
PDF Specification for IEEE Xplore[®]
(Part C-Creating and Checking PDFs)

VERSION 4.10

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IEEE CONTENT ENGINEERING



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DOCUMENT STATUS RECORD

| Release Date | Status | Version | Amendment / Purpose |
|------------------|--------|---------|--|
| December 2008 | Final | 4.10 | Describes the sample Acrobat settings, how IEEE checks PDFs, and how to check font embedding in PDF 1.4. |
| July 2008 | Final | 4.02 | Provides initial instructions for “PDF 1.7, Adobe Extension Level 3” (Acrobat 9) files. |
| May 2007 | Final | 4.01B | Announces the ability to test PDF 1.7 (check Acrobat 8 files. |
| February 2007 | Final | 4.01A | Addresses PitStop’s ability to check Acrobat 8 files. Announces the phase out of support of PDF versions 1.0 thru 1.3 (Acrobat 1 thru 4) during 2007. |
| November 2006 | Final | 4.01 | Addresses PDF 1.7 (Acrobat 8) issues. |
| October 2006 | Final | 4.0 | Consolidates PDF specifications and addendum. Replaces the concepts of compliant or compatible PDF files with a simpler set of requirements. Addresses Acrobat 7 issues. |
| 15 December 2003 | Final | 3.2 | Divided into two parts. The first part is for authors. It defines compatible PDF files. The second part is for conference organizers and vendors. It defines the requirements for compliant PDF files. This section also defines the requirements for PDF version 1.5 (Acrobat 6) and the settings (job options) file. |
| 6 August 2003 | Final | 3.1 | Defines requirements for PDF version 1.5 (Acrobat 6) files. |
| 25 June 2003 | Final | 3.0 | Combines author and technical documentation into a single specification. The technical information is in an appendix. Includes screen captures for Acrobat 5. Adjusts Acrobat 5 Compression settings. Summarizes requirements for links and bookmarks. |
| 14 April 2003 | Final | 2.2B | Adjusted graphics settings to provide print production quality graphics. Clarifies how to embed fonts. |
| 21 January 2002 | Final | 2.2 | Summarizes requirements for Acrobat 5 compatible PDF files. |
| 18 May 2001 | Final | 2.1 | Summarizes PDF parameter settings; describes the requirements for scanned PDFs. |
| 30 April 2001 | Final | 2.0 | Initial release |

1. INTRODUCTION

This document describes the settings used to create PDFs for IEEE Xplore[®]. It also provides the profile used to check PDF files. The profile that is used is the same for IEEE’s internal QA and PDF eXpress. The document “PDF Specification for IEEE Xplore[®]” also includes (1) [core requirements](#) and (2) [additional PDF features](#).

2. SAMPLE SETTINGS FILES

IEEE provides Acrobat Distiller settings files, designed for specific purposes, online at iee.org. Please note that these files set other PDF characteristics (See Section 4) because Acrobat Distiller requires it. A content provider is free to change these other settings as necessary.

Please note that no changes are needed to the version 4.0 settings to meet the required, recommended, and suggested settings in version 4.01 or later.

The downloadable sample settings are summarized in the table below. Each PDF characteristic described in this document is shown in the first column. The subsequent columns show how the “required”, “recommended” and “suggested” Acrobat Distiller settings are set-up, respectively. Please see the next page for the rest of the table and the footnotes.

