

1. Bl.CollectionView
2. CollectionViewSVG
3. CollectionViewCanvas ()
4. CollectionViewCanvas ()

1. Bl.CollectionView
 - a. celldiv (labelbutton)
2. CollectionViewSVG
 - a. collectionsvgcellpathstext
3. CollectionViewCanvas ()
 - a. collectioncanvascell ()
 - b. cellBl.CanvassolidtextsetFont
4. CollectionViewCanvas ()
 - a. 3

1. Bl.CollectionView
 - a. 2262; 80px15px =====> ~1-2s 1-3fps
 - b. 2792; 60px10px =====> ~3s~1fps
 - c. 4192; 40px7px =====> ~5s~0fps
2. CollectionViewSVG
 - a. 2262; 80px15px =====> ~3s 1-2fps
 - b. 2792; 60px10px =====> ~5s 0-2fps
 - c. 4192; 40px7px =====> ~8s ~0fps
3. CollectionViewCanvas ()
 - a. 2262; 80px15px =====> <1s 30-50fps
 - b. 2792; 60px10px =====> <1s ~25fps
 - c. 4192; 40px7px =====> <1s 6-20fps
4. CollectionViewCanvas ()
 - a. 2262; 80px15px =====> <1s 7-10fps
 - b. 2792; 60px10px =====> <1s 4-6fps
 - c. 4192; 40px7px =====> <1s 2fps

Canvas

canvas[High DPI Canvas](#)

devicePixelRatio / e.g. css2pxtext2px * devicePixelRatio

-----118-----

(High DPI Canvas)BackingStorePixelRatioCanva

HiDPICanvas

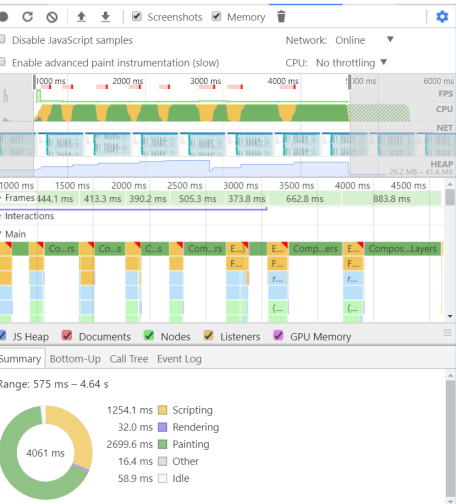
```
_createHiDPICanvas: function (w, h, ratio) {
  if (!ratio) {
    ratio = window.devicePixelRatio ||
      window.screen.deviceXDPI / window.screen.logicalXDPI || 1;
  }
  var canvas = document.createElement("canvas");
  if (!document.createElement('canvas').getContext) {
    canvas = window.G_vmlCanvasManager.initElement(canvas);
  }
  canvas.width = w * ratio;
  canvas.height = h * ratio;
  canvas.style.width = w + "px";
  canvas.style.height = h + "px";
  canvas.getContext("2d").setTransform(ratio, 0, 0, ratio, 0, 0);
  return canvas;
},
```

backingStorePixelRatiocanvasbacking-storecanvascanvascontextcanvasunderlying-storageunderlying-storagebacking-storecanvasbacking-storebacking-storebackingStorePixelRatio.g-backingStorePixelRatio2200px * 200pxcanvascanvas400px * 400px

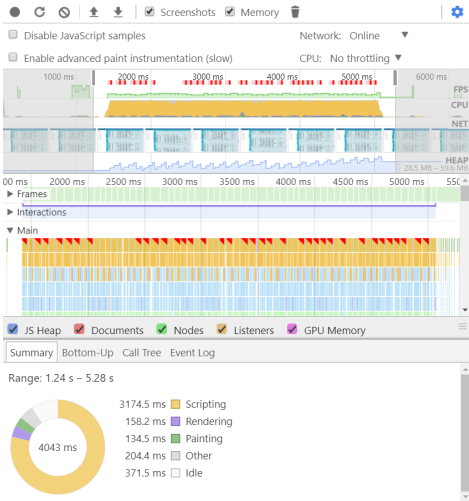
canvas

pixelRatio = devicePixelRatio / backingStorePixelRatio/pixelRatio1canvascanvascanvas/pixelRatioCSS-style/:

