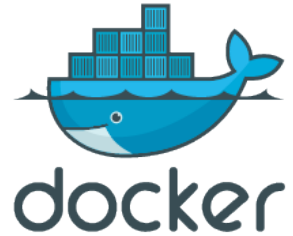


# Step-by-Step Setup Guide

## Coturn - TURN Server

[GabrielTanner Website](#)



This step-by-step article will guide you through setting up Coturn, a TURN server, using Docker Swarm and Traefik as a reverse proxy. You will configure Coturn to help WebRTC function by handling NAT traversal issues in peer-to-peer connections.

### Prerequisites

- Linux server with Docker Swarm and Traefik installed. -> [Check this Article](#)
- A domain name for the TURN server (optional but recommended).
- GlusterFS or similar shared storage system (optional for Docker Swarm). -> [Check this Article](#)
- Knowledge of setting up Docker, Docker Compose, and basic networking. -> [Check this Article](#)

## Step 1: Set Up Data Directory in GlusterFS

If you use Docker Swarm and want data shared across all nodes, create a directory in GlusterFS for persistent data.

```
mkdir -p /mnt/glustermount/data/coturn_data
```

# Step 2: Create and Customize

## turnserver.conf

Create a configuration file for Coturn (`turnserver.conf`) that defines essential settings like server realm, authentication, ports, and SSL certificates.

```
sudo nano /mnt/glustermount/data/coturn_data/turnserver.conf
```

Also Create a Logfile for Persistent Data in GlusterFS:

```
sudo nano /mnt/glustermount/data/coturn_data/turnserver.log
```

### Single Configure Steps

1. Add the following content to define your Coturn server realm and server name. Replace the placeholder values according to your needs.

```
# TURN server name and realm
realm=<DOMAIN>
server-name=<SERVER_NAME>
```

2. After that, add the `external-ip` key to define your server's IP-Address and the `listening-ip` key to specify which IP-Addresses the Coturn server should listen to (0.0.0.0 tells the server to listen to all IP-Addresses).

```
# IPs the TURN server listens to
listening-ip=0.0.0.0

# External IP-Address of the TURN server
external-ip=IP_ADDRESS
```

3. Next you can define the port your server will listen on and the ports for further configuration.

```
# Main listening port
listening-port=3478

# Further ports that are open for communication
min-port=10000
```

```
max-port=20000
```

4. Then you can continue by defining the directory for your logs and enable the verbose logging mode.

```
# Use fingerprint in TURN message
fingerprint

# Log file path
log-file=/var/log/turnserver.log

# Enable verbose logging
verbose
```

5. Lastly, you can enable authentication for your TURN server using the `user` and `lt-cred-mech` keys.

```
# Specify the user for the TURN authentication
user=test:test123

# Enable long-term credential mechanism
lt-cred-mech
```

These configuration blocks will result in the following file:

```
# TURN server name and realm
realm=DOMAIN
server-name=turnserver

# Use fingerprint in TURN message
fingerprint

# IPs the TURN server listens to
listening-ip=0.0.0.0

# External IP-Address of the TURN server
external-ip=IP_ADDRESS
```

```
# Main listening port
listening-port=3478

# Further ports that are open for communication
min-port=10000
max-port=20000

# Log file path
log-file=/mnt/gluster mount/data/coturn_data/turnserver.log

# Enable verbose logging
verbose

# Specify the user for the TURN authentication
user=test:test123

# Enable long-term credential mechanism
lt-cred-mech

# If running coturn version older than 4.5.2, uncomment these rules and ensure
# that you have listening-ip set to ipv4 addresses only.
# Prevent Loopback bypass https://github.com/coturn/coturn/security/advisories/GHSA-6g6j-r9rf-cm7p
#denied-peer-ip=0.0.0.0-0.255.255.255
#denied-peer-ip=127.0.0.0-127.255.255.255
#denied-peer-ip>:::1
```

Once you're done, save and exit your file.

You can further customize your configuration for your own needs by changing the give keys' values or by adding new ones. You can reference the original configuration, which provides essential documentation for the most important options.

## Step 3: Create PID Folder & Create CoturnUser

**1. Create a System User for Coturn:** This command creates a system user for Coturn with no login shell for security purposes:

```
sudo useradd -r -s /bin/false coturn
```

**2. Set Ownership:** Change the ownership of the Coturn data directory to the newly created Coturn user:

```
sudo chown -R coturn:coturn /mnt/glustermount/data/coturn_data
```

**3. Set Correct Permissions:** Ensure that only the Coturn user has access to this directory by setting the proper permissions:

```
sudo chmod -R 700 /mnt/glustermount/data/coturn_data
```

These steps will ensure that Coturn has the correct permissions to access and write files in its data directory.

## Step 4: Set Up Docker Compose for Coturn

Now, set up a `docker-compose.yaml` file to run Coturn inside Docker Swarm.

```
nano /mnt/glustermount/data/coturn_data/docker-compose.yaml
```

Add the following Docker Compose configuration:

```
coturn:
  image: coturn/coturn:4.5.2
  environment:
    - TURN_REALM=<DOMAIN>
    - TURN_LISTEN_PORT=3478
  volumes:
    - /mnt/glustermount/data/coturn_data/turnserver.conf:/etc/coturn/turnserver.conf:ro
    - /mnt/glustermount/data/coturn_data/pid:/var/run
  networks:
    - management_net
```

```
deploy:
  mode: replicated
  replicas: 1
```

```
networks:
  management_net:
    external: true
```

## Step 5: Port Forwarding

For external access, you need to set up **port forwarding** on your router or firewall. Forward the following ports:

- **3478 TCP/UDP**: TURN Port.
- **49152-65535 UDP**: Ensure this range of ports (or at least some) is open for relayed media traffic.

These ports allow external clients to connect to your VPN server and administrators to access the web interface.

If you don't know how to do that go visit this [Website](#) from NordVPN.

## Conclusion

Setting up a TURN server with Coturn in Docker Swarm can simplify peer-to-peer communication in WebRTC applications, especially in networks where NAT traversal is required. With Traefik as a reverse proxy, you can easily manage your server through HTTPS and make it accessible from the internet. By following this guide, you've built a robust, scalable, and secure TURN server setup.

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