In the last three columns:

1. **Yes** means that the example Acrobat Distiller setting sets the PDF characteristic.
2. **No** means that the example Acrobat Distiller setting does not set the PDF characteristic.
3. **User Set** means that user and not the example Acrobat Distiller settings control the PDF characteristic.

| PDF Characteristic | Required | Recommended | Suggested |
|---|-----------------------------------|-----------------------------------|-----------------------------------|
| Available for PDF version(s) ^{1,2} | 1.4, 1.5, 1.6, 1.7, and Acrobat 9 | 1.4, 1.5, 1.6, 1.7, and Acrobat 9 | 1.4, 1.5, 1.6, 1.7, and Acrobat 9 |
| No Passwords or Security Allowed | User Set | User Set | User Set |
| PDF Distiller | Yes | Yes | Yes |
| No Bookmarks or Links | User Set | User Set | User Set |
| No Crop Marks, Registration Marks, or Other Marks | User Set | User Set | User Set |
| No PostScript Code Overriding Settings File | User Set | User Set | User Set |
| Embed or Subset All Fonts | Yes/User Set | Yes/User Set | Yes/User Set |
| Merged or Packaged PDF | User Set | User Set | User Set |
| PDF Contains Attachments | User Set | User Set | User Set |
| Latest Version of Fonts | User Set | User Set | User Set |
| Open Type Fonts | User Set | User Set | User Set |
| Fast Web View (Linearized) | No | Yes | Yes |
| Broadest use | No | No | Yes |
| Older Printer Support | No | No | Yes |
| Color Images ³ | Yes | Yes | Yes |
| Grayscale Images ⁵ | Yes | Yes | Yes |
| Monochrome Images ³ | Yes | Yes | Yes |
| Thumbnail in PDF | No | No | Yes |

Footnotes:

1. For “required” and “recommended” settings PDF version 1.4 always gives broadest use and older printer support.
2. For “suggested” settings the files for PDF versions 1.5, 1.6 , and 1.7 are stored in PDF 1.4 (Acrobat 5) compatibility. Editing or opening the files afterward may change the PDF version.
3. Settings intended to be reasonable in most cases. Settings may be changed as needed.

3. CHECKING PDF FILES

Internally, at the time of this writing, IEEE uses PitStop Server version 4.02 from Enfocus Software (www.enfocus.com) to check all PDF files. The settings that are used in PDF eXpress and for internal QA by IEEE and are available online at iee.org.

Unlike earlier IEEE supplied profiles the new ones are not locked (password protected). If the profile is edited care must be taken not to change the original values in the profile. Otherwise the profile may no longer detect problems in the PDF file.

4. OTHER ADOBE DISTILLER SETTINGS

This section describes the other Acrobat Distiller settings that are set in samples in Section 2. *Please note that no changes are needed to the version 4.0 settings to meet the required, recommended, and suggested settings in version 4.01.* The shaded boxes shows changes from the “Required” settings file. Any setting described in this section may be changed as needed.

Adobe Acrobat Distiller 9.x Settings

| Setting Location and Name | Required | Recommended | Suggested |
|---|---|---|---|
| GENERAL TAB | | | |
| Object Level Compression | Off | Off | Off |
| Auto-Rotate Pages | Off | Off | Off |
| Binding | Left | Left | Left |
| Resolution | 600 | 600 | 600 |
| All Pages (Radio Button) | Selected | Selected | Selected |
| Embed Thumbnails | Not checked | Not checked | Checked |
| Optimize for fast web view | Not checked | Checked | Checked |
| Default Page Size | Desired size | Desired size | Desired size |
| IMAGES TAB | | | |
| Anti-alias to gray | Off | Off | Off |
| Policy | See Part B- Additional PDF Features | See Part B- Additional PDF Features | See Part B- Additional PDF Features |
| FONTS TAB | | | |
| Embed or Subset All Fonts | Checked | Checked | Checked |
| Embed Open Type Fonts ¹ | Not checked | Not checked | Not checked |
| Subset embedded fonts when percent of characters used is less than ² | Not checked | Not checked | Not checked |
| When Embedding Fails | Warn and Continue | Warn and Continue | Warn and Continue |
| Always Embed | All fonts in | All fonts in | All fonts in |