canvas tablecanvascellcellpixelRatio > 1canvascanvaspainting2262; 80px15pxpixelRatio11.5fps30-503



canvas table2262; 80px15pxpixelRatio11.5fps7-1016-20



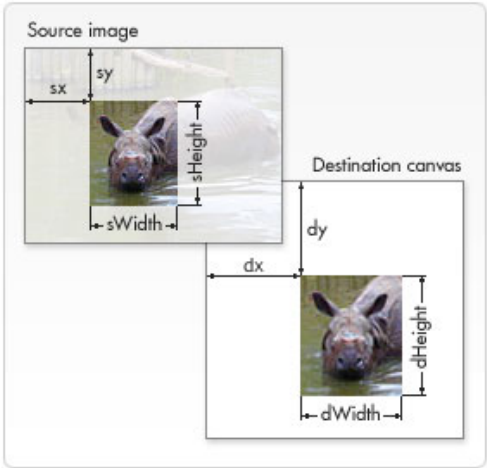
CanvasGridView

Canvas/cellCanvasCanvastranslatetransformcellCanvasdrawImage

CanvasRenderingContext2D.drawImage()

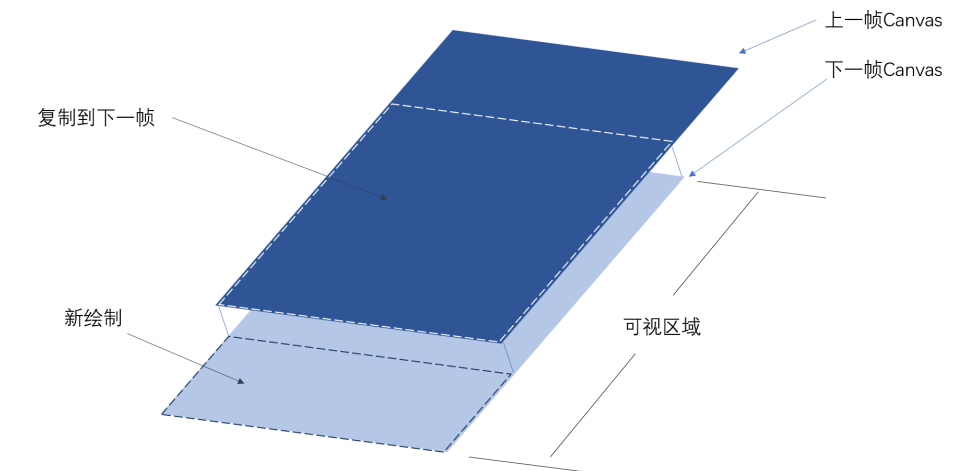
CanvasRenderingContext2D.drawImage()

```
void ctx.drawImage(image, dx, dy);
void ctx.drawImage(image, dx, dy, dWidth, dHeight);
void ctx.drawImage(image, sx, sy, sWidth, sHeight, dx, dy, dWidth, dHeight);
```

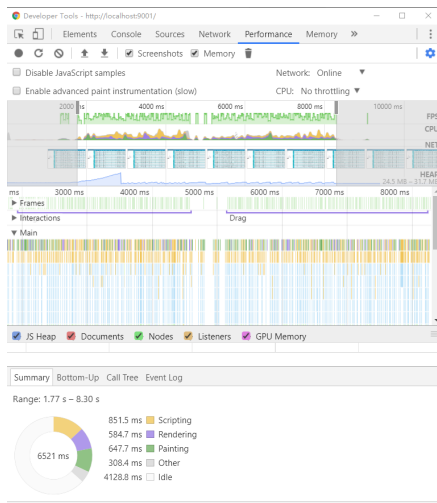


imageCSSImageValue, HTMLImageElement, SVGImageElement, HTMLVideoElement, HTMLCanvasElement, ImageBitmap, OffscreenCanvas.

CanvasimageCanvasCanvasCanvasCanvasdrawImageCanvas



High DPI CanvassetTransformCanvasratio1drawImage/drawImage1drawImage60cell



ChromeFireFoxOperaEdgeIE(9)