Screen Sharing

Screen sharing example

Screen sharing is available for Chrome and Firefox. To share screen in Chrome before 73 the extension need to build and install, in the latest Chrome versions (73 and newer), Firefox and Safari screen can be shared without extension. Today, it is not recommended to use extension.

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	My S	creen			DOWNLOAD NOW GOOGLE DIAV
wss://test2.flashphone	er.com:8443/3480	c6ee	Stop		Preview
	PUBL	ISHING			

Extension for Google Chrome with publication in Chrome Store

Source code for the extension is available by the following link:

Chrome Screen Sharing Extension

Create a Google account

1. Go to google.com and click Sign in button



2. On the Sign in page, click Create account link

G Sign in - Google Accounts X
← → C 🏻 https://accounts.google.com/ServiceLogin?hl=en&passive=true&continue=https://www.google.☆
Google
One account. All of Google.
Sign in with your Google Account
Enter your email Next Need help? Create account Dne Google Account for everything Google C M R R R R R R R R R R R R R R R R R R

3. Create your Google Account page will be opened Fill the required fields and click Next step button to create the account.

Register as Chrome Web Store Developer

1. Sign in to Chrome Developer Dashboard with the created Google account

2. Pay a one-time \$5 developer signup fee

- → C 🔒 https://chrome.google.com/we	bstore/developer/dashboard?hl=en&pli=1	2
a chrome web store	Search the store	c
Developer Dashboard		
Your Listings		
To publish a new app, extension or theme, click "Add n	new item". Learn more	
Chrome Web Store	Start uploading your apps now!	Add new iter
Chrome Web Store The Chrome Web Store is an open marketplace for web apps. A one-time developer registration fee of US\$5.	Start uploading your apps now!	Add new iter
hrome Web Store ihe Chrome Web Store is an open marketplace for web apps. A one-time developer registration fee of US\$5.	Start uploading your apps now! .00 is required to verify your account and publish items. Pay this fee now - Le	Add new iter

Customization for your domain

Follow the procedures described below to use the extensions with your domain. Edit manifest file manifest.json of the Chrome extension.

Change:

- name
- author
- description
- homepage_url
- under "externally_connectable": "matches" change flashphoner.com to your domain

Save your icons for the extension to <u>chrome-extension</u> directory and edit the file names in "icons" and "web_accessible_resources". (For more information, see <u>Manifest - Icons</u> and <u>Supplying Images</u>.)

Pack the extension

Pack files from chrome-extension folder into ZIP archive.

Publish the extension

1. Sign in to Chrome Developer Dashboard

2. In the dashboard, click Add new item button



3. Accept the developer agreement



4. On the Upload page, choose the chrome-extension.zip file and click Upload button

C https://chrome.google.com/webstore/devi	loper/update?hl=en&authuser=1&publisherl	d=g111163104753
chrome web store	Search the sto	pre Q
Upload an extension or app (.zip file) chrome-extension.zip 0 B / 1.38 KB Remo Choose file Upload Remo	c	
ploading an item: Upload a ZIP file of your item directory, not a packaged CRX file.		
Include a well-designed product icon in your manifest (more info).		

5. When the extension is uploaded, the page for editing the extension draft will be opened Edit the extension as required and click <u>Save draft and return to dashboard</u> button at the bottom of the page