| Setting Location and Name | Required | Recommended | Suggested |
|---|-----------------------|-----------------------|-----------------------|
| | font folder(s) | font folder(s) | font folder(s) |
| Never Embed | Empty | Empty | Empty |
| COLOR TAB | | | |
| Settings File | None | None | None |
| Color Management Policies | Leave Color Unchanged | Leave Color Unchanged | Leave Color Unchanged |
| Document Rendering Intent | Preserve | Preserve | Preserve |
| Working Spaces | Dimmed | Dimmed | Dimmed |
| Preserve under color removal and black generation | Checked | Checked | Checked |
| When transfer functions are found | Remove | Remove | Remove |
| Preserve halftone Information | Checked | Checked | Checked |
| ADVANCED TAB | | | |
| Convert gradients to smooth shades | Checked | Checked | Checked |
| Preserve Level 2 cypage semantics | Checked | Checked | Checked |
| Preserve overprint settings | Checked | Checked | Checked |
| Save Adobe PDF settings inside PDF file | Checked | Checked | Checked |
| Save original JPEG images in PDF if possible | Checked | Checked | Checked |
| All other choices in Options ³ | Not checked | Not checked | Not checked |
| All Document Structuring Conventions (DSC) | Not checked | Not checked | Not checked |
| STANDARDS TAB | | | |
| Compliance Standard | None | None | None |
| Default Value if Not Specified in the Document | Dimmed | Dimmed | Dimmed |

Footnotes:

1. This is not checked because Open Type support is a PDF 1.6 and 1.7 (Acrobat 7 and 8) only feature.
2. If the option is checked, the suggested percentage is 100%.
3. Never check (select) "Use Prologue.ps and Epilogue.ps" or "Allow PostScript file to override Adobe PDF settings" (or both). *Doing so violates the requirement that the PostScript code does not override the settings or job options file.*

Adobe Acrobat Distiller 8.x Settings

| Setting Location and Name | Required | Recommended | Suggested |
|--|---|---|---|
| GENERAL TAB | | | |
| Object Level Compression | Off | Off | Off |
| Auto-Rotate Pages | Off | Off | Off |
| Binding | Left | Left | Left |
| Resolution | 600 | 600 | 600 |
| All Pages (Radio Button) | Selected | Selected | Selected |
| Embed Thumbnails | Not checked | Not checked | Checked |
| Optimize for fast web view | Not checked | Checked | Checked |
| Default Page Size | Desired size | Desired size | Desired size |
| IMAGES TAB | | | |
| Anti-alias to gray | Off | Off | Off |
| Policy | See Part B- Additional PDF Features | See Part B- Additional PDF Features | See Part B- Additional PDF Features |
| FONTS TAB | | | |
| Embed or Subset All Fonts | Checked | Checked | Checked |
| Embed Open Type Fonts ¹ | Not checked | Not checked | Not checked |
| Subset embedded fonts when percent of characters used is less than ² | Not checked | Not checked | Not checked |
| When Embedding Fails | Warn and Continue | Warn and Continue | Warn and Continue |
| Always Embed | All fonts in font folder(s) | All fonts in font folder(s) | All fonts in font folder(s) |
| Never Embed | Empty | Empty | Empty |
| COLOR TAB | | | |
| Settings File | None | None | None |
| Color Management Policies | Leave Color Unchanged | Leave Color Unchanged | Leave Color Unchanged |
| Document Rendering Intent | Preserve | Preserve | Preserve |
| Working Spaces | Dimmed | Dimmed | Dimmed |
| Preserve under color removal and black generation | Checked | Checked | Checked |
| When transfer functions are found | Remove | Remove | Remove |
| Preserve halftone Information | Checked | Checked | Checked |
| ADVANCED TAB | | | |
| Convert gradients to smooth shades | Checked | Checked | Checked |
| Preserve Level 2 cypage semantics | Checked | Checked | Checked |
| Preserve overprint settings | Checked | Checked | Checked |
| Save Adobe PDF settings inside PDF file | Checked | Checked | Checked |
| Save original JPEG images in PDF if possible | Checked | Checked | Checked |
| All other choices in Options ³ | Not checked | Not checked | Not checked |

| Setting Location and Name | Required | Recommended | Suggested |
|--|-----------------|--------------------|------------------|
| All Document Structuring Conventions (DSC) | Not checked | Not checked | Not checked |
| STANDARDS TAB | | | |
| Compliance Standard | None | None | None |
| Default Value if Not Specified in the Document | Dimmed | Dimmed | Dimmed |

