Docker

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PiHole - Synology Configuration

This is to create a MAC vlan on you synology to bridge interfaces

You will need to create the following folders from the main docker folder.

```
mkdir -p /volume1/docker/pihole
mkdir -p /volume1/docker/pihole/pihole
mkdir -p /volume1/docker/pihole/dnsmasq.d
```

My testing vlan uses 192.168.253.0/24

```
sudo docker network create -d macvlan -o parent=eth3 --subnet=192.168.253.0/24 --gateway=192.168.253.1 --ip-range=192.168.253.44/32 ph_network
```

YAML Configurations

```
services:
  pihole:
    image: pihole/pihole:latest
    container_name: pihole
    hostname: pihole
    security_opt:
      - no-new-privileges=false
    networks:
      - ph_network
      - ph_bridge
    environment:
      PIHOLE_GID: 100
      PIHOLE_UID: 1024
      DNSMASQ_USER: root
      TZ: 'America/Montreal'
      FTLCONF_webserver_api_password: '[Your_Password_Here]'
      #FTLCONF_webserver_port: 8080
      FTLCONF_dns_listeningMode: all
```

```
      DNSMASQ_LISTENING: local
    volumes:
      - /volume1/docker/pihole/pihole:/etc/pihole
      - /volume1/docker/pihole/dnsmasq.d:/etc/dnsmasq.d
      - /etc/localtime:/etc/localtime:ro
    cap_add:
      - NET_ADMIN
      - SYS_TIME
      - SYS_NICE
    restart: on-failure:5
networks:
    ph_bridge:
      driver: bridge
      ipam:
        config:
          - subnet: 192.168.100.0/24
            gateway: 192.168.100.1
            ip_range: 192.168.100.2/32
    ph_network:
      name: ph_network
      external: true
```

Accessing the pi-hole remotely

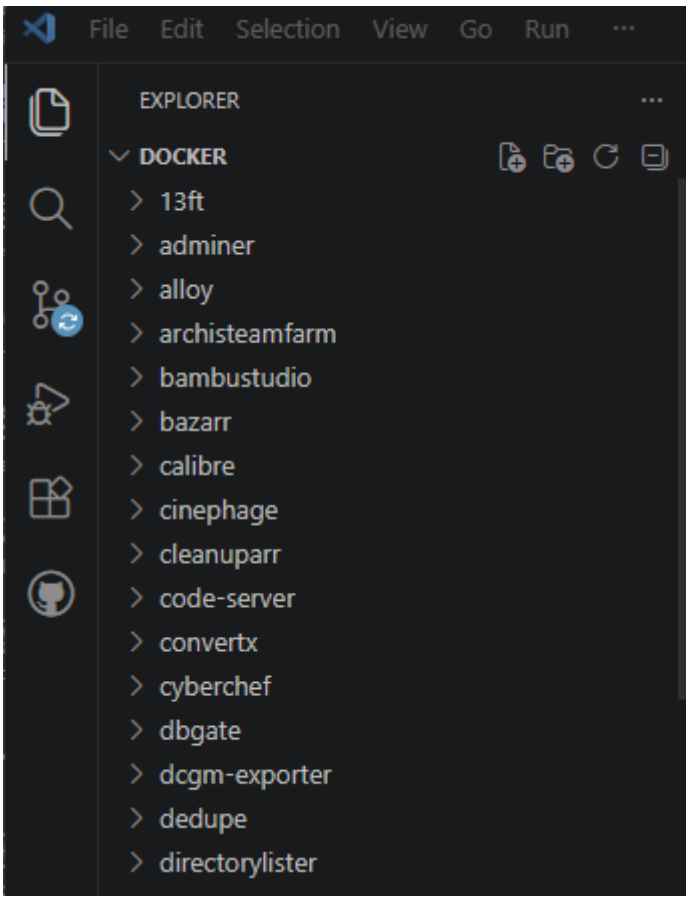
```
https://192.1638.253.44/admin
```

If you are 7.1 DSM you will need to use this command

```
docker-compose -f /volume1/docker/pihole/compose.yaml up -d
```

.gitignore - .gitIgnore File for Docker Compose Files

Use Case TrueNAS shared SMB with a folder dedicated to yaml files.