	. heith ith ith ith	
chrome	d > Test Screen Sharing	Search the store
Edit Item	In-app Products	
Upload	Test Screen Sharing Short name: Not specified in manifest Version 1.4 by Upload Updated Package This Chrome extension is developed for <your domain=""> to enable screen ca</your>	apture.
Detailed description		Focus on explaining what the item does and wh users should install it. Characters remaining: 16000
		1,
lcon	Upload new icon	
Icon	Upload new icon	
Icon Test Screen Shari C A h Inline install	Upload new icon ng - Edit × ttps://chrome.google.com/webstore/developer/edit/mclajop Ithis item uses inline install.	igkalbkpcdemdgdcdbmlibpch?hl=en&authuser=5 Select this checkbox to allow inline install for your item (note that this may delay publishing). More info
Icon Test Screen Shari C C Analytics	Upload new icon ng - Edit × ttps://chrome.google.com/webstore/developer/edit/mclajop This item uses inline install. Google Analytics ID UA(example: 1234567-1)	Digkalbkpcdemdgdcdbmlibpch?hl=en&authuser=5 Select this checkbox to allow inline install for your item (note that this may delay publishing). More info
Icon Test Screen Shari C Inline install Analytics Requirements	Upload new icon ng - Edit × ttps://chrome.google.com/webstore/developer/edit/mclajop This item uses inline install. Google Analytics ID UA- (example: 1234567-1) No requirements	Jigkalbkpcdemdgdcdbmlibpch?hl=en&authuser=5 Select this checkbox to allow inline install for your item (note that this may delay publishing). More info

6. The extension will appear in the developer dashboard Click Publish link to publish the extension

+	ogle.com/websi	tore/developer	/dashboard/	/g15527730490	/55806/20?hl=en	삶
n chrome web store				-	Search the store	Q
eveloper Dashboard						
Check out new Chrome Web Store Mu target system based on its NaCl archite	tiple Platform feature	which reduces the	download size of	f your application by o	distributing only relevant file:	s to the
four Listings (1 - 1 of 1)	Created	Last published	Weekly users	Status		
Your Listings (1 - 1 of 1)	Created	Last published	Weekly users	Status		
Your Listings (1 - 1 of 1) Test Screen Sharing Version 1.4	Created 4/6/16	Last published	Weekly users	Status Draft		Publish Edit More Info

A published extension will have status **Published** as on the image below.

	e.com/webst	tore/developer	/dashboard	?hl=en-US&auth	nuser=1	f 42
n chrome web store				-	Search the store	C
eveloper Dashboard						
Your Listings (1 - 1 of 1)	Created	Last published	Weekly users	Status		
Flashphoner Screen Sharing	2/23/16	2/25/16	12	Published		Stats Unpublish Edi More info
***** (0)						

For more information, see Chrome Web Store Publishing Tutorial.

Extension Inline Installation

Extension installation can be initiated by clicking a link on the Screen Sharing client page. Note that the extension to be installed should be customized, published and approved before inline installation can be used.

Follow the steps described below to use the client with your extensions:

1. When publishing, select Inline Install option

Inline install	☑ This item uses inline install.	Select this checkbox to allow inline install for your item (note that this may delay publishing). More info
Analytics	Google Analytics ID UA (example: 1234567-1)	
Requirements	No requirements	
Visibility options	Public Everyone can see it	
	Unlisted Only people with the link can see it.	
	Private Only trusted testers from your developer dashboard can see it. You can also include members of a Google Group that you own or manage.	

- 2. Verify and add website with your domain to the extension
 - Click Add a New Site



• Google Search Console page will open in a new tab. Enter URL with your domain

Developer Dashboard - C	Konstant of the second se		2
Google		0	s
Search Console	Help -	٥	×
Home All Messages Other Resources	Welcome to Search Console Get the data, tools, and diagnostics needed to create and maintain Google-friendly websites an apps. To get started, just add your site or app now. https://m.flashphoner.com	nd mobil	le

• A page with the instruction for the site verification will open. Follow the procedure steps and click Verify button

🚡 Developer Dashboard - 🔿 🗙 🕞 Search Console	× = ×
← → C 🔒 https://www.google.com/webma	sters/verification/verification?hl=en&authuser=0&the $\frac{1}{\sqrt{2}}$
Google	
Search Console	Help ~
Verify your ownership of https://m.flashphoner.com/. Learn	n more.
Recommended method Alternate methods	
Recommended: HTML file upload Upload an HTML file to your site.	
1. Download this HTML verification file. [google4b93d2d3	la 1 de 58 ff. html]
2. Upload the file to https://m.flashphoner.com/	
 Confirm successful upload by visiting https://m.flashph Click Verify below. 	oner.com/google4b93d2d3a1de58ff.html in your browser.
To stay verified, don't remove the HTML file, even after ve	rification succeeds.
VERIFY Not now	