Footnotes:

1. This is not checked because Open Type support is a PDF 1.6 and 1.7 (Acrobat 7 and 8) only feature.
2. If the option is checked, the suggested percentage is 100%.
3. Never check (select) "Use Prologue.ps and Epilogue.ps" or "Allow PostScript file to override Adobe PDF settings" (or both). *Doing so violates the requirement that the PostScript code does not override the settings or job options file.*

Adobe Acrobat Distiller 7.x Settings

| Setting Location and Name | Required | Recommended | Suggested |
|--|---|---|---|
| GENERAL TAB | | | |
| Object Level Compression | Off | Off | Off |
| Auto-Rotate Pages | Off | Off | Off |
| Binding | Left | Left | Left |
| Resolution | 600 | 600 | 600 |
| All Pages (Radio Button) | Selected | Selected | Selected |
| Embed Thumbnails | Not checked | Not checked | Checked |
| Optimize for fast web view | Not checked | Checked | Checked |
| Default Page Size | Desired size | Desired size | Desired size |
| IMAGES TAB | | | |
| Anti-alias to gray | Off | Off | Off |
| Policy | See Part B- Additional PDF Features | See Part B- Additional PDF Features | See Part B- Additional PDF Features |
| FONTS TAB | | | |
| Embed or Subset All Fonts | Checked | Checked | Checked |
| Embed Open Type Fonts ¹ | Not checked | Not checked | Not checked |
| Subset embedded fonts when percent of characters used is less than ² | Not checked | Not checked | Not checked |
| When Embedding Fails | Warn and Continue | Warn and Continue | Warn and Continue |
| Always Embed | All fonts in font folder(s) | All fonts in font folder(s) | All fonts in font folder(s) |
| Never Embed | Empty | Empty | Empty |
| COLOR TAB | | | |
| Settings File | None | None | None |
| Color Management Policies | Leave Color Unchanged | Leave Color Unchanged | Leave Color Unchanged |
| Document Rendering Intent | Preserve | Preserve | Preserve |
| Working Spaces | Dimmed | Dimmed | Dimmed |
| Preserve under color removal and black generation | Checked | Checked | Checked |
| When transfer functions are found | Remove | Remove | Remove |
| Preserve halftone Information | Checked | Checked | Checked |
| ADVANCED TAB | | | |
| Convert gradients to smooth shades | Checked | Checked | Checked |
| Preserve Level 2 cypage semantics | Checked | Checked | Checked |
| Preserve overprint settings | Checked | Checked | Checked |
| Save Adobe PDF settings inside PDF file | Checked | Checked | Checked |
| Save original JPEG images in PDF if possible | Checked | Checked | Checked |
| All other choices in Options ³ | Not checked | Not checked | Not checked |

| Setting Location and Name | Required | Recommended | Suggested |
|--|-----------------|--------------------|------------------|
| All Document Structuring Conventions (DSC) | Not checked | Not checked | Not checked |
| STANDARDS TAB | | | |
| Compliance Standard | None | None | None |
| All other options | Dimmed | Dimmed | Dimmed |

Footnotes:

1. This is not checked because Open Type support is a PDF 1.6 and 1.7 (Acrobat 7 and 8) only feature.
2. If the option is checked, the suggested percentage is 100%.
3. Never check (select) “Use Prologue.ps and Epilogue.ps” or “Allow PostScript file to override Adobe PDF settings” (or both). *Doing so violates the requirement that the PostScript code does not override the settings or job options file.*

