

## Redraw/Reload behaviour of some browsers for HTML pages with Flash contents

In course of a Web development project I stumbled across a strange behaviour of certain browsers regarding the redrawing/reloading of image and div contents on HTML pages which in addition contain Flash objects (swf movies).

### I. General description of the problem

I have a variety of pages which differ just with respect to text contents. Otherwise the pages have basically the same layout structure and objects:

Each page contains positioned DIV-containers for text, DIV-containers with simple jpg-images and DIV-containers with a certain flash object (swf). A background color is assigned to the BODY of the document.

Each page contains simple links to the other pages. When you switch from one page to the other (by clicking on the respective link) only text parts of the contents change. So one expects that the switching from one page to another would proceed and appear rather smoothly on the screen due to the caching algorithms of the browser. No redrawing of divs, images is required and these objects should remain static – only the text parts should change.

Basically, this expectation is fulfilled for most browsers and standard HTML pages - *as long as you do not show any Flash movies on your web side.*

However, if you display Flash contents on the HTML pages you may see substantial and profoundly **annoying redraw and reload effects** which result in a massive flickering of the page display during page switches.

Surprisingly, the flickering does not only affect the Flash contents – it may affect unrelated DIV contents as well. In case of Opera on MS Win XP the whole web page is reloaded – as if there were no cache mechanism active at all. Even the background is redrawn.

These “redraw flicker effects” does not occur on MS IE7.

I have seen it only on Firefox, Opera and (partially) Konqueror.

For Opera and Firefox the redraw and flicker effects strongly depend on the OS environment – Firefox behaves much better in its Windows version than under Linux. Surprisingly, Opera shows relatively smooth switching between the pages for Linux, but is almost unusable on a Win XP system.

### II. A simple test case

Below I summarize some results after tests for the same test files and the following browsers:

Opera (MS Windows XP, Linux), Firefox (MS Win XP, Linux), IE7 (MS Windows XP),

The Linux environment is an updates Opensuse 10.2 system (64 Bit installation on a system with an AMD X2 processor ) with Opera and Firefox installed in their 32 Bit versions – as Adobe does not provide a 64-Bit Flash plugin. The desktop environment is KDE 3.5.7 with latest Updates from the SuSE repository.

The Win XP environment is an updated standard 32Bit installation on a Dell M90 Precision Laptop. The results are however valid on other Win XP installations, too. The results are even the same in a VMware environment (host Linux, guest WinXP).

### HTML test file structure:

I use only 2 files which are based on exactly the same extremely simple contents – only the links are different. The links direct you to the other page, respectively.

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<html>
<head>
<title>Test_Flash_Flicker_1</title>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
<script src="swfobject.js" language="javascript"></script>
</head>

<body style="background-color:#CCCC00;">
  <div id="cont" style="position:relative; width:800px; height:600px;">
    <div id="pic" style="position:absolute; width:300px; height:168px;
z-index:1; left:500px; top: 20px;"></div>
    <div id="link" style="position:absolute; width:100px; height:100px;
z-index:2; left:20px; top: 20px;">
      <a id="link" href="test_2.html" style="display:block;
height:100px; width:100px; background-color:#CCCCCC; z-index:3; text-
decoration:none; color:#000000; text-align:center;
cursor:pointer;">test_2.html</a>
    </div>
    <div id="flashcontent" style="width:250px; height:250px;
position:absolute; top:20px; left:180px; background-color:#FFFF33; z-index:4"
></div>

