# 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

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

sudo ufw allow 21027/udp

1. **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"

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

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

1. **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.