Adobe Acrobat Distiller 6.x Settings

| Setting Location and Name | Required | Recommended | Suggested |
|---|-----------------------------|-----------------------------|-----------------------------|
| GENERAL TAB | | | |
| Object Level Compression | Off | Off | Off |
| Auto-Rotate Pages | Off | Off | Off |
| Binding | Left | Left | Left |
| Resolution | 600 | 600 | 600 |
| All Pages (Radio Button) | Selected | Selected | Selected |
| Embed Thumbnails | Not checked | Not Checked | Checked |
| Optimize for fast web view | Not checked | Checked | Checked |
| Default Page Size | Desired size | Desired size | Desired size |
| IMAGES TAB | | | |
| Anti-Alias to gray | Off | Off | Off |
| FONTS TAB | | | |
| Embed or Subset All Fonts | Checked | Checked | Checked |
| When Embedding Fails | Warn and Continue | Warn and Continue | Warn and Continue |
| Subset embedded fonts when percent of characters used is less than ¹ | Not checked | Not checked | Not checked |
| Always Embed | All fonts in font folder(s) | All fonts in font folder(s) | All fonts in font folder(s) |
| Never Embed | Empty | Empty | Empty |
| COLOR TAB | | | |
| Settings File | None | None | None |
| Color Management Policies | Leave Color Unchanged | Leave Color Unchanged | Leave Color Unchanged |
| Intent | Default | Default | Default |
| Working Spaces | Dimmed | Dimmed | Dimmed |
| Preserve under color removal and black generation | Checked | Checked | Checked |
| When transfer functions are found | Remove | Remove | Remove |
| Preserve halftone Information | Checked | Checked | Checked |
| ADVANCED TAB | | | |
| Convert gradients to smooth shades | Checked | Checked | Checked |
| Preserve Level 2 cypage Semantics | Checked | Checked | Checked |
| Preserve overprint settings | Checked | Checked | Checked |
| Save Adobe PDF settings inside PDF file | Checked | Checked | Checked |
| Save original JPEG images in PDF if possible | Checked | Checked | Checked |
| All other choices in Options ² | Not checked | Not checked | Not checked |
| All Document Structuring Conventions (DSC) | Not checked | Not checked | Not checked |
| PDF/X TAB | | | |
| PDF/X-1a | Not checked | Not checked | Not checked |
| PDF/X-3 | Not checked | Not checked | Not checked |

Footnotes begin on the next page.

1. If the option is checked, the suggested percentage is 100%.
2. Never check (select) “Use Prologue.ps and Epilogue.ps” or “Allow PostScript file to override Adobe PDF settings” (or both). *Doing so violates the requirement that the PostScript code does not override the settings or job options file.*

Adobe Acrobat Distiller 5.x Job Options

| Setting Location and Name | Required | Recommended | Suggested |
|---|-----------------------|-----------------------|-----------------------|
| GENERAL TAB | | | |
| Optimize for Fast Web View | Not checked | Checked | Checked |
| Embedded Thumbnails | Not checked | Not checked | Checked |
| Auto-Rotate Pages | Not checked | Not checked | Not checked |
| Page Range | All | All | All |
| Binding | Left | Left | Left |
| Resolution | 600 | 600 | 600 |
| Default Page Size | Desired size | Desired size | Desired size |
| COMPRESSION TAB | | | |
| Anti-Alias to gray | Not checked | Not checked | Not checked |
| Compress Text and Line Art | Checked | Checked | Checked |
| FONTS TAB | | | |
| Embed or Subset All Fonts | Checked | Checked | Checked |
| When Embedding Fails | Warn and Continue | Warn and Continue | Warn and Continue |
| Subset embedded fonts when percent of characters used is less than ¹ | Not checked | Not checked | Not checked |
| Always Embed | Base 14 Fonts | Base 14 Fonts | Base 14 Fonts |
| Never Embed | Empty | Empty | Empty |
| COLOR TAB | | | |
| Settings File | None | None | None |
| Color Management Policies | Leave Color Unchanged | Leave Color Unchanged | Leave Color Unchanged |
| Intent | Default | Default | Default |
| Working Spaces | Dimmed | Dimmed | Dimmed |
| Preserve Overprint Settings | Checked | Checked | Checked |
| Preserve Under Color Removal and Black Generation Settings | Checked | Checked | Checked |
| Transfer Functions | Remove | Remove | Remove |
| Preserve Halftone Information | Checked | Checked | Checked |
| ADVANCED TAB | | | |
| Preserve Level 2 cypage Semantics | Checked | Checked | Checked |
| All other choices in Options ² | Not checked | Not checked | Not checked |
| All Document Structuring Conventions (DSC) | Not checked | Not checked | Not checked |

