

Capture Prevention

For User Protection

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Agenda

- Capture vs Capture Prevention
- Content Protection vs User Protection
- Capture Prevention Examples
- Capture Prevention for User Protection
- Discussions

Capture

- Take a picture of the screen :)
 - Out of scope
- Copy from output, e.g. HDMI
 - Out of scope
- OS Capture
 - Windows: Snipping tool, Windows Key + PrtScn, etc
 - Mac: Command + Shift + 5, etc
- In-Browser Capture
 - Tab capture
 - [getDisplayMedia\(\)](#): Screen, Window, Tab
 - Chrome Extension API [chrome.desktopCapture](#): Screen, Window, Tab
 - [Element Capture](#)

Capture Prevention

Prevent content from being captured.

Use Cases:

- Content Protection
 - Video protected by a Digital Rights Management (DRM) system.
- Enterprise Policy
 - Prevent sensitive corporate content from being captured.
- User Privacy?

Content Protection vs User Protection

Content Protection

- Protect content from being captured by the user.
- User has no options.
- User can be the attacker trying to work around the protection.

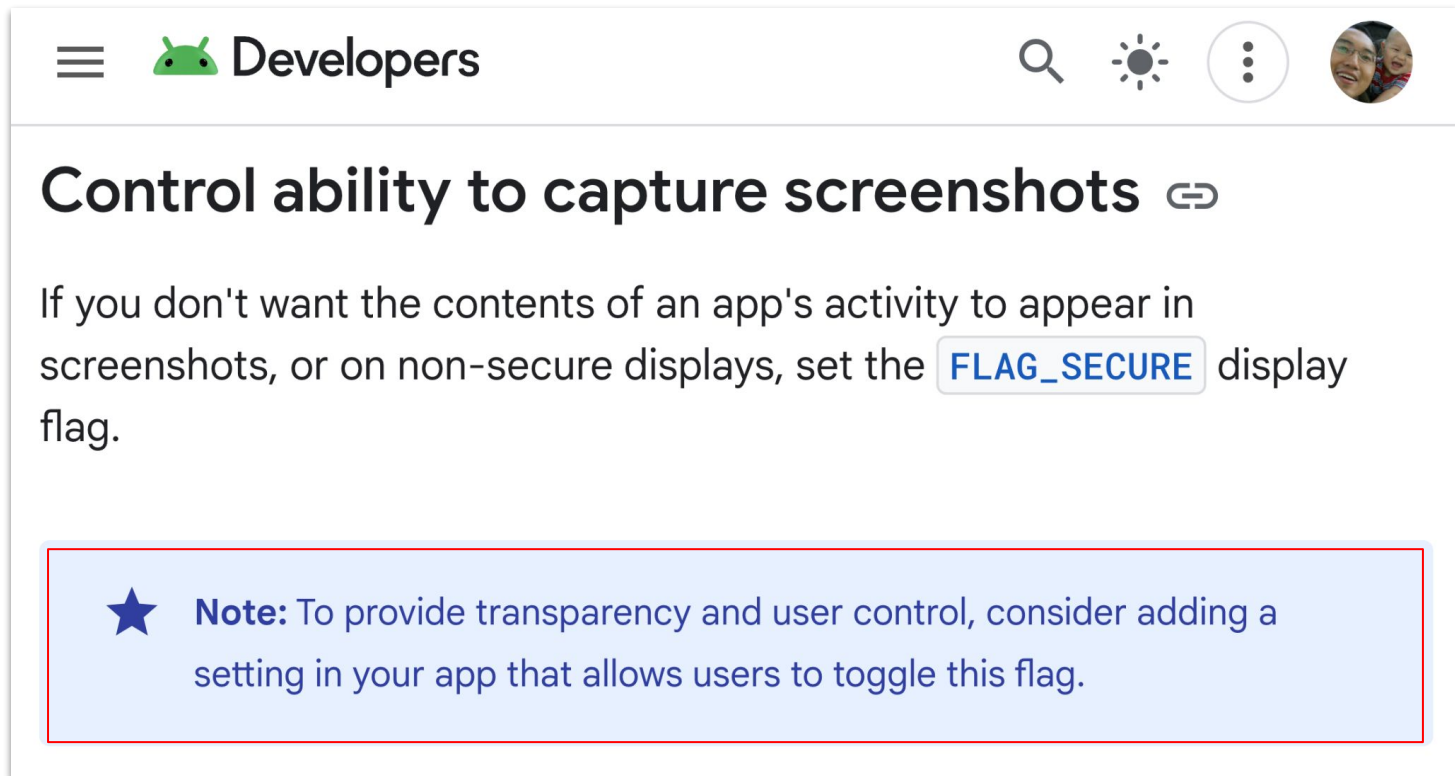
User Protection

- Protect sensitive content from being accidentally captured and shared, e.g. from phishing or malicious activities.
- Users can decide whether to share or not.