• If the verification is passed, a page confirming successful verification will be opened



• The website will appear in the list in the extension options and the extension can be associated with the site

C 🧯	https://chrome.google.com/webstore/developer/edit/hjjhafbcdlcbn	njkbjogdlhdofkpnggmj?hl=en&authus
Websites	Verify that this is an official item for a website you own:	If your item is associated with a website that yo
	https://m.flashphoner.com/	register as the owner for a site using Google
	Add a new site Refresh list	Webmaster Tools. More info
	Link to website for your item (optional)	Providing the URLs for description and suppor
		pages can improve your users' experience and
	Q Link to summark 0. 540 feature item (antional)	more meaningful. More info

Configuring the client

Edit Screen-sharing.html and Screen-sharing.js

• In <u>Screen-sharing.html</u> the <u>chrome-webstore-item</u> parameter should point to your extension in the Chrome Store

• In Screen-sharing.js replace the value of the chromeScreenSharingExtensionId parameter to the ID of your extension

To get the ID of the extension, click More info of this extension in Chrome Developer Dashboard



Media source parameters

To configure screen media source parameters, use parameters of the **Configuration** object passed to the **init()** method upon initializing of the Flashphoner API instance.

```
var f = Flashphoner.getInstance();
var configuration = new Configuration();
....
configuration.screenSharingVideoWidth = 1920;
configuration.screenSharingVideoHeight = 1080;
configuration.screenSharingVideoFps = 10;
f.init(configuration);
```

Parameter list

Parameter	Description
screenSharingVideoWidth	Screen media source width
screenSharingVideoHeight	Screen media source height
screenSharingVideoFps	Screen media source framerate

These parameters set marginal values of resolution and framerate (FPS). For instance, screenSharingVideoWidth = 1080 means the width of the source video cannot be more than 1080 pixels, but can be less. (i.e. when sending a stream of an app window that has the width of 720 pixels).

System sound capture in Chrome browser

In Chrome browser, there is ability to translate audio stream from system sound source while capturing a screen. The feature is useful in screencasting, for example. To capture system sound, set <u>Share audio</u> option in Chrome extension dialog window while choosing streaming source window or browser tab:

Your Entire Screen	Application Window	Chrome Tab	
Contraction of the second			
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Chrome extension code:

callback({sourceId: sourceId, systemSoundAccess: opts.canRequestAudioTrack});

Capture source management in Firefox browser

In Firefox browser, all the screen or some program window can be chosen as video stream source with constraints.video.mediaSource parameter

code:



Source selection interface example:



Program window capture



Screen capture

		Screen	Sharing				
FPS 30	Width 640	Height 480	Source Screen		• •	coun Staring € → C* De	* +
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wss://test2.flashphor	ner.com:8443/f5b78c7	7	Stop				Preview
	PUBLISH	ING					

Screen sharing without extension

Firefox browser

Firefox browser does not use extension to share screen

Chromium based browsers

Since Chrome 73 and Flashphoner WebSDK 0.5.28.2753.86 screen sharing is possible without extension. To do this constraints.video.withoutExtension parameter should be passed when stream is created

code



Safari browser in MacOS

Since Safari 13 and Flashphoner WebSDK 0.5.28.2753.152 screen sharing is possible without extension. To do this constraints.video.withoutExtension parameter should be passed when stream is created

code

if (\$("#woChromeExtension").prop('checked') || Browser.isSafari()) {
 constraints.video.withoutExtension = true;
}

Known limits

- 1. In Chrome browser, picture resolution and FPS are set by source dimensions (screen, windows or browser tab) and by real picture updating speed, not by constraints. This issue is fixed since Flashphoner WebSDK build 0.5.28.2753.152
- 2. System sound capture only works starting from Crome 74

Code of the example

This example uses Flashphoner extensions for work with domain *.flashphoner.com. For work with your domain, build up and publish your extensions as described above.

