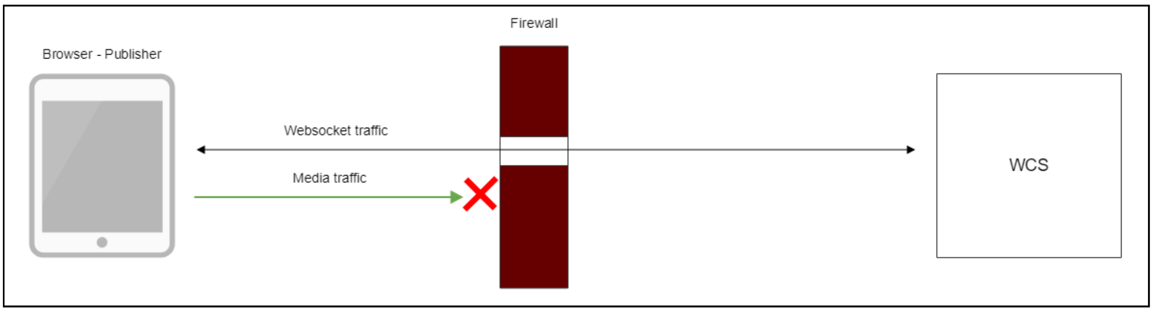
TURN server

Overview

TURN server is used to establish WebRTC connection and transmit media traffic when UDP exchange between client and server is blocked by firewall



There are the following ways to use TURN server with WCS server

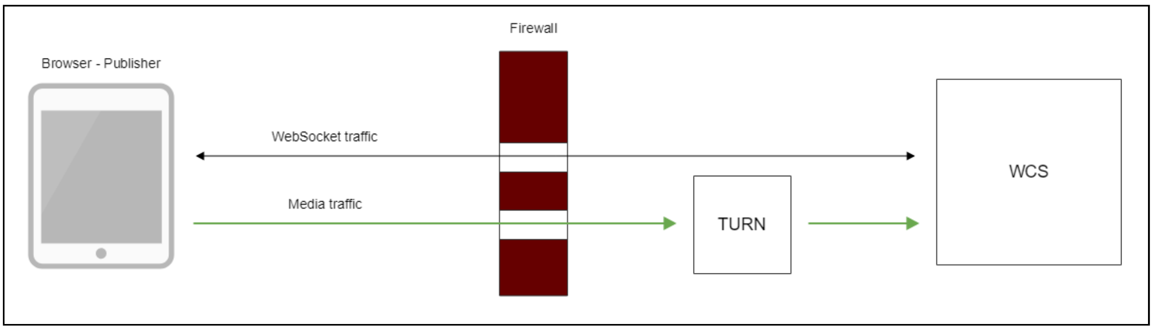
1. Using external TURN server, This is suitable for customers with enterprise infrastructure and customers which prefer to separate task performed by servers.
2. Using internal TURN server that embedded to WCS. This is sutable for small office and customer which prefer out-of-the-box solutions.

Supported platforms and browsers

	Chrome	**Firefox**	**Safari**	**Chromium Edge**
Windows	✅	❌	❌	✅
Mac OS	✅	❌	✅	✅
Android	✅	❌	❌	✅
iOS	✅	❌	✅	✅

Using external TURN server

When external TURN server is used, a traffic flows through available ports as follows:



Installing and configuring the TURN server on CentOS 7

1. Download and install turnserver
   Or use the following guide to compile from sources
2. Create the configuration file `turnserver.conf`
   An example of the `turnserver.conf.default` configuration file is in the `/usr/local/etc` directory. You can rename it to `turnserver.conf` or create a new file.
   Below is an example of the minimum configuration file:

   ```
   fingerprint
   lt-cred-mech
   user=username1:password1
   realm=flashphoner.com
   cert=/usr/local/etc/turn_server_cert.pem
   pkey=/usr/local/etc/turn_server_pkey.pem
   pkey-pwd=qweasd
   ```

3. As seen from this example, operation of the TURN server requires a certificate and a private key. If the TURN server is installed on the same server as the WCS server, you can use certificates of the WCS server.
   If the TURN server is installed on another server, you can use openssl to generate a certificate and a private key:

   ```
   openssl req -x509 -newkey rsa:4096 -keyout
   /usr/local/etc/turn_server_pkey.pem -out
   usr/local/etc/turn_server_cert.pem -days 365
   ```

4. REQUIRED: the configuration file of the TURN server must enable authorization, and users for authorization must be specified (the first three lines of the configuration file example).
5. Start turnserver