This is it to be used if you have a SMB drive and point Visual Code or Code Server to all of your docker folders.

The .`gitignore` file setup

```
# Ignore everything by default
*

# Allow directories to be traversed
!*/

# Include YAML files
```

```
!*.yaml
!*.yml
!.env
!env.*

# Include .gitignore and .gitattributes files
!.gitignore
!.gitattributes
```

RustDesk - pfSense and and HAProxy

You can configure self-hosted RustDesk (hbbs ID/rendezvous server + hbbr relay server) behind your pfSense + HAProxy Docker setup using `hostname.domain.com` as the external ID server address. However, there are important caveats due to how RustDesk works.

Important Limitations with HAProxy for RustDesk

RustDesk uses a **custom protocol** (not HTTP/HTTPS) with:

- **TCP ports**: 21115 (hbbs signaling), 21116 (hbbs), 21117 (hbbr relay)
- **UDP port**: 21116 (critical for NAT traversal / hole punching)
- Optional WebSocket ports 21118/21119 (only needed for the web client)

HAProxy (even in TCP mode) is not ideal for the core RustDesk traffic:

- It cannot properly proxy UDP 21116 (HAProxy's UDP support is very limited and not suitable here).
- Even in TCP mode, the real client IP is hidden (hbbs sees the HAProxy container's IP), which breaks NAT hole-punching and forces everything through the relay.
- Domain-based routing (`hostname.domain.com`) doesn't help because RustDesk clients connect directly to the resolved IP + specific ports — there is no Host header or SNI to route on.

Recommended approach: Use **pfSense Port Forward / NAT rules** for the RustDesk ports (direct to your RustDesk Docker host/container). Keep HAProxy for your HTTP/HTTPS services only. This is the most reliable way and what most people successfully use with pfSense + RustDesk.

If you *must* route everything through HAProxy Docker, it's possible for the TCP ports only (see advanced section at the end), but UDP will still need a direct forward and performance/reliability will suffer.

Step-by-Step Recommended Setup (Direct pfSense NAT + Domain)

1. **Set up DNS**
   - Create an A record (and AAAA if IPv6) for `hostname.domain.com` pointing to your **pfSense WAN public IP**.
   - No special subdomains or paths needed.
2. **Run RustDesk Server in Docker** (on your internal host/VM/LXC behind pfSense) You can also choose to use the official Docker Compose (download `oss.yml` from RustDesk or use this standard one):

```
services:
  hbbs: # ID / signaling server
    container_name: hbbs
    image: rustdesk/rustdesk-server:latest
    command: hbbs -r {REMOTE HOSTNAME}:21117
    logging:
      driver: json-file
      options:
        max-file: ${DOCKERLOGGING_MAXFILE:-10}
        max-size: ${DOCKERLOGGING_MAXSIZE:-200k}
    ports:
      - "21115:21115"
      - "21116:21116"
      - "21116:21116/udp"
      - "21118:21118"
    volumes:
      - ${DOCKERFOLDER}/rustdesk/data:/root
    depends_on:
      - hbbr
    restart: unless-stopped
  hbbr: # Relay server
    container_name: hbbr
    image: rustdesk/rustdesk-server:latest
    command: hbbr
    logging:
      driver: json-file
      options:
        max-file: ${DOCKERLOGGING_MAXFILE:-10}
```

```
    max-size: ${DOCKERLOGGING_MAXSIZE:-200k}
  ports:
    - "21117:21117"
    - "21119:21119"
  volumes:
    - ${DOCKERFOLDER}/rustdesk/data:/root
  restart: unless-stopped
```

- Run with `docker compose up -d`.
- The `./data` folder will contain your `encryption` key pair (`id_ed25519.pub`).
- Check logs: `docker logs hbbs` → look for the **public key** (you'll need this in clients).