As temporary solution, IP address of your WCS server can be added to file C:\Windows\System32\drivers\etc\hosts (on Windows OS) as test.flashphoner.com. That way, you will be able to test your WCS server with domain test.flashphoner.com till the extensions for your domain are built up.

With Chrome, the example works only via HTTPS.

The path to the source code of the example on WCS server is:

/usr/local/FlashphonerWebCallServer/client/examples/demo/streaming/screen-sharing

- screen-sharing.css file with styles
- · screen-sharing.html page of the screen sharing streamer
- screen-sharing.js script providing functionality for the streamer

This example can be tested using the following address:

https://host:8888/client/examples/demo/streaming/screen-sharing/screen-sharing.html

Here host is the address of the WCS server.

For Chrome, link to the extension is specified directly in file screen-sharing.html line 17

<link rel="chrome-webstore-item" href="https://chrome.google.com/webstore/detail/nlbaajplpmleofphigmgaifhoikjmbkg

Analyzing the code

1. Initialization of the API

Flashphoner.init() code

Chrome extension ID is passed to the **init()** method.

Flashphoner.init({screenSharingExtensionId: extensionId});

2. Connection to WCS server

Flashphoner.createSession() code



3. Receiving the event confirming successful connection



4. Stream constraints setting

resolution and fps code

```
var constraints = {
  video: {
    width: parseInt($('#width').val()),
    height: parseInt($('#height').val()),
    //WCS-2014. fixed window/tab sharing
    frameRate: parseInt($('#fps').val())
```

michrophone usage code

```
if ($("#useMic").prop('checked')) {
   constraints.audio = {
        deviceId: $('#audioInput').val()
   };
}
```

video source type and Chrome screen sharing without extension code

```
constraints.video.type = "screen";
if ($("#woChromeExtension").prop('checked')) {
  constraints.video.withoutExtension = true;
}
```

Firefox media source code

```
if (Browser.isFirefox()){
    constraints.video.mediaSource = $('#mediaSource').val();
}
```

5. Video streaming

```
Session.createStream(), Stream.publish() code
session.createStream({
    name: streamName,
    display: localVideo,
    constraints: constraints
    ...
}).publish();
```

6. Receiving the event confirming successful streaming

StreamStatusEvent PUBLISHING code

When the screen sharing stream is published, preview video stream is created with method Session.createStream(), and function Stream.play() is called to start playback of the stream in div element remoteVideo.

```
session.createStream({
   name: streamName,
   display: localVideo,
   constraints: constraints
}).on(STREAM_STATUS.PUBLISHING, function(publishStream){
   /*
```



7. Receiving the event confirming successful preview stream playback



8. Preview stream playback stop

Stream.stop() code

```
function onStarted(publishStream, previewStream) {
    $("#publishBtn").text("Stop").off('click').click(function(){
        $(this).prop('disabled', true);
        previewStream.stop();
```



9. Receiving the event confirming successful playback stop

StreamStatusEvent STOPPED code

On receiving the event, publishStream.stop() is called to stop screen sharing streaming



10. Screen sharing streaming stop by click on Chrome extension button

```
Stream.stop() code

document.getElementById(publishStream.id()).srcObject.getVideoTracks()
[0].onended = function (e) {
    publishStream.stop();
    };
```

11. Receiving the event confirming successful streaming stop

```
StreamStatusEvent UNPUBLISHED code
session.createStream({
    name: streamName,
    display: localVideo,
    constraints: constraints
}).on(STREAM_STATUS.PUBLISHING, function(publishStream){
    ...
}).on(STREAM_STATUS.UNPUBLISHED, function(){
    setStatus(STREAM_STATUS.UNPUBLISHED);
    //enable start button
    onStopped();
}).on(STREAM_STATUS.FAILED, function(){
    ...
}).publish();
```