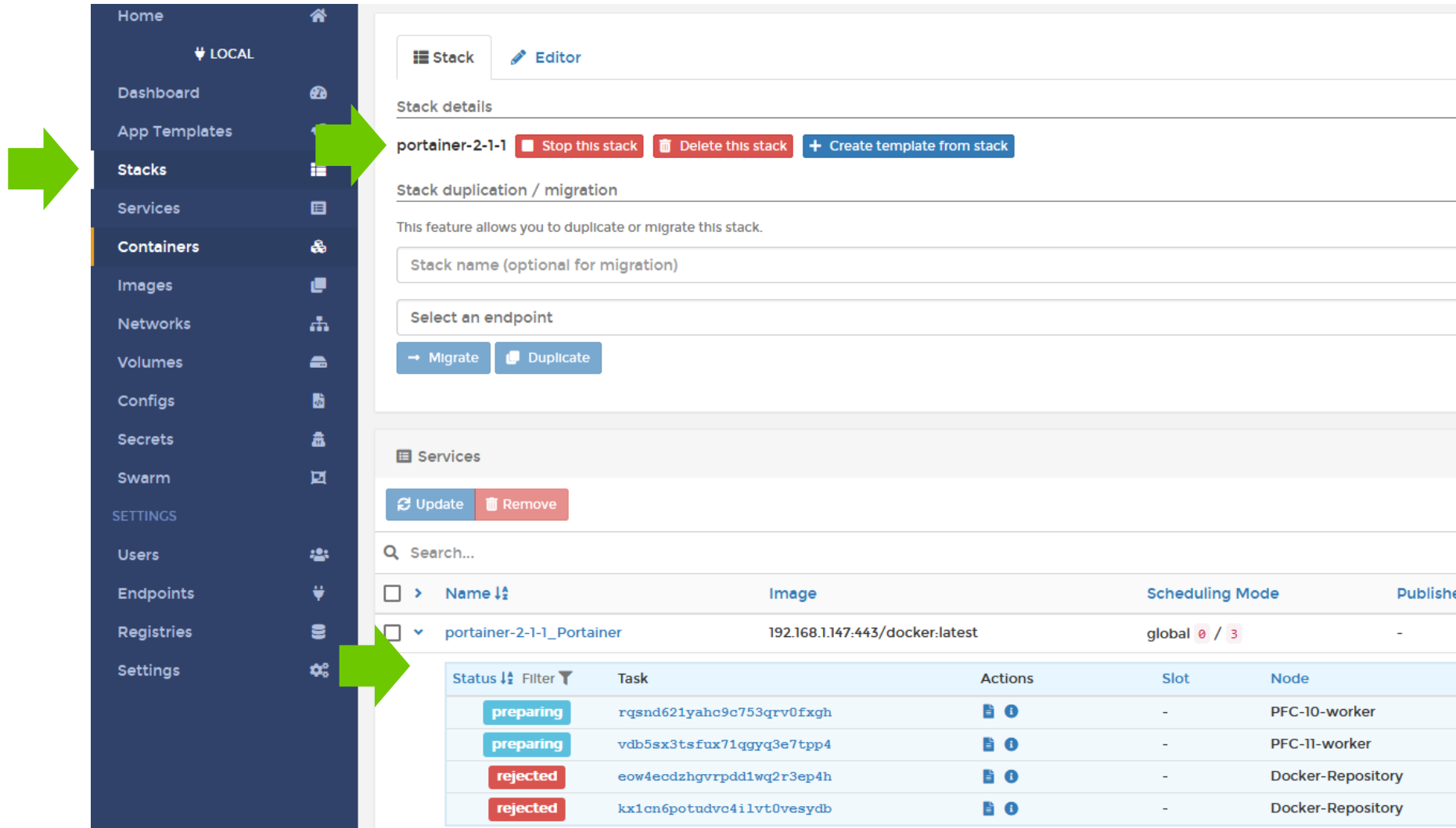
Services

 Update  Remove  Add service

Q Search...

