



PDF: a Package

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The Big Picture



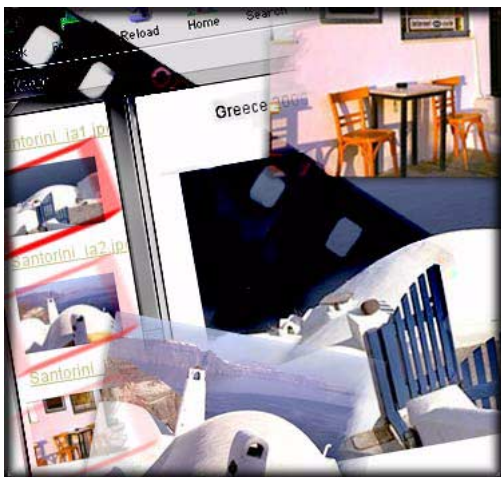
PDFs are Composite Documents

- Collecting many instances of many things
 - Page contents
 - Images
 - Graphics
 - Fonts
 - Colorspaces
 - Metadata
 - Annotations
 - Links
 - Digital signatures
 - etc.

Adobe Photoshop Elements

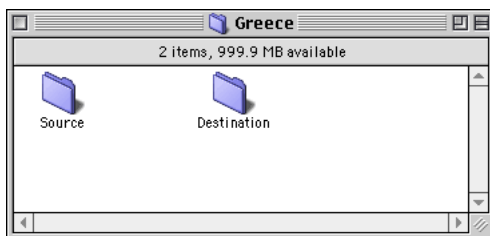
Create web photo galleries

Want to organize your images into an online gallery? Need to put together a quick portfolio for a prospective client to view? Learn how the Web Photo Gallery tool in Adobe® Photoshop® Elements generates a gallery with easy navigation for viewing your images in a browser.



1. Set up your image files.

Make sure your images are in a folder (called the *source folder*). Also, create a *destination folder* to contain all of the HTML and image files generated for your Web gallery.

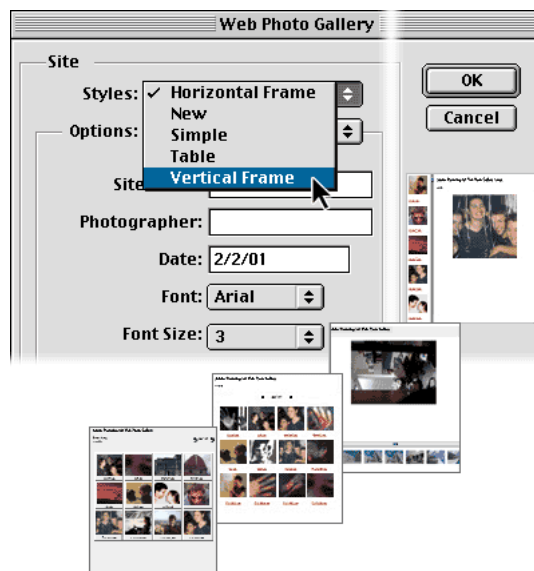


2. Choose a style and set up your banner.

Choose File > Automate > Web Photo Gallery. A dialog box opens when you launch the Web Photo Gallery. Use the Styles pop-up menu to choose the format of your gallery. A sample preview of each style is shown on the right side of the dialog box.

Now choose Banner in the Options pop-up menu, and enter the title of your Web gallery in the Site Name field. You can also fill in the Photographer and Date fields if desired. Use the Font and Font Size pop-up menus to determine the text appearance in your banner. In the Font Size pop-up, the larger the number, the bigger the font size will be.

We chose the Vertical Frame style for our gallery and for the Banner options, we used Helvetica/Arial at the default size of 3.

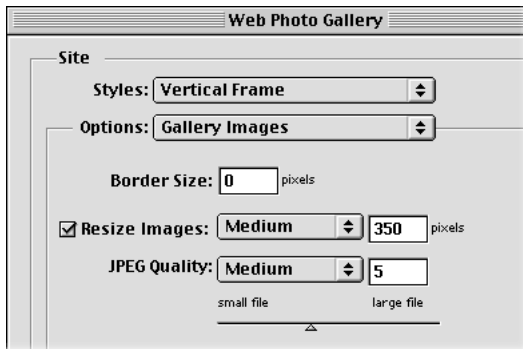


3. Determine how your images are displayed.

Decide whether your gallery images are displayed with borders, resized or not, and at what level of optimization.

