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Podman Quadlet 등록

컨테이너를 시스템 부팅시 자동으로 실행하게 하거나 `systemd`를 이용하여 제어하는 경우 [컨테이너 systemd 등록](#) 방법을 이용하였으나 RHEL9 Podman 4.6 버전 이후부터는 Quadlet 사용을 권장한다.

전통적으로 `podman/docker cli` 명령어로 아래처럼 컨테이너를 기동한다.

```
test-debian:~# podman run -d --name nginx -v
/data/html:/usr/share/nginx/html:ro -p 80:80 -p 443:443
docker.io/library/nginx

test-debian:~# podman ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED
10593d057410	docker.io/library/nginx:latest	nginx -g daemon o...	3 seconds ago

```
Up 3 seconds ago 0.0.0.0:80->80/tcp, 0.0.0.0:443->443/tcp
nginx
```

systemd generate 방식

위 컨테이너를 `systemd`에 등록하기 위해서는 아래처럼 수행한다.

```
test-debian:~# podman generate systemd nginx > /etc/systemd/system/podman-
nginx.service
test-debian:~# systemctl daemon-reload
test-debian:~# systemctl status podman-nginx.service
○ podman-nginx.service - Podman
container-10593d05741041022e1f46a19054f1a8ef71ba7a307cea3e4caa1f89ceb8edfa.s
ervice
    Loaded: loaded (/etc/systemd/system/podman-nginx.service; disabled;
    preset: enabled)
    Active: inactive (dead)
    Docs: man:podman-generate-systemd(1)
```

systemd quadlet 방식

그러나 podman 4.6 버전 이후부터는 `systemd generate`를 이용하게 되면 아래와 같은 경고 문구가 나오게 된다.

```
[root@kvm33 ~]# podman generate systemd nginx > /etc/systemd/system/podman-
nginx.service
```

DEPRECATED command:

It is recommended to use Quadlets for running containers and pods under systemd.

Please refer to podman-systemd.unit(5) for details.

따라서 podman 4.6버전 이후부터는 아래와 같이 Quadlet을 만들어 systemd에 등록하여 사용한다.
quadlet을 등록할 수 있는 경로는 아래와 같다.

- root 사용자의 경우: /usr/share/containers/systemd/ 또는 /etc/containers/systemd/
- rootless 사용자의 경우: \$HOME/.config/containers/systemd/, \$XDG_CONFIG_HOME/containers/systemd/, /etc/containers/systemd/users/\${UID} 또는 /etc/containers/systemd/users/

```
[root@kvm33 systemd]# cat > /etc/containers/systemd/nginx.container
# nginx container quadlet
[Unit]
Description=The nginx container
After=local-fs.target network.target

[Container]
# 사용할 이미지
Image=docker.io/library/nginx:latest

# 포트 바인딩 설정 (호스트의 80, 443 포트를 컨테이너의 80, 443 포트에 매핑)
PublishPort=80:80
PublishPort=443:443

# 디렉토리 마운트 설정 (호스트의 /data/html을 컨테이너의 /usr/share/nginx/html로 읽기
전용으로 마운트)
Volume=/data/html:/usr/share/nginx/html:ro

[Install]
# Start by default on boot
WantedBy=multi-user.target default.target
```

위와 같이 등록 후 systemctl daemon-reload를 수행하여 systemd service 를 생성한다.

```
[root@kvm33 systemd]# systemctl daemon-reload

[root@kvm33 systemd]# journalctl -f
Sep 27 12:14:06 kvm33 systemd[1]: Reloading.
Sep 27 12:14:06 kvm33 systemd-rc-local-generator[103106]: /etc/rc.d/rc.local
is not marked executable, skipping.
```

만약 quadlet파일에 오류가 있는경우 아래와 같이 출력된다.

```
[root@kvm33 systemd]# journalctl -f
Sep 27 11:22:58 kvm33 systemd-rc-local-generator[101427]: /etc/rc.d/rc.local
is not marked executable, skipping.
Sep 27 11:22:58 kvm33 systemd[101403]: /usr/lib/systemd/system-
generators/podman-system-generator failed with exit status 1.
Sep 27 11:24:32 kvm33 systemd[1]: Reloading.
Sep 27 11:24:32 kvm33 quadlet-generator[101492]: converting
"nginx.container": unsupported key 'Detach' in group 'Container' in
/etc/containers/systemd/nginx.container
Sep 27 11:24:32 kvm33 systemd-rc-local-generator[101512]: /etc/rc.d/rc.local
is not marked executable, skipping.
Sep 27 11:24:32 kvm33 systemd[101488]: /usr/lib/systemd/system-
generators/podman-system-generator failed with exit status 1.
Sep 27 11:24:47 kvm33 systemd[1]: Reloading.
Sep 27 11:24:47 kvm33 quadlet-generator[101525]: converting
"nginx.container": unsupported key 'RestartPolicy' in group 'Container' in
/etc/containers/systemd/nginx.container
Sep 27 11:24:47 kvm33 systemd-rc-local-generator[101544]: /etc/rc.d/rc.local
is not marked executable, skipping.
Sep 27 11:24:47 kvm33 systemd[101521]: /usr/lib/systemd/system-
generators/podman-system-generator failed with exit status 1.
```

이후 서비스 기동 수행한다.

