

# **SCANNING GUIDELINES**

## **to Minimize File Size and Save Storage, Upload, and Review Time for CM/ECF Filers**

It is critical to fast and efficient use of CM/ECF that the software used for scanning documents is configured correctly. Essentially, the consequences of poor or incorrect setup are significantly increased file size - typically 20 to 40 times. This bloated file size causes:

- Vastly increased file storage requirements at the user's PC, server and backup level, together with a general slowness in handling such files.
- Vastly increased network traffic both locally and through the user's Internet Service Provider with very long file upload times. Files may simply be rejected for size or the communications network simply time out due to overlarge files.
- A very slow response from CM/ECF as the user attempts to upload a large file, and attendant delay in obtaining a confirmation of successful receipt, or at worst file rejection.
- A very slow download and file opening when attempting to read large files already uploaded into CM/ECF.

Fortunately, there are some simple steps and checks to ensure correct scanner software settings:

- Resolution should be set to 200 dpi, or a maximum 300 dpi.
- Image type should be set to black and white drawing (NOT gray scale, NOT color).
- Scanned image output or *Save As...* format should be TIF (ideally compressed CCITT4). Check your scanner software manual or Help for information on how to set output type.

A simple test scan should be made and the file converted to PDF, ready for upload to CM/ECF. This PDF conversion can be done using one of several software packages; a good example is Adobe Acrobat 5.0 (full package not just the Reader). Simply drag the scanned file onto the Acrobat icon and conversion is automatic. This conversion should NOT significantly increase the file size. Do a last check of the PDF file to make sure! File size can be viewed by simply finding the file through Windows Explorer, left-clicking the icon of the file once, to highlight it, then right-click and select *Properties*. The file size will be listed.

If your document is mostly text, it should be no larger than about 50KB per page. At most, a very detailed paged with graphics (e.g. a title) should be no larger than about 200KB per page.

Print this page and scan it as a test!

At 200dpi this single page scans and converts to a 35KB PDF file

At 300dpi this single page scans and converts to a 52KB PDF file

## Creating PDF Documents

The creation of Portable Document Format (PDF) documents is essential for the electronic filing component of CM/ECF; it is the only format that the application accepts. The CM/ECF project team has evaluated various options for creating PDF documents; findings and guidelines are presented below.

### Background

There are two primary methods for creating PDF documents: formatting text documents into PDF at the time of creation or scanning imaged documents from paper into PDF. The former method offers at least four significant advantages over the latter.

*Reduced Labor:* Imaging is a labor-intensive task and if documents must be imaged, either the attorney or the court will have to provide that labor.

*Improved System Performance:* Text documents are much smaller than imaged documents. For a typical document, its PDF text version would be only 20% of the size of its imaged version. Therefore, whenever an imaged document is stored or viewed, it puts five times more load on the network than it would as a text document. It also takes five times as long to transfer. That extra transfer time is particularly noticeable when the user is working over the Internet.

*Reduced System Storage Cost:* An imaged document consumes about five times more storage space than it would as a text file.

*Text Search Capability:* Text documents can be searched for words and phrases (as is done in Westlaw or Lexis). Imaged documents cannot be searched without first performing an extra step called optical character recognition (OCR). OCR is