<input type="checkbox"/> > Name	Stack	Image	Scheduling Mode	Published Ports	Last Update																				
<input type="checkbox"/> FW18_UpdateFW18	FW18	192.168.1.147:443/fw-update:3.2.18	global 1 / 1	-	2021-09-27 15:48:23																				
<div>Status  Filter </div> <table border="1"><thead><tr><th>Task</th><th>Actions</th><th>Slot</th><th>Node</th><th>Last Update</th></tr></thead><tbody><tr><td> pyw3ynbuq61e1q9rwppw4ngqt</td><td> </td><td>-</td><td>PFC-11-worker</td><td>2021-09-27 15:49:54</td></tr></tbody></table>						Task	Actions	Slot	Node	Last Update	 pyw3ynbuq61e1q9rwppw4ngqt	 	-	PFC-11-worker	2021-09-27 15:49:54										
Task	Actions	Slot	Node	Last Update																					
 pyw3ynbuq61e1q9rwppw4ngqt	 	-	PFC-11-worker	2021-09-27 15:49:54																					
<input type="checkbox"/> secure_securePFC	secure	192.168.1.147:443/secure:6.0.0	global 0 / 0	-	2021-09-27 15:47:16																				
<div>Status  Filter </div> <table border="1"><thead><tr><th>Task</th><th>Actions</th><th>Slot</th><th>Node</th><th>Last Update</th></tr></thead><tbody><tr><td colspan="5">No task matching filter.</td></tr></tbody></table>						Task	Actions	Slot	Node	Last Update	No task matching filter.														
Task	Actions	Slot	Node	Last Update																					
No task matching filter.																									
<input type="checkbox"/> standard_securePFC	standard	192.168.1.147:443/secure:6.0.0	global 0 / 0	-	2021-09-27 15:49:28																				
<div>Status  Filter </div> <table border="1"><thead><tr><th>Task</th><th>Actions</th><th>Slot</th><th>Node</th><th>Last Update</th></tr></thead><tbody><tr><td colspan="5">No task matching filter.</td></tr></tbody></table>						Task	Actions	Slot	Node	Last Update	No task matching filter.														
Task	Actions	Slot	Node	Last Update																					
No task matching filter.																									
<input type="checkbox"/> state_Alpine-FW18	state	192.168.1.147:443/alpine:latest	global 0 / 3	-	2021-09-27 15:48:03																				
<div>Status  Filter </div> <table border="1"><thead><tr><th>Task</th><th>Actions</th><th>Slot</th><th>Node</th><th>Last Update</th></tr></thead><tbody><tr><td> i1u3vr7s0r8ko0zdzo0vtmq4s</td><td> </td><td>-</td><td>PFC-11-worker</td><td>2021-09-27 15:48:21</td></tr><tr><td> jvszqoxtvmw3iuaqjjvth1mo0</td><td> </td><td>-</td><td>PFC-10-worker</td><td>2021-09-27 15:48:16</td></tr><tr><td> jr54ku02v6ux6n7xfyz3qsmxz</td><td> </td><td>-</td><td>Docker-Repository</td><td>2021-09-27 15:48:09</td></tr></tbody></table>						Task	Actions	Slot	Node	Last Update	 i1u3vr7s0r8ko0zdzo0vtmq4s	 	-	PFC-11-worker	2021-09-27 15:48:21	 jvszqoxtvmw3iuaqjjvth1mo0	 	-	PFC-10-worker	2021-09-27 15:48:16	 jr54ku02v6ux6n7xfyz3qsmxz	 	-	Docker-Repository	2021-09-27 15:48:09
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 jr54ku02v6ux6n7xfyz3qsmxz	 	-	Docker-Repository	2021-09-27 15:48:09																					

Stacks – in action (4)