   ```
   turnserver
   ```

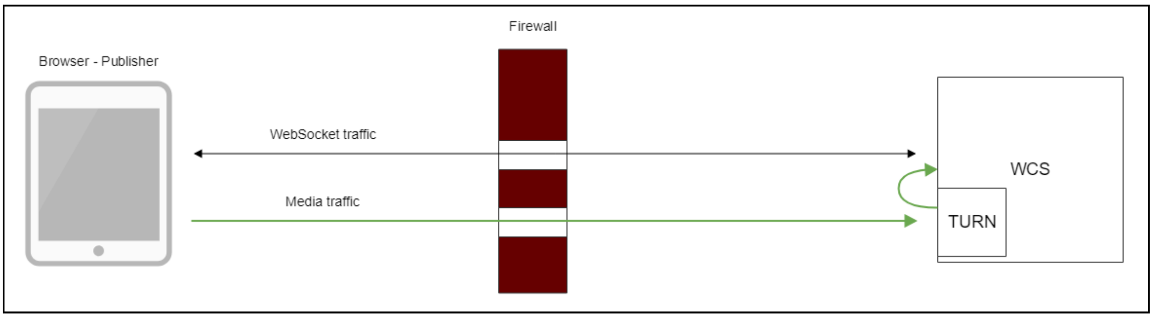
Connection using external TURN server

When you create a session using the Flashphoner WebSDKyou need to pass the `mediaOptions` parameter where the credentials of the TURN server are specified. Below is an example of creating such a session:

```
Flashphoner.createSession({urlServer: url, mediaOptions: {"iceServers": [ {
'url': 'turn:192.168.0.1:3478?transport=tcp', 'credential': 'password1',
'username': 'username1' } ], "iceTransportPolicy": "relay"}})
```

Using internal TURN server

When internal TURN server is used, a traffic flows through available ports as follows:



Client browser establishes TCP connection to internal TURN server port (3478 by default), then internal TURN server connects to local WCS interface through UDP ports from specified range (36001-37000 by default). Thus, for client media traffic flows through TCP tunnel, and for WCS server nothing is changed, traffic flows via UDP ports.

The side effect is that all media traffic between client and server goes through TCP, this may seriously improve quality of HD translations with high bitrate.

Internal TURN server configuration

Internal TURN server should be set up using the following parameters in flashphoner.properties file:

Parameter	Default value	Description
`turn_ip`	`ip`	Internal TURN server IP address (by default is the same as `ip`)
`turn_ip_local`	`ip_local`	Internal TURN server local IP address used for port binding (by default is the same as `ip_local`)
`turn_port`	3478	Internal TURN server TCP port

Parameter	Default value	Description
`turn_password`	coM77EMrV7Cwhyan	Internal TURN server password (username is `flashphoner`)
`turn_media_port_from`	36001	Beginning of media UDP ports range for WebRTC connection between TURN and WCS
`turn_media_port_to`	37000	End of media UDP ports range
`turn_media_ports_auditor_interval`	5000	Audit interval for busy and free ports, in milliseconds
`turn_media_ports_auditor_max_attempts`	3	Number of audits to make sure freed port is not bound
`turn.server_channel_receive_buffer_size`	1048576	Receive buffer size in bytes
`turn.server_channel_send_buffer_size`	1048576	Send buffer size in bytes

Connection using internal TURN server

When you create a session using the Flashphoner WebSDK you need to pass the `mediaOptions` parameter where the credentials of the internal TURN server are specified:

```
Flashphoner.createSession({urlServer: url, mediaOptions: {"iceServers": [ {
'url': 'turn:test.flashphoner.com:3478?transport=tcp', 'credential':
'coM77EMrV7Cwhyan', 'username': 'flashphoner' } ]}})
```

If UDP ports are blocked by firewall, browser may not establish WebRTC connection through UDP. In this case, `"iceTransportPolicy": "relay"` parameter should be set in `mediaOptions`

```
Flashphoner.createSession({urlServer: url, mediaOptions: {"iceServers": [ {
'url': 'turn:test.flashphoner.com:3478?transport=tcp', 'credential':
'coM77EMrV7Cwhyan', 'username': 'flashphoner' } ], "iceTransportPolicy":
"relay"}})
```

for media traffic go through TURN server.

Quick manual for testing

1. For test we use:

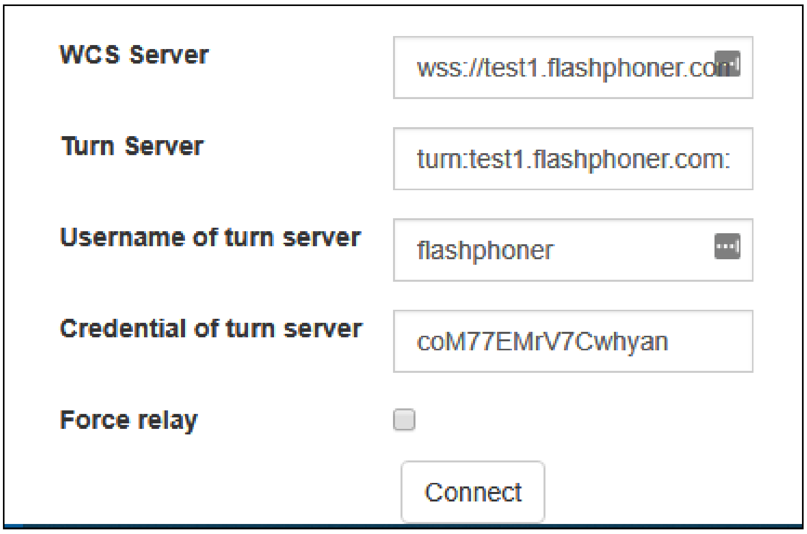
2. WCS with active embedded TURN server
3. Firewall Traversal Streaming web application in Chrome browser
4. `iptables` to block UDP ports on server
5. Block UDP posrt on external network interface of WCS server

