System Requirements

## Call-flow-Diagram

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**Network Requirements:**  
  
Using the Flexperto platform requires allowing access to its services over specific ports in order to work. A network administrator in your organization can configure these firewall settings.

**Ports**

Minimum Requirement:

The minimum Requirement is that TCP ports 80/443 HTTP(S) are open. Some firewall/proxy rules only allow for SSL traffic over port 443. You will need to make sure that non-web traffic can also pass over this port and that WSS (Proxy HTTP 1.1) can be used. In addition, due to browser limitations, you should configure your proxy to not require HTTP Basic Authentication when accessing URL's and IP's listed in the whitelist further down.

**McAffee WebGateway**

If you are using the McAffee WebGateway Proxy in version >= 7.2, "SSL inspection" on Port 443 has to be disabled for traffic towards the listed IPs and Domains further down. This is a known issue in the WebGateway: <https://community.mcafee.com/thread/59536?tstart=0>

In addition TCP/UDP port 3478 should be open. This connection is bidirectional but always initiated from the corporate network/client so it is not possible for an external entity to send malicious traffic in the opposite direction.

Without port TCP/UDP 3478 open and NAT/Proxies in place it is likely that the public facing NAT/Proxy IP can not be discovered and communication across the borders of the corporate network could fail.

*Best Experience:*

For the best possible experience, we recommend that TCP/UDP ports 5349 is open.

**Whitelisting of IP’s and URL’s**

The following Domains and IP’s must be whitelisted in any case:

* 37.61.222.224/27
* 146.0.229.160/27
* 95.172.85.0/25
* 64.95.96.0/25
* 35.158.127.224/28
* „\*.flexperto.com“
* „\*.opentok.com“
* „\*.tokbox.com“

For global connectivity, it is advised to whitelist all networks listed in [this dictionary](https://whitelist.tokbox.com/whitelist.json).

## Client Side Requirements

**Hardware**

The client hardware should meet these minimum Requirements:

* Desktop or Laptop Computer, Android Tablet or Android Smartphone
* Processor: min 2 GHz Dual Core
* RAM: min 1 GB
* Web cam (integrated or external)
* Speakers (we recommend USB echo-canceling speakers for meeting room environments)
* Microphone (we recommend a Headset with microphone for improved sound quality and privacy)

**Software**

 The client software should meet these minimum Requirements:

* Google Chrome Version 67 +
* FireFox Version ESR 52 + (with UDP 3478 STUN open on firewall)
* recommended FireFox Version ESR 60
* FireFox Version 60+
* Internet Explorer 11 (Plugin requiriert)
* on Android Chrome 67 +
* on Android Firefox 60 +
* Safari 11+

**Browser Settings**

JavaScript must be activated

Your camera has to be accessible by and responsive to the browser. You can verify this via this test page <https://simpl.info/getusermedia/>

Things that can prohibit camera access are:

* For build in Cameras: Your Camera is deactivated in the BIOS-Settings
* For external Cameras: Your PC is configured to not accept USB-Cameras
* Your camera driver is outdated (generally the universal Microsoft driver should work)
* Your Anti-Virus software (such as Avira or Kaspersky) is configured to block camera access by default
* Especially for Firefox: required features (such as getUserMedia or PeerConnection) are disabled in your browser

**Browser Plugins**

For broadcasting a screen (screensharing), a Flexperto Browser plugin needs to be installed either for Chrome or for Firefox.

For receiving a screen, no plugin is required.

In order to interoperate with Safari Browsers (namely using the on this platform only supported h264 codec) Firefox requires a build in Plugin "openh264" to be up to date. In enterprise evironment, Firefox is typically configured to not perform automatic updates. Due to the plugin system of Firefox, this causes that openh264 files are out of date. For Safari Support find here a patch which updates the plugin files of Firefox without using Firefox Auto Update features. The archive contains a README with detailed instructions on how to apply the patch: <https://flexperto.box.com/s/ctzl7whdgedi05bqzwyeyprqahape28m>

Screensharing (broadcasting) doesn't work on mobile OS Systems. (Andriod and IOS) Tokbox doesn't support this feature.

**Firefox with updated disabled and Safari Support**

In order to interoperate with Safari Browsers (namely using the on this platform only supported h264 codec) Firefox requires a build in Plugin "openh264" to be up to date. In enterprise evironment, Firefox is typically configured to not perform automatic updates. Due to the plugin system of Firefox, this causes that openh264 files are out of date. For Safari Support find here a patch which updates the plugin files of Firefox without using Firefox Auto Update features. The archive contains a README with detailed instructions on how to apply the patch:

<https://flexperto.box.com/s/ctzl7whdgedi05bqzwyeyprqahape28m>

**Screensharing Mobile OS**

Screensharing (broadcasting) doesn't work on mobile OS Systems. (Andriod and IOS )  
Tokbox doesn't support this feature.

**Operating System**

The following Operating Systems are supported:

* OSX10.9+
* Windows 8.1 +
* Ubuntu 12 +
* Android KitKat +
  + with Chrome 67 +
  + with Firefox 60 +

**Thin Clients**

Thin Clients are not supported.

**Internet Bandwidth**

We recommend a minimum dedicated 1.000 kb/s down per downloaded stream, as well as 1.000 kb/s up per uploaded stream to maintain a stable video / audio connection. Please note that the bandwidth is not the only factor for a stable video / audio connection.

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