Examples: Android FLAG_SECURE

- FLAG_SECURE is a Window flag.
- For applications that need to protect sensitive information, like banking apps or password managers.
- When a window is flagged with FLAG_SECURE:
 - Screenshot is not allowed.
 - Prevents the window from being displayed on a non-secure display, e.g. TV or projector.
- “Protect the information that is being displayed in the window from being accessed by unauthorized people.”

Examples: Android FLAG_SECURE



The screenshot shows the top navigation bar of the Android Developers website. It includes a hamburger menu icon, the Android logo, the text "Developers", a search icon, a brightness icon, a vertical ellipsis icon, and a profile picture. Below the navigation bar is the main heading "Control ability to capture screenshots" with a link icon. The main text explains that to prevent app content from appearing in screenshots or on non-secure displays, the FLAG_SECURE display flag should be set. A blue note box at the bottom contains a star icon and text advising to add a user toggle for transparency and control.

☰  Developers    

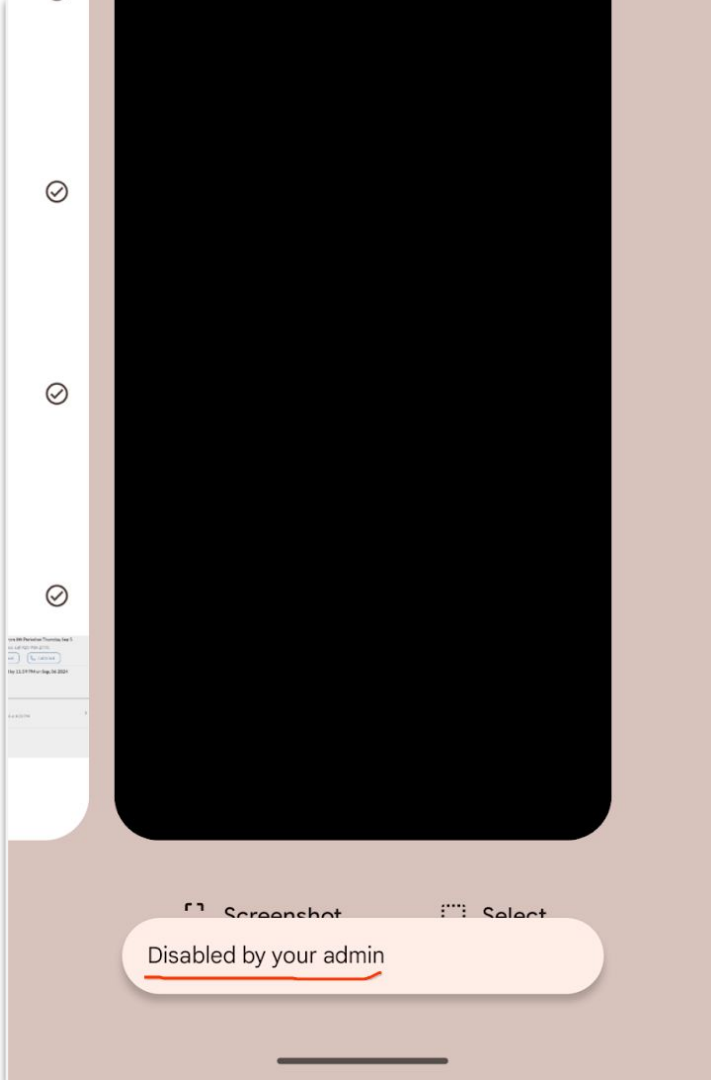
Control ability to capture screenshots

If you don't want the contents of an app's activity to appear in screenshots, or on non-secure displays, set the `FLAG_SECURE` display flag.

★ **Note:** To provide transparency and user control, consider adding a setting in your app that allows users to toggle this flag.



MyChart



MyChart

General Preferences

Enable Screen Shots

Allow taking screen shots that show the contents of the app. If you enable this option, be careful when sharing screens with your personal information.



About

Organization Admin Settings

Enable Custom Server

Enable the custom server. Only applies if a custom server address has been configured.



Custom Server Address

Address of the server or phonebook.