   ```
   iptables -i ens192 -I INPUT -m udp -p udp --dport 0:65535 -j DROP
   ```

   Where `ens192` is external network interface of WCS server
6. Open Firewall Traversal Streaming application, set the following to `TURN server`

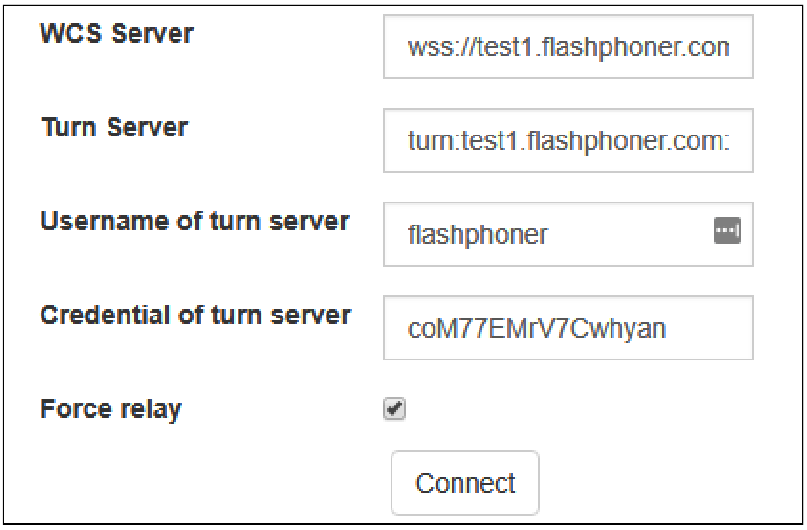
   ```
   turn:test.flashphoner.com:3478?transport=tcp
   ```

   Where
7. `test.flashphoner.com` is WCS server hostname
8. `3478` is internal TURN server port
9. Set up media traffic relay
10. if UDP ports on WCS server are not blocked, uncheck `Force relay`



WCS Server	wss://test1.flashphoner.com
Turn Server	turn:test1.flashphoner.com:
Username of turn server	flashphoner
Credential of turn server	coM77EMrV7Cwhyan
Force relay	☐

11. if UDP ports on WCS server are blocked, check `Force relay`



WCS Server: wss://test1.flashphoner.con

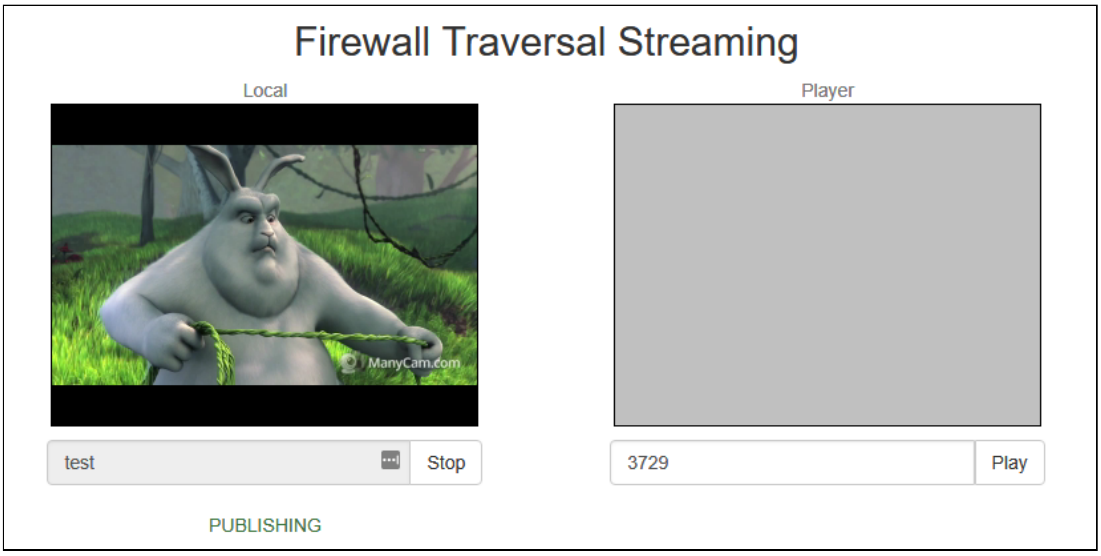
Turn Server: turn:test1.flashphoner.com:

Username of turn server: flashphoner

Credential of turn server: coM77EMrV7Cwhyan

Force relay ☑

12. Click `Connect`, enter stream name `test` and click `Publish`. Stream publishing starts through internal TURN server



Firewall Traversal Streaming

test

3729

PUBLISHING

Known issues

1. TURN relaying does not work in some browsers

The Microsoft Legacy Edge and Mozilla Firefox browser can not connect and relay media traffic via the TURN server

Symptoms

Publishing/playback do not work when trying to connect through the TURN server

✓ **Solution**

Use Chrome browser or its successors.