Choose Gallery Images from the Options pop-up menu. Enter the values in the fields. If you don't want your images resized, Resize Images should be unselected. For your convenience, you can drag the slider to determine the JPEG optimization based on whether you want a small or large file.

With Resize Images selected, we left all the settings at their defaults.



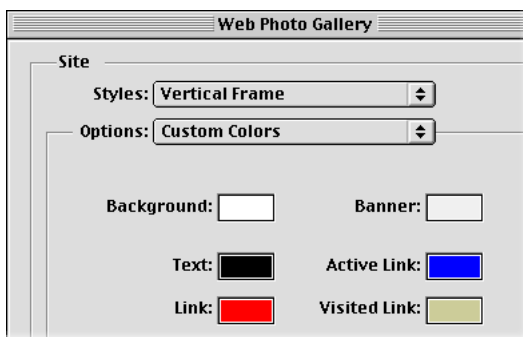
4. Determine the look of your thumbnails.

You can specify the appearance of your gallery's thumbnails and the captions.

Choose Gallery Thumbnails from the Options pop-up menu. Select Use Filename to appear as a caption under your thumbnail. If you prefer to write a caption, select Use File Info Caption.

5. Make your gallery colorful.

The background of your Web gallery can be the default white or any color you wish. You can also specify the color of the text and links. Choose Custom Colors from the Options pop-up menu. Use the Adobe Color Picker to make any color changes.



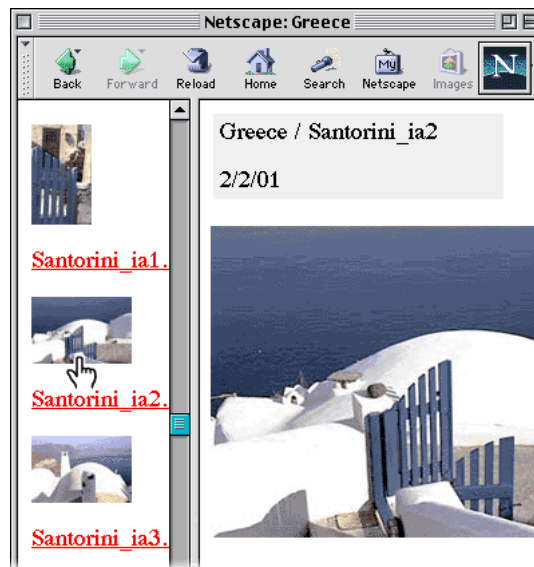
6. Choose your source and destination folders.

Click the Source button under Files in the dialog box, and choose the folder containing the images you want to appear in your gallery. Then, click Destination, and select the folder that you want to contain the images and the HTML files for you Web gallery.



7. View your gallery in a browser.

Click OK and Photoshop generates your Web gallery. The HTML files and JPEGs for your Web gallery are placed in the destination folder. Once the process is finished, your browser is launched with your Web gallery displayed.



The Basics



Looking Inside ...

- PDF files are made from “objects”
- Objects are numbered
- Objects can occur in any order in a file
- Objects can refer to each other
- Cross references create a cross linked set of objects (mathematical graph)
- Cross Reference Table maps object numbers to locations within the PDF file



Hello World



Looking Inside ...



```
%PDF-1.4
1 0 obj
<<
  /Type /Page
  /Parent 5 0 R
  /Resources 3 0 R
  /Contents 2 0 R
>>
endobj

2 0 obj
<<
  /Length 51
>>
stream
BT
  /F1 24 Tf
  1 0 0 1 260 330 Tm
  (Hello World)Tj
ET
endstream
endobj
```

```
3 0 obj
<<
  /ProcSet[/PDF/Text]
  /Font <</F1 4 0 R >>
>>
endobj

4 0 obj
<<
  /Type /Font
  /Subtype /Type1
  /Name /F1
  /BaseFont/Helvetica
>>
endobj

5 0 obj
<<
  /Type /Pages
  /Kids [ 1 0 R ]
  /Count 1
  /MediaBox
    [ 0 0 612 446 ]
>>
endobj
```

