

개인 프로젝트_1차

도커 클러스터 (Docker)

과 정 : 클라우드 데브옵스(DevOps)
엔지니어 및 관리자 양성과정
이 름 : 김 연 수

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1 Docker Swarm Cluster

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Part 1-1 도커 설치

```
manager ~$ sudo systemctl enable --now cockpit.socket
Last login: Wed Mar 22 16:25:29 2023 from 192.168.255.1
root@manager:~# docker version
Client: Docker Engine - Community
Version: 23.0.1
API version: 1.42
Go version: go1.19.5
Git commit: a5ee5b1
Built: Thu Feb 9 19:49:07 2023
OS/Arch: linux/amd64
Context: default

Server: Docker Engine - Community
Engine:
Version: 23.0.1
API version: 1.42 (minimum version 1.12)
Go version: go1.19.5
Git commit: bc3805a
Built: Thu Feb 9 19:46:47 2023
OS/Arch: linux/amd64
Experimental: false
containerd:
Version: 1.6.18
GitCommit: 2456e983eb9e37e47538f59ea18f2043c9a73640
runc:
Version: 1.1.4
GitCommit: v1.1.4-0-g5fd4c4d
docker-init:
Version: 0.19.0
GitCommit: de4bad0
root@manager:~#
```

```
worker1 ~$ sudo systemctl enable --now cockpit.socket
Last login: Wed Mar 22 16:19:09 2023 from 192.168.255.1
root@worker1:~# docker version
Client: Docker Engine - Community
Version: 23.0.1
API version: 1.42
Go version: go1.19.5
Git commit: a5ee5b1
Built: Thu Feb 9 19:49:07 2023
OS/Arch: linux/amd64
Context: default

Server: Docker Engine - Community
Engine:
Version: 23.0.1
API version: 1.42 (minimum version 1.12)
Go version: go1.19.5
Git commit: bc3805a
Built: Thu Feb 9 19:46:47 2023
OS/Arch: linux/amd64
Experimental: false
containerd:
Version: 1.6.18
GitCommit: 2456e983eb9e37e47538f59ea18f2043c9a73640
runc:
Version: 1.1.4
GitCommit: v1.1.4-0-g5fd4c4d
docker-init:
Version: 0.19.0
GitCommit: de4bad0
root@worker1:~#
```

```
worker2 ~$ sudo systemctl enable --now cockpit.socket
Last login: Wed Mar 22 16:30:46 2023 from 192.168.255.1
root@worker2:~# docker version
Client: Docker Engine - Community
Version: 23.0.1
API version: 1.42
Go version: go1.19.5
Git commit: a5ee5b1
Built: Thu Feb 9 19:49:07 2023
OS/Arch: linux/amd64
Context: default

Server: Docker Engine - Community
Engine:
Version: 23.0.1
API version: 1.42 (minimum version 1.12)
Go version: go1.19.5
Git commit: bc3805a
Built: Thu Feb 9 19:46:47 2023
OS/Arch: linux/amd64
Experimental: false
containerd:
Version: 1.6.18
GitCommit: 2456e983eb9e37e47538f59ea18f2043c9a73640
runc:
Version: 1.1.4
GitCommit: v1.1.4-0-g5fd4c4d
docker-init:
Version: 0.19.0
GitCommit: de4bad0
root@worker2:~#
```

< Docker Version 확인 >

방화벽 설정

```
manager worker1 worker2 |
root@manager:~]# systemctl disable --now firewalld
root@manager:~]# systemctl stop --now firewalld
root@manager:~]#
```

```
manager worker1 worker2 |
root@worker1:~]# systemctl disable --now firewalld
root@worker1:~]# systemctl stop --now firewalld
root@worker1:~]#
```

```
manager worker1 worker2 |
root@worker2:~]# systemctl disable --now firewalld
root@worker2:~]# systemctl stop --now firewalld
root@worker2:~]#
```

< 리눅스 방화벽 해제 >

서버 구성

```

manager worker1 worker2
root@manager:~]# docker node ls
ID                               HOSTNAME    STATUS    AVAILABILITY    MANAGER STATUS    ENGINE VERSION
yx1w11bx9v3fiuntfnaupc1b1 *    manager    Ready     Active           Leader             23.0.1
r6sfq4d68t9qskoeows44pvmh      worker1    Ready     Active           Reachable          23.0.1
iy2vpnmmgf28j1enr2bvae6x7      worker2    Ready     Active           Reachable          23.0.1
root@manager:~]#