App Review Settings

Enable App Review Mode





Incognito Mode Chrome Android

chrome://flags

Screenshot Reset all

Experiments

129.0.6668.54

Available Unavailable

Incognito Screenshot

Enables Incognito screenshots on Android. It will also make Incognito thumbnails visible. – Android

[#incognito-screenshot](#)

Default

google.com/search?q=hello kitty

Google Sign in

hello kitty

All Images Shopping Videos News Short videos

Hello Kitty

Fictional character

Overview Played by Quotes Merch Fashion

Quick facts

Significant other: Dear Daniel

Creator: Yuko Shimizu

Sisters

Hello Kitty twin sister

Birthd

Disabled by your admin

Google

hello kitty

All Images Shopping Videos News

Hello Kitty

Fictional character

Overview Played by Quotes Merch

Hello Kitty, also known by her real name Kitty White, is a fictional character created by Yuko Shimizu, currently designed by Yuko Yamaguchi, and owned by the Japanese company Sanrio. Sanrio depicts Hello Kitty as a British anthropomorphized white cat with a red bow and no visible mouth. Wikipedia

Quick facts

Significant other: Dear Daniel

Creator: Yuko Shimizu

Sisters

Hello Kitty twin sister

Birthd

Examples: Screenshot Prevention in Edge for Business

- Reduce browser data exfiltration with expanded [screenshot prevention](#)
- Support screenshot prevention policies.
- When these policies are set, screenshot attempts while using Edge on desktop will be prevented by showing a black screen instead of the protected content.

Capture Prevention for User Protection

Goal: To protect users from inadvertently sharing sensitive information.

Example Websites:

- **Banking:** sensitive account information, including account numbers, balances, and transaction histories.
- **Medical:** sensitive medical information, such as medical history and prescriptions.
- **Corporation:** internal documents or pages that contain confidential information.

Requirements

- Warning before capturing, or prevention of capturing, of sensitive information.
- Minimum interruption of existing capturing and sharing workflow.
- User have full control over capturing or not. (Otherwise it becomes content protection.)

Detection of Sensitive Information

- Web applications can provide a hint.
 - For example, a new HTML [global attribute](#): **capturable** or **sensitive**.
 - Pros:
 - Applications has a standard way to provide accurate information.
 - Interoperable among all browsers.
 - Cons:
 - Sites need to adopt this new attribute.
 - Can be abused by sites, e.g. for “content protection”.
- Browser can try to detect any sensitive information.
 - Pros: No application change required.
 - Cons:
 - Computational cost and accuracy
 - Browser behavior divergence
 - Can also be abused by applications?

Handling of Sensitive Information

- Prevent Capturing by default
 - Prevent Capturing of the whole window
 - Only hide the sensitive information (element)
 - More secure, but could breaking existing experiences
- Provide a warning before capturing
- Provide a setting to control the behavior

Accounts Summary

- Checking Account: 111111
 - Balance: \$1234
- Savings Account: 222222
 - Balance: \$5678

Contact us: 1-800-800-8080

Original content

```
<p> Accounts Summary </p>
<div capturable=false>
<ul>
  <li>Checking Account: 111111</li>
  <ul><li>Balance: $1234</li></ul>
  <li>Saving Account: 222222</li>
  <ul><li>Balance: $5678</li></ul>
</ul>
</div>
```

Source for original content

Accounts Summary

Confidential information

Contact us: 1-800-800-8080

Capture prevented

Accounts Summary

Confidential information

Click to Show

Contact us: 1-800-800-8080

Capture prevented with a button to show content






Choose what to share with webrtc.github.io

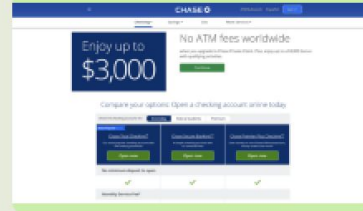
The site will be able to see the contents of your screen

Chrome Tab

Window

Entire Screen

-  Google
-  Chase Checking Accounts: Compare & Ap...
-  Yahoo | Mail, Weather, Search, Politics, Ne...
-  (2153) YouTube
-  New Tab



Chase Checking Accounts: Compare & Apply Today | Chase

This site may contain sensitive information. Proceed to share? Yes/No

 Also share tab audio



Cancel

Share

Settings

In browser's privacy settings:

Capture of sensitive information:

- Always prevent capture of sensitive information
- Warn before capture of sensitive information
- Allow capture of sensitive information

Discussions