

COMPREHENSIVE GUIDE TO SETTING UP SYNCTHING

IN A MASTER-CLIENT CONFIGURATION

Overview

Syncthing is an open-source, decentralized file synchronization tool. This guide details the process for setting up a master-client configuration, where a Jetson Nano acts as the master node, and multiple client nodes synchronize files with it. The guide assumes Docker-based deployment with the following configuration:

- **Master Node:** Jetson Nano
- **Client Nodes:** Devices running Syncthing containers

Prerequisites

1. Hardware and Software

- Jetson Nano (Master node)
- Client devices capable of running Docker
- Linux-based OS for all nodes
- Stable network connection between nodes

2. **Install Docker** Ensure Docker is installed on all devices. Follow the official Docker installation guide for your operating system:

- Install Docker

3. **Prepare Syncthing Configuration Directories** On each device, create directories for Syncthing's configuration and data:

```
mkdir -p ~/syncthing/config ~/syncthing/data
```

Docker Compose Configuration

Each node will run Syncthing using the following Docker Compose file:

Master Node (Jetson Nano) Configuration

Create a docker-compose.yml file with the following content:

```
version: '3.7'

services:

  syncthing:
    image: syncthing/syncthing
    container_name: syncthing

    ports:
      - "8384:8384"      # Web interface
      - "22000:22000"    # Default sync port
```

- "21027:21027/udp" # Local discovery

volumes:

- ./syncthing/config:/var/syncthing/config

- ./syncthing/data:/var/syncthing/data

restart: unless-stopped

privileged: true

Start the Syncthing service:

docker-compose up -d

Client Nodes Configuration

Repeat the same steps for each client node:

1. Copy the same docker-compose.yml file to each client device.
2. Adjust the volumes path if necessary to point to the correct directories on the host machine.
3. Start the Syncthing service:

docker-compose up -d

Access Syncthing Web Interface

- Open a browser and navigate to <http://<device-ip>:8384> on the master and client nodes.
- Replace <device-ip> with the IP address of the device running Syncthing.

Initial Setup

1. Master Node Configuration

- Open the Syncthing Web UI.
- Note the Device ID of the master node.
- Share the desired folder with client nodes:
 1. Go to the "Folders" section.
 2. Add a new folder or use the default "Sync" folder.
 3. Click "Edit" and share it with the client nodes.

2. Client Node Configuration

- Open the Syncthing Web UI.
- Note the Device ID of the client node.
- Add the master node as a trusted device:
 1. Go to the "Devices" section.
 2. Click "Add Remote Device."
 3. Enter the Device ID of the master node and click "Save."

- Accept the folder share from the master node.

3. Synchronization

- Once devices are connected, Syncthing will start synchronizing the specified folders.

Troubleshooting

1. **Permission Issues** Ensure that Syncthing has permission to write to the config and data directories:

2. `sudo chmod -R 755 ~/syncthing/config ~/syncthing/data`

`sudo chown -R $USER:$USER ~/syncthing/config ~/syncthing/data`

3. **Firewall Settings** Open the required ports (8384, 22000, 21027/udp) on your firewall if synchronization does not work.

4. `sudo ufw allow 8384`

5. `sudo ufw allow 22000`

`sudo ufw allow 21027/udp`

6. **Logs** Check Syncthing logs if the container keeps restarting:

`docker logs syncthing`

Scaling to Multiple Clients

1. Add New Clients

- Repeat the client setup process for each new device.
- Share the folder from the master node with the new client device.

2. Monitor Devices

- Use the Web UI to monitor synchronization status and connected devices.

Advanced Configuration

1. **Resource Limiting** Add resource limits to the docker-compose.yml file for each node to prevent Syncthing from consuming excessive resources:

2. `deploy:`

3. `resources:`

4. `limits:`

5. `memory: 500M`

`cpus: "0.5"`

6. **Backup Configuration** Periodically back up the config and data directories to prevent data loss:

`tar -czvf syncthing-backup.tar.gz ~/syncthing/config ~/syncthing/data`

7. **Using Syncthing Over the Internet** If nodes are in different networks, configure Syncthing to use global discovery and ensure NAT traversal is enabled. Additionally, set up a relay server if required.

By following this guide, you can efficiently set up and manage a Syncthing-based file synchronization system with a master-client configuration. For further customization, refer to the official Syncthing documentation.