```
[root@kvm33 systemd]# systemctl status nginx
○ nginx.service - The nginx container
   Loaded: loaded (/etc/containers/systemd/nginx.container; generated)
   Active: inactive (dead)
[root@kvm33 systemd]# systemctl restart nginx
[root@kvm33 systemd]# systemctl status nginx
● nginx.service - The nginx container
   Loaded: loaded (/etc/containers/systemd/nginx.container; generated)
   Active: active (running) since Fri 2024-09-27 12:17:04 KST; 3s ago
 Main PID: 103363 (conmon)
    Tasks: 26 (limit: 3296240)
  Memory: 21.0M
     CPU: 165ms
    CGroup: /system.slice/nginx.service
            └─libpod-payload-
de01f8a650ae6d7e0893c6e3d399d219af3c44ebad4f73bda6615d477d210bf2
            │ └─103365 "nginx: master process nginx -g daemon off;"
            │ └─103394 "nginx: worker process"
            │ └─103395 "nginx: worker process"
            │ └─103396 "nginx: worker process"
            │ └─103397 "nginx: worker process"
            │ └─103398 "nginx: worker process"
            │ └─103399 "nginx: worker process"
            │ └─103400 "nginx: worker process"
            │ └─103401 "nginx: worker process"
```

```
|_103402 "nginx: worker process"
|_103403 "nginx: worker process"
|_103404 "nginx: worker process"
|_103405 "nginx: worker process"
|_103406 "nginx: worker process"
|_103407 "nginx: worker process"
|_103408 "nginx: worker process"
|_103409 "nginx: worker process"
|_103410 "nginx: worker process"
|_103411 "nginx: worker process"
|_103412 "nginx: worker process"
|_103413 "nginx: worker process"
|_103414 "nginx: worker process"
|_103415 "nginx: worker process"
|_103416 "nginx: worker process"
|_103417 "nginx: worker process"
runtime
|_103363 /usr/bin/conmon --api-version 1 -c
de01f8a650ae6d7e0893c6e3d399d219af3c44ebad4f73bda6615d477d210bf2 -u
de01f8a650ae6d7e0893c6e3d399d219af3c44ebad4f73bda6615d477d210bf2 -r
/usr/bin/crun -b /var/lib/containers/storage/overlay-conta>

Sep 27 12:17:04 kvm33 systemd-nginx[103363]: 2024/09/27 03:17:04 [notice]
1#1: start worker process 38
Sep 27 12:17:04 kvm33 systemd-nginx[103363]: 2024/09/27 03:17:04 [notice]
1#1: start worker process 39
Sep 27 12:17:04 kvm33 systemd-nginx[103363]: 2024/09/27 03:17:04 [notice]
1#1: start worker process 40
Sep 27 12:17:04 kvm33 systemd-nginx[103363]: 2024/09/27 03:17:04 [notice]
1#1: start worker process 41
Sep 27 12:17:04 kvm33 systemd-nginx[103363]: 2024/09/27 03:17:04 [notice]
1#1: start worker process 42
Sep 27 12:17:04 kvm33 systemd-nginx[103363]: 2024/09/27 03:17:04 [notice]
1#1: start worker process 43
Sep 27 12:17:04 kvm33 systemd-nginx[103363]: 2024/09/27 03:17:04 [notice]
1#1: start worker process 44
Sep 27 12:17:04 kvm33 systemd-nginx[103363]: 2024/09/27 03:17:04 [notice]
1#1: start worker process 45
Sep 27 12:17:04 kvm33 systemd-nginx[103363]: 2024/09/27 03:17:04 [notice]
1#1: start worker process 46
Sep 27 12:17:04 kvm33 systemd-nginx[103363]: 2024/09/27 03:17:04 [notice]
1#1: start worker process 47
[root@kvm33 systemd]# podman ps -a
CONTAINER ID   IMAGE                                     COMMAND                                           CREATED
STATUS        PORTS                               NAMES
de01f8a650ae   docker.io/library/nginx:latest             nginx -g daemon o... 5
seconds ago   Up 6 seconds   0.0.0.0:80->80/tcp, 0.0.0.0:443->443/tcp
systemd-nginx
```

참조링크

- https://docs.redhat.com/ko/documentation/red_hat_enterprise_linux/9/html/building_running_and_managing_containers/assembly_porting-containers-to-systemd-using-podman_building-running-and-managing-containers#auto-generating-a-systemd-unit-file-using-quadlets_assembly_porting-containers-to-systemd-using-podman
- https://www.redhat.com/sysadmin/quadlet-podman?extIdCarryOver=true&sc_cid=701f2000001OH6kAAG
- <https://docs.podman.io/en/latest/markdown/podman-systemd.unit.5.html>

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