3. **pfSense Configuration (Port Forwards + Firewall Rules)** Go to **Firewall → NAT → Port Forward** and create these rules (all source = WAN, destination = your RustDesk Docker host's internal IP):

Protocol	Destination Port	Forward to IP	Forward to Port	Notes
TCP	21115	RustDesk Docker IP	21115	hbbs signaling
TCP	21116	RustDesk Docker IP	21116	hbbs
UDP	21116	RustDesk Docker IP	21116	Critical for hole punching
TCP	21117	RustDesk Docker IP	21117	hbbr relay

   - Set **Source port range** to *any* (RustDesk clients use random source ports).
   - Auto-create the associated firewall rules (or manually create matching WAN rules under **Firewall → Rules → WAN** allowing the same ports).

   Optional but recommended:
   - Enable **System → Advanced → Firewall & NAT → NAT Reflection** (Pure NAT mode) if you want LAN clients to reach the server via the public domain.
4. **Client Configuration** On every RustDesk client (Windows/macOS/Linux/Android/iOS):
   - Go to **Settings → ID/Relay Server**
   - **ID Server**: hostname.domain.com (or `hostname.domain.com:21115` if you changed the port)
   - **Relay Server**: leave blank (hbbs will tell clients to use `hostname.domain.com:21117`)
   - **Key**: paste the public key from your `./data/id_ed25519.pub` file
5. **Test**
   - From outside your network, connect using an ID from one of your machines.
   - Check connection type in the session (should be "Direct" most of the time; falls back to "Relay" if needed).
   - Monitor logs: `docker logs hbbs` and `docker logs hbbr`.

Advanced: Forcing Everything Through HAProxy Docker (Not Recommended)

If you really want HAProxy as the single entry point:

- Forward **all** the ports above from pfSense WAN → your **HAProxy Docker container IP** (instead of directly to RustDesk).
- In your HAProxy config (or pfSense HAProxy package if you're using that), add TCP-mode frontends/backends for each TCP port:

```
frontend rustdesk_hbbs_21115
    bind :21115
    mode tcp
    default_backend rustdesk_hbbs

backend rustdesk_hbbs
    mode tcp
    server hbbs rustdesk-docker-ip:21115

# Repeat for 21116 (TCP only), 21117, etc.
```

- **UDP 21116** → still do a direct pfSense NAT forward to the RustDesk container (bypassing HAProxy).
- You will likely have NAT traversal issues because of the hidden client IP.

For the RustDesk **Web Client** only (if you use it), you can proxy the WebSocket ports (21118/21119) through HAProxy in HTTP mode with proper `Upgrade` headers — similar to the official Nginx example in the RustDesk docs.

This direct pfSense NAT + domain setup is what works reliably for almost everyone running RustDesk behind pfSense. Let me know if you hit any specific error logs or need the exact Docker Compose / HAProxy snippets adjusted for your environment!

PODMAN - Install Podman on Linux Redhat

Production-Ready Step-by-Step Guide Rootless Podman + Quadlet on Red Hat Enterprise Linux 10

This guide is designed for a production environment as assums a fresh install of Redhat. It uses the modern **Quadlet** method (recommended) and follows Red Hat best practices for RHEL 10.

---

1. System Requirements (Production)

Resource	Minimum	Recommended (Production)	Our Systems
CPU	2 cores	4+ cores	8 cores
RAM	4 GB	8–16 GB+	32 GB
Disk	40 GB free	100 GB+ (SSD preferred)	350 GB
cgroup	cgroup v2	cgroup v2 (required)	
SELinux	Enforcing	Enforcing	

Check cgroup version:

```
podman info --format '{{.Host.CgroupVersion}}'
```

Install Needed Tools:

Epel Release

```
subscription-manager repos --enable codeready-builder-for-rhel-10-$(arch)-rpms
dnf install https://dl.fedoraproject.org/pub/epel/epel-release-latest-10.noarch.rpm -y
```