Footnotes:

1. If the option is checked, the suggested percentage is 100%.
2. Never check (select) "Use Prologue.ps and Epilogue.ps" or "Allow PostScript file to Override Job Options" (or both). *Doing so violates the requirement that the PostScript code does not override the settings or job options file.*

5. HOW TO CHECK FONT EMBEDDING AND ENCODING IN ADOBE ACROBAT 5 OR EARLIER

The steps below explain how to check for font embedding and encoding as required by this specification using Acrobat or Acrobat Reader.

5.1 Using Acrobat or the Acrobat Reader¹ to Check the Fonts

To check if all the fonts are embedded, subset, or substituted follow the steps below.

1. (Skip this step if using the Acrobat Reader) Under the View menu, be sure that “Use local fonts” is not checked.
2. On the Print panel, check “Print to file”. This will cause Acrobat to try to assign fonts to all the fonts in the document.
3. Print the file.
4. Go to Document Properties → Fonts
5. Click on the “List all fonts” button
6. (Note: Columns in the screen shots below are numbered to aid in understanding the Font Info screen). In the Font Info panel, column one gives the original font name. Column two gives the original font type (i.e., Type 1 or TrueType). Column three is not relevant to this check. If the font is embedded column four (“Used Font”) will say “Embedded”. If the font is subset column four will say “Embedded Subset.” In either case, column five (“Type”) will match column two. If font substitution occurs then column four will not match column 1. In addition, column five may or may not match column two.

Sample Screen Showing Required Font Embedding

| Original Font ① | Type ② | Encoding ③ | Used Font ④ | Type ⑤ |
|-----------------|----------|------------|-------------|----------|
| ArialBlack | TrueType | Windows | Embedded | TrueType |
| Helvetica | Type 1 | Windows | Embedded | Type 1 |
| Tahoma | TrueType | Windows | Embedded | TrueType |
| Times-Roman | Type 1 | Windows | Embedded | Type 1 |

Sample Screen Showing Embedded and Not Embedded Fonts

Fonts are OK.
Original Fonts are subset.

Fonts are **NOT** OK.
Original fonts are not embedded.

| Original Font ① | Type ② | Encoding ③ | Used Font ④ | Type ⑤ |
|-----------------|----------|------------|-------------------|----------|
| ArialBlack | TrueType | Windows | Embedded Subset | TrueType |
| Helvetica | Type 1 | Windows | Embedded Subset | Type 1 |
| Tahoma | TrueType | Windows | Embedded Subset | TrueType |
| Times-Roman | Type 1 | Windows | Embedded Subset | Type 1 |
| ArialBlack | TrueType | Windows | Adobe Sans MM | Type 1 |
| Helvetica | Type 1 | Windows | ArialMT | Type 1 |
| Tahoma | TrueType | Windows | Adobe Sans MM | Type 1 |
| Times-Roman | Type 1 | Windows | TimesNewRomanPSMT | Type 1 |

¹ The free Acrobat Reader is available at www.adobe.com/products/acrobat/readstep2.html.