```

```

manager worker1 worker2
root@worker1:~]# docker node ls
ID                               HOSTNAME    STATUS    AVAILABILITY    MANAGER STATUS    ENGINE VERSION
yx1w11bx9v3fiuntfnaupc1b1      manager    Ready     Active           Leader             23.0.1
r6sfq4d68t9qskoeows44pvmh *    worker1    Ready     Active           Reachable          23.0.1
iy2vpnmmgf28j1enr2bvae6x7      worker2    Ready     Active           Reachable          23.0.1
root@worker1:~]#

```

```

manager worker1 worker2
root@worker2:~]# docker node ls
ID                               HOSTNAME    STATUS    AVAILABILITY    MANAGER STATUS    ENGINE VERSION
yx1w11bx9v3fiuntfnaupc1b1      manager    Ready     Active           Leader             23.0.1
r6sfq4d68t9qskoeows44pvmh      worker1    Ready     Active           Reachable          23.0.1
iy2vpnmmgf28j1enr2bvae6x7 *    worker2    Ready     Active           Reachable          23.0.1
root@worker2:~]#

```

< 서버 구성 >

메모리 사용량 제한

```
root@manager:~/awesome-compose/portainer]# docker service create -d --name apache --replicas=3 --mount type=volume,source=ys-volume,destination=/usr/local/apache2/htdocs,volume-label="type=html" --limit-memory 200M --reserve-memory 100M httpd:latest  
5qhs8kbgqujabl8z3cx5646p
```

Service specification

☰ Resource limits and reservations

Memory reservation (MB)	<input type="text" value="100"/>	Minimum memory available on a node to run a task (set to 0 for unlimited)
Memory limit (MB)	<input type="text" value="200"/>	Maximum memory usage per task (set to 0 for unlimited)
CPU reservation	<div>unlimited <input type="range" value="1"/></div>	Minimum CPU available on a node to run a task
CPU limit	<div>unlimited <input type="range" value="1"/></div>	Maximum CPU usage per task

Apply changes ▼

< 아파치 사용량 제한 >

메모리 사용량 제한

```
root@manager:~]# docker volume create ys-volume
ys-volume
root@manager:~]# docker service create -d --name nginx --replicas=3 --mount type=volume,source=ys-volume,destination=/usr/share/nginx/html,volume-label="type=html"
--limit-memory 120M --reserve-memory 100M nginx:latest
ir6skrlqs9m7owgqnt83qkg08
```

Service specification

Resource limits and reservations

Memory reservation (MB)	<input type="text" value="100"/>	Minimum memory available on a node to run a task (set to 0 for unlimited)
Memory limit (MB)	<input type="text" value="120"/>	Maximum memory usage per task (set to 0 for unlimited)
CPU reservation	<div>unlimited</div> <div><div></div></div> <div>1</div>	Minimum CPU available on a node to run a task
CPU limit	<div>unlimited</div> <div><div></div></div> <div>1</div>	Maximum CPU usage per task

Apply changes

< nginx 사용량 제한 >

볼륨 생성 및 컨테이너 연동

Volume details

Volume details

ID	ys-volume	<div>Remove this volume</div>
Created	2023-03-22 17:13:40	
Mount path	/var/lib/docker/volumes/ys-volume/_data	
Driver	local	

Access control

Ownership

administrators

Change ownership

Containers using volume

Container Name	Mounted At	Read-only
apache.3.drj5src7nqd20ap85ty81cu6x	/usr/local/apache2/htdocs	false
nginx.2.d6hvbngdo8kr477r7yg14js6	/usr/share/nginx/html	false

< 볼륨 생성 >

Replica 구성

Services

Service list [↻](#)

admin [⌵](#)