After Epel installation rerun the upgrade to update if any are needed

```
dnf upgrade -y
```

Toolset

```
dnf install bind-utils bzip2 cups cifs-utils enscript ftp gdb ghostscript krb5-workstation ksh lftp lrzsz lsof libnsl lzop plocate mutt ncompress net-tools net-snmp net-snmp-utils net-tools nfs-utils nmap nvme-cli openldap-clients openssh-clients psmisc realmd rsync samba-client strace sysstat tcpdump telnet telnet-server tmux unix2dos vim vim-enhanced vsftpd wget xfsdump vsftpd htop mc rsyslog rsyslog-doc postfix dbus-daemon s-nail dovecot cyrus-sasl cyrus-sasl-lib cyrus-sasl-plain tree figlet toilet coreutils -y
```

---

2. Prepare the System

2.1 Register and Update RHEL 10

```
sudo dnf update -y
sudo reboot
```

2.2 Install Container Tools

```
sudo dnf install -y container-tools
```

Optional (Docker CLI compatibility):

```
sudo dnf install -y podman-docker
```

Verify:

```
podman --version
podman info
```

---

3. Create a Dedicated Service User (Best Practice)

For production, avoid running services under a regular interactive user.

```
# Create a system user for containers
sudo useradd -r -m -d /home/podman -s /bin/bash podman
```

```
# Set a strong password or disable password login
sudo passwd podman          # or lock the account later
```

Grant subordinate UIDs/GIDs (required for rootless):

```
sudo usermod --add-subuids 100000-165535 --add-subgids 100000-165535 podman
```

---

4. Enable Lingering (Critical for Production)

This allows the user services to run even when the user is not logged in.

```
sudo loginctl enable-linger podman
```

Verify:

```
loginctl show-user podman | grep Linger
# Linger=yes
```

---

5. Configure Rootless Environment

Switch to the service user:

```
sudo -u podman -i
```

Create required directories:

```
mkdir -p ~/.config/containers/systemd
mkdir -p ~/.config/containers
mkdir -p ~/.local/share/containers
```

Optional but Recommended: Storage Configuration

```
cat > ~/.config/containers/storage.conf << 'EOF'
[storage]
driver = "overlay"
runroot = "/run/user/$(id -u)/containers"
graphroot = "$HOME/.local/share/containers/storage"

[storage.options.overlay]
mount_program = "/usr/bin/fuse-overlayfs"
mountopt = "nodev,fsync=0"
EOF
```

Optional: Registries Configuration

```
cat > ~/.config/containers/registries.conf << 'EOF'
unqualified-search-registries = ["registry.access.redhat.com", "registry.redhat.io", "docker.io", "quay.io"]

[[registry]]
location = "docker.io"
insecure = false
EOF
```

---

6. Create Your First Production Quadlet

A) Example: Nginx reverse proxy / web service

```
cat > ~/.config/containers/systemd/nginx.container << 'EOF'
[Unit]
Description=Nginx Web Server (Production)
After=network-online.target
Wants=network-online.target

[Container]
Image=docker.io/library/nginx:alpine
ContainerName=nginx
PublishPort=8080:80
Volume=nginx-data.volume:/usr/share/nginx/html:Z
Volume=nginx-conf.volume:/etc/nginx/conf.d:Z
```

```
AutoUpdate=registry
Environment=TZ=America/New_York
PodmanArgs=--memory=512m --cpus=1.0 --memory-swap=512m

[Service]
Restart=always
TimeoutStartSec=300

[Install]
WantedBy=default.target
EOF
```

A) Create supporting volumes:

```
cat > ~/.config/containers/systemd/nginx-data.volume << 'EOF'
[Volume]
VolumeName=nginx-data
EOF

cat > ~/.config/containers/systemd/nginx-conf.volume << 'EOF'
[Volume]
VolumeName=nginx-conf
EOF
```