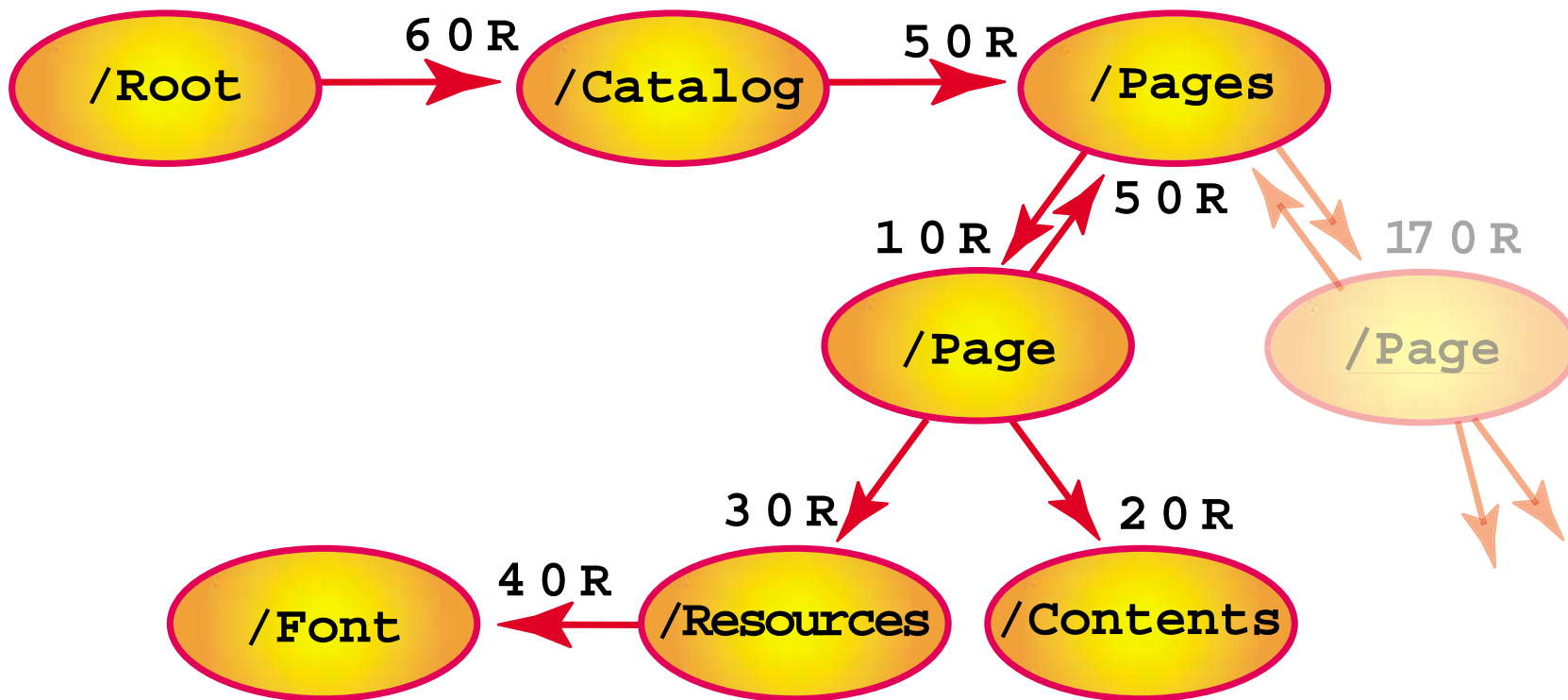
```
6 0 obj
<<
  /Type /Catalog
  /Pages 5 0 R
>>
endobj

trailer
<<
  /Root 6 0 R
>>

xref
0 7
0000000000 65535 f
0000000009 00000 n
0000000103 00000 n
0000000204 00000 n
0000000275 00000 n
0000000361 00000 n
0000000452 00000 n
trailer
<<
  /Size 7
>>
startxref
532
%%EOF
```



Objects Form a Graph





Basic Object Types

- Atomic Objects

- Integers Reals Booleans Names Strings
 1445 514.450 *true false* /dog (Hello)

- Compound Objects

- Arrays (heterogeneous)
 [1445 514.450 *true /dog*]
- Dictionaries (name/value pairs)
 << /Color (red) /size 954 /memo /home>>
- Arbitrary nesting
 << /D [22 <</fee /fie /foe /fum >>] /size <</k (king)>> >>

Numbered Indirect Objects

- The object

```
[/personal <</myName (Jim) /height 75>> 502 (abc) ]
```

- Is essentially the same as

```
[ /personal 61 0 R 502 (abc) ]
```

```
61 0 obj
```

```
<</myName (Jim) /height 75>>
```

```
endobj
```