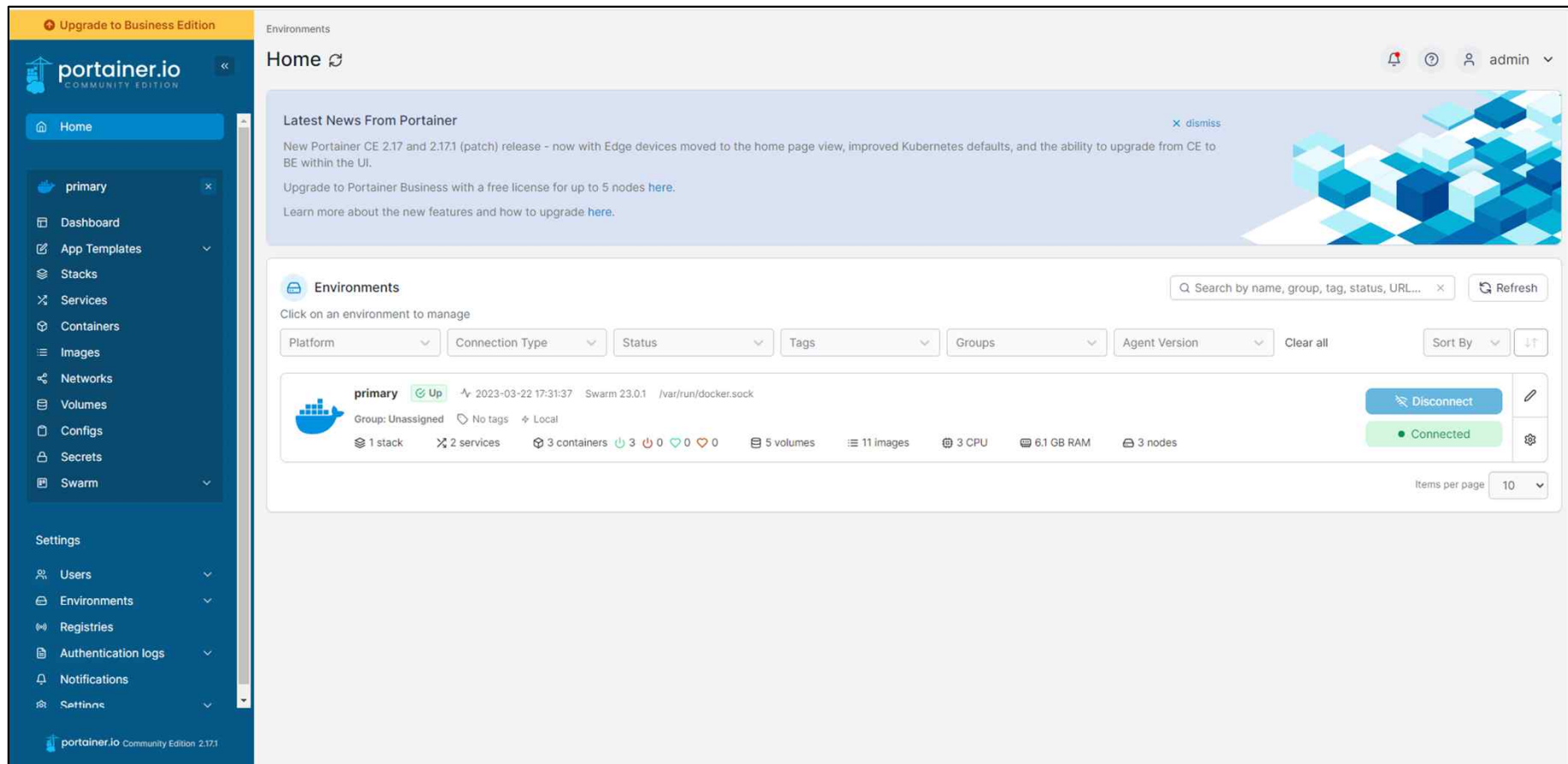
Services [↻ Update](#) [🗑 Remove](#) [+ Add service](#) [☰](#) [⋮](#)

<input type="checkbox"/>	Name ↓↑	Stack ↓↑	Image ↓↑	Scheduling Mode ↓↑	Published Ports ↓↑	Last Update ↓↑	Ownership ↓↑
<input type="checkbox"/>	> apache	-	httpd:latest	replicated 3 / 3 ⚙ Scale	-	2023-03-22 17:25:34	administrators
<input type="checkbox"/>	> nginx	-	nginx:latest	replicated 3 / 3 ⚙ Scale	-	2023-03-22 17:17:35	administrators

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< Replica 구성 >

Portainer Container 구현



< Portainer Container >

A top-down view of a spiral-bound notebook with a black metal spiral binding on the left side. The notebook is open to a page with a light gray grid pattern. A black pen with a silver clip and a small label is lying vertically on the left side of the grid. The notebook is placed on a light-colored wooden surface with vertical planks. The word "END" is superimposed in the center of the image in a large, bold, black sans-serif font.

END