B) Another Example

```
cat > ~/.config/containers/systemd/myapp.container << 'EOF'
[Unit]
Description=My Application (Production)
After=network-online.target
Wants=network-online.target

[Container]
Image=your-registry/your-app:latest
ContainerName=myapp
PublishPort=8080:8080
Volume=myapp-data.volume:/data:Z
AutoUpdate=registry
Environment=TZ=America/New_York
PodmanArgs=--memory=1g --cpus=1.5 --memory-swap=1g
```

```
[Service]
Restart=always
TimeoutStartSec=300

[Install]
WantedBy=default.target
EOF
```

B) Create supporting volume:

```
cat > ~/.config/containers/systemd/myapp-data.volume << 'EOF'
[Volume]
VolumeName=myapp-data
EOF
```

---

7. Activate the Service

A) Example for Nginx

```
# Reload systemd user units
systemctl --user daemon-reload

# Start and enable
systemctl --user enable --now nginx.service

# Check status
systemctl --user status nginx.service
podman ps
```

View logs:

```
journalctl --user -u nginx.service -f
```

B) Second Example

```
systemctl --user daemon-reload
systemctl --user enable --now myapp.service

# Verify
systemctl --user status myapp.service
podman ps
```

View logs:

```
journalctl --user -u myapp.service -f
```

---

8. Configure pfSense HAProxy

In pfSense HAProxy:

1. **Backend**
   - Mode: http
   - Server: IP of your RHEL 10 host
   - Port: 8080 (or whatever you published)
   - Health check: recommended
2. **Frontend**
   - Bind to WAN / desired interface
   - TLS offloading (recommended)
   - ACL based on Host header (e.g. hdr(host) -i app.yourdomain.com)
   - Use backend created above
3. **Firewall Rules**
   - Allow traffic from HAProxy (or LAN) to the RHEL host on the published port(s) only.

Firewall example:

```
sudo firewall-cmd --permanent --add-port=8080/tcp
sudo firewall-cmd --reload
```

---

9. Production Hardening Checklist

Item	Command / Action	Status
SELinux	Keep enforcing	☐
Linger enabled	loginctl show-user podman	☐
Resource limits	Set in Quadlet (--memory, --cpus)	☐
Auto-update	AutoUpdate=registry in Quadlet	☐
Firewall	Open only required ports	☐
Log rotation	Configure journald or ship logs	☐
Image scanning	Use podman image scan or external scanner	☐
Backup volumes	Backup ~/.local/share/containers	☐
Non-interactive user	Disable password / use key-based access only	☐
Log management	journalctl --user or forward logs	

Enable auto-update timer (as podman user):

```
systemctl --user enable --now podman-auto-update.timer
```

---

9. Useful Management Commands

A) Example for Nginx

```
# List all user services
systemctl --user list-units --type=service

# Restart a service
systemctl --user restart nginx.service

# Stop a service
systemctl --user stop nginx.service

# View resource usage
podman stats
```

```
# Update all containers with AutoUpdate
podman auto-update
```

B) Another Example

```
# Service management
systemctl --user status myapp.service
systemctl --user restart myapp.service
systemctl --user stop myapp.service

# Container status & resources
podman ps
podman stats

# Logs
journalctl --user -u myapp.service -f

# Manual update
podman auto-update
```

---

10. Optional: Auto-Update Timer

Enable Podman’s auto-update timer (as the podman user):

Bash

```
systemctl --user enable --now podman-auto-update.timer
```

Summary of Key Directories (Rootless)

Purpose	Path
Quadlet files	~/.config/containers/systemd/
Container storage	~/.local/share/containers/storage/
User systemd units	~/.config/systemd/user/

Purpose	Path
Configuration	~/.config/containers/

Summary

- HAProxy on pfSense = edge reverse proxy / TLS / routing
- RHEL 10 + rootless Podman + Quadlet = application runtime
- No Nginx needed unless the application itself requires it