- "61 0 R" is a reference to *one* object



Stream Objects

The key to packaging



```
%PDF-1.4
1 0 obj
<<
  /Type /Page
  /Parent 5 0 R
  /Resources 3 0 R
  /Contents 2 0 R
>>
endobj

2 0 obj
<<
  /Length 51
>>
stream
BT
  /F1 24 Tf
  1 0 0 1 260 330 Tm
  (Hello World)Tj
ET
endstream
endobj
```

```
3 0 obj
<<
  /ProcSet[/PDF/Text]
  /Font <</F1 4 0 R >>
>>
endobj

4 0 obj
<<
  /Type /Font
  /Subtype /Type1
  /Name /F1
  /BaseFont/Helvetica
>>
endobj

5 0 obj
<<
  /Type /Pages
  /Kids [ 1 0 R ]
  /Count 1
  /MediaBox
    [ 0 0 612 446 ]
>>
endobj
```

```
6 0 obj
<<
  /Type /Catalog
  /Pages 5 0 R
>>
endobj

trailer
<<
  /Root 6 0 R
>>

xref
0 7
0000000000 65535 f
0000000009 00000 n
0000000103 00000 n
0000000204 00000 n
0000000275 00000 n
0000000361 00000 n
0000000452 00000 n
trailer
<<
  /Size 7
>>
startxref
532
%%EOF
```



PDF Objects

- **Sometimes called "COS"**
 - Carousel Object System
 - Carousel -- an early name for Acrobat

- **COS notation is case sensitive**
 - /Colorspace is different from /ColorSpace

Add An Image





Hello World





Image Stream (XObject)



```
%PDF-1.4
1 0 obj
<<
  /Type /Page
  /Parent 5 0 R
  /Resources 3 0 R
  /Contents 2 0 R
>>
endobj

2 0 obj
<<
  /Length 80
>>
stream
BT
  /F1 24 Tf
  1 0 0 1 260 330 Tm
  (Hello World)Tj
ET
280 0 0 265 180 35 cm
/I1 Do
endstream
endobj
```

```
3 0 obj
<<
  /ProcSet[/PDF/Text]
  /Font <</F1 4 0 R >>
  /XObject <</I1 7 0 R >>
>>
endobj

4 0 obj
<<
  /Type /Font
  /Subtype /Type1
  /Name /F1
  /BaseFont/Helvetica
>>
endobj

5 0 obj
<<
  /Type /Pages
  /Kids [ 1 0 R ]
  /Count 1
  /MediaBox
    [ 0 0 612 446 ]
>>
endobj
```

```
6 0 obj
<<
  /Type /Catalog
  /Pages 5 0 R
>>
endobj

7 0 obj
<< /Type /XObject
  /Subtype /Image
  /Width 374
  /Height 354
  /BitsPerComponent 8
  /ColorSpace
    /DeviceRGB
  /Length 26957
  /Filter [ /DCTDecode ]>>
stream
  !!JPEG:26957 bytes!!
endstream
endobj

trailer
```

Compression/Decompression

- DCTDecode
 - ASCIIHexDecode
 - ASCII85Decode
 - FlateDecode
 - RunLengthDecode
 - CCITTFaxDecode
 - JBIG2Decode
- JPEG
 - printable characters (2 for 1)
 - printable characters (5 for 4)
 - PNG also uses Flate
 - Simple byte run length code
 - Normal Fax ITU Group 3 and 4
 - uses a dynamic pattern library
- lossy compression

PDF: a Package





PDF: a True Composite Document

Streams support embedded stuff

- Page Contents
- Images•
- Fonts•
- ICC Color Profiles•
- Arithmetic Functions
- Sound Data•
- Repeating Form Data
- Transparency Groups
- Icons
- User Embedded Files•
- JavaScript programs•
- Patterns/Shadings
- Halftones
- Color Index Tables
- Thumbnails
- Appearance Streams
- Image Masks
- Font Encodings
- And more!

• indicates same as a standalone file format

A Collection of Things -- Plus **Glue**

- Object references
 - 61 0 R
 - Creates an arbitrary network of relationships
- Page Content uses Resource Dictionary as Glue
 - Page Contents cannot use object references directly
 - By-name connection to other objects and streams

```
2 0 obj
<<
  /Length 80
>>
stream
BT
...
ET
280 0 0 265 180 35 cm
/I1 Do
endstream
endobj
```

```
3 0 obj
<<
  /ProcSet[/PDF/Text]
  /Font <</F1 4 0 R >>
  /XObject <</I1 7 0 R>>
>>
endobj
```

```
7 0 obj
<< /Type /XObject
  /Subtype /Image
  ...
  /Filter /DCTDecode>>
stream
!!JPEG:26957 bytes!!
endstream
endobj
```



This is Packaging

- Unique to PDF!
- One file contains everything
- A collection of files and other material but glued together to form a complete document



Adobe