The screenshot displays the Docker Swarm management interface. The left sidebar contains a navigation menu with items: Home, LOCAL, Dashboard, App Templates, Stacks, Services, Containers, Images, Networks, Volumes, Configs, Secrets, Swarm, SETTINGS, Users, Endpoints, Registries, and Settings. The main content area is titled 'Stack' and 'Editor'. It shows the 'Stack details' for 'portainer-2-1-1' with buttons for 'Stop this stack', 'Delete this stack', and 'Create template from stack'. Below this is the 'Stack duplication / migration' section, which includes a text input for 'Stack name (optional for migration)', a 'Select an endpoint' dropdown, and 'Migrate' and 'Duplicate' buttons. The 'Services' section below has 'Update' and 'Remove' buttons. A search bar is present above a table of services. The table has columns: Name, Image, Scheduling Mode, and Publish. The first service listed is 'portainer-2-1-1_Portainer' with image '192.168.1.147:443/docker:latest' and scheduling mode 'global 0 / 3'. Below this is a detailed table of tasks with columns: Status, Task, Actions, Slot, and Node. The tasks are: 'preparing' for 'rqsnd621yahc9c753qrv0fxgh' on 'PFC-10-worker', 'preparing' for 'vdb5sx3tsfux71qgyq3e7tpp4' on 'PFC-11-worker', 'rejected' for 'eow4ecdzhgvrpdd1wq2r3ep4h' on 'Docker-Repository', and 'rejected' for 'kx1cn6potudvc4ilvt0vesydb' on 'Docker-Repository'.

Stack

Editor

Stack details

portainer-2-1-1 Stop this stack Delete this stack Create template from stack

Stack duplication / migration

This feature allows you to duplicate or migrate this stack.

Stack name (optional for migration)

Select an endpoint

Migrate Duplicate

Services

Update Remove

Search...

<input type="checkbox"/>	Name	Image	Scheduling Mode	Publish
<input type="checkbox"/>	portainer-2-1-1_Portainer	192.168.1.147:443/docker:latest	global 0 / 3	-

Status	Task	Actions	Slot	Node
preparing	rqsnd621yahc9c753qrv0fxgh	Stop Restart	-	PFC-10-worker
preparing	vdb5sx3tsfux71qgyq3e7tpp4	Stop Restart	-	PFC-11-worker
rejected	eow4ecdzhgvrpdd1wq2r3ep4h	Stop Restart	-	Docker-Repository
rejected	kx1cn6potudvc4ilvt0vesydb	Stop Restart	-	Docker-Repository

FW-Rollout with template

portainer.io

Application templates list

Templates

Select a category

Show container templates ☒

Search...

wago pfc200 FW-Update FW19 container

Open Source Container to update Host-Firmware of PFC 200 G2 -[19]

wago pfc200 FW-Update FW18 SP3 container

Open Source Container to update Host-Firmware of PFC 200 G2 -[18]

wago pfc200 FW-Update FW18 SP1 container

Open Source Container to update Host-Firmware of PFC 200 G2 -[18]

wago pfc200 FW-Update FW17 container

Open Source Container to update Host-Firmware of PFC 200 G2 -[17]

portainer.io

Container logs

Containers > state_Alpine-FW18.rm0h3preuhuaJ283xll8qr5dm.shvevf5vhur4bk92lknq9slha > Logs

Log viewer settings

Auto-refresh logs ☒

Wrap lines ☒

Display timestamps ☐

Fetch All logs

Search Filter...

Lines 100

Actions Download logs Copy Copy selected lines Unselect

FIRMWARE=03.05.10(17)

Contact



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Q&A

4



[1]

http://www.wallpaperhi.com/Animals/Fish/sea_swarm_fish_sealife_1280x1024_wallpaper_79865

[2] <https://www.quora.com/Can-you-share-the-inside-view-of-a-merchant-navy-ship>

[3]

<http://timesofkabul.com/wp-content/uploads/2016/11/Smart-Building-Market.png>