</div>

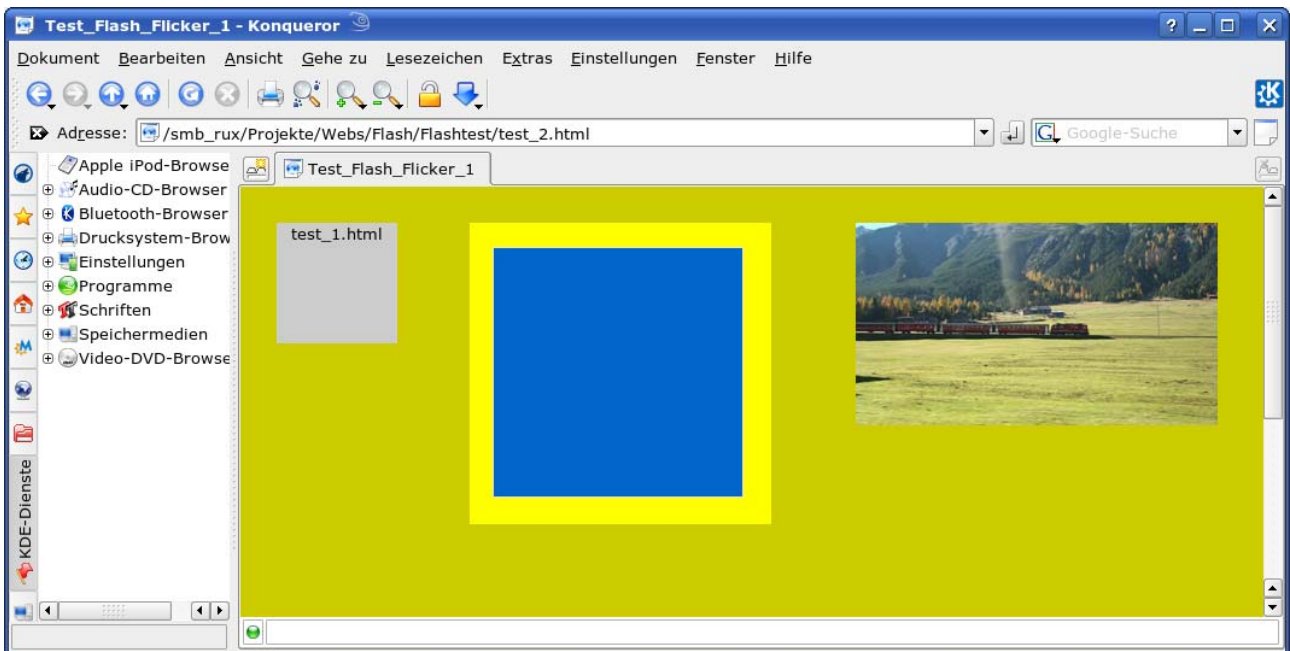
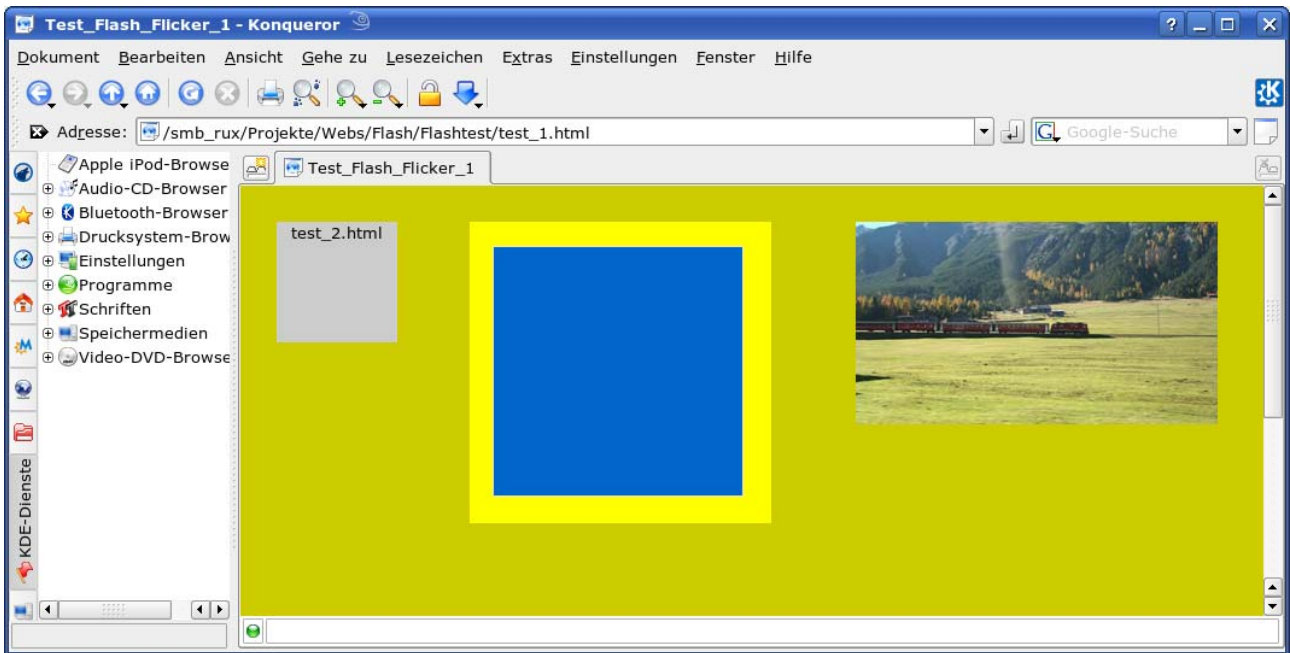
<script language="javascript">
  var so = new SWFObject("quad_op_ow.swf", "quadrat", "250", "250", "9");
  so.write("flashcontent");
</script>
</body>
</html>
```

The swf-file just displays a colored square – nothing more – no action. Really, you can't do it much simpler. See the pictures below.

When you click on the leftmost grey block <a> you basically get to another page with almost the same contents again – only the filename is different and the link changes. Everything else remains constant – the image shown on the right side, the background color, the flash swf.

So, you really would expect a smooth transition between the pages. However, reality is different.

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**III. Results of the redraw behaviour for page switches between the test files**

Browser	Version	Flash Plugin	Linux behaviour	Windows behaviour	Remarks
MS IE7	7.05730.11	9.0.47.0	-	Perfect! Absolute smooth transitions. No flicker of any object. Even the area of the flash object is not redrawn. No reaction to rapid mouse movements directly after the click.	Impression: Minimal time period for "loading" the page.  Absolutely, no redraw or flicker effect, even if the load status bar is displayed.
Opera	□9.10 Build 8679	9.0.47.0	-	Unbearable !  The whole page is redrawn – including the background and the contents of all DIVs, the image and the Flash object.  -> Massive flicker effects when you switch between the two test pages	In this form simply not usable for practical purposes.
Opera	9.23 Build 660 (32 Bit version under 64Bit OS)	9.0.48.0-3.1	Much better than the Win XP version!  No redrawing of the background, divs or images.  Only the area of the flash object is redrawn.		The redraw time period (reload time?) for the flash object is substantially longer than the reload time in Konqueror and Firefox.
Firefox	2.0.0.7	9.0.47.0		Smooth transitions as long as the mouse is not moved directly after the click.  If smooth: No redraw of any div, img, flash object.  If you move the mouse immediately after the click, then a redraw may happen of all (!) DIVs, the image, the flash object. Only the background remains static during page switches .	Usable. However as the mouse click is sometimes done hastily, ugly redraw effects may occur. The flicker time period (redraw time intervall) is rather short.  In contrast to IE7, Firefox allows for mouse movements with a pressed left mouse button on link areas. The link text and other text (even pictures!) get marked then. Maybe this induces the

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Browser	Version	Flash Plugin	Linux behaviour	Windows behaviour	Remarks
					redraw effects.  The behaviour should be optimized to avoid any redraw effects.
Firefox	2.0.0.6 (32Bit)	9.0.48.0-3.1	<p>Massive flickering during page switches – with and without mouse movement immediately after the click.</p> <p>Only the background remains static.</p> <p>All other objects (DIVs, IMG, FLASH obj.) are redrawn. As the flash obj. is redrawn on white background the flicker effect is pretty annoying.</p>		<p>Unusable! Not as bad as Opera under Windows bad too bad for all practical purposes.</p> <p>(Reload/redraw time, for the Flash object much shorter than for Opera (Linux) )</p>
Konqueror	<p>kdelibs3: 3.5.7-80.1 kdebase: 3.5.7-91.2</p> <p>(64 Bit with 32Bit Flash Plugin geht nur mit Konqueror)</p>	9.0.48.0-3.1	<p>No redraw of background, divs or images.</p> <p>Only the area of the flash object is redrawn.</p>		<p>Pretty short redraw (reload) time for the flash object: Seems to be the shortest redraw time for the flash object of all tested Linux browsers</p>

### Summary:

**Windows:** IE7 behaves perfectly under Windows (unfortunately, one might say), Firefox has problems under certain circumstances, Opera cannot be used in our case.

**Linux:** Surprisingly, Opera shows a much better performance regarding the redraw activities in the Linux environment than under MS Windows XP. It behaves better than Firefox, which is almost as unusable as Opera's Windows version. Konqueror – also a surprise for me – handles the test case best of all three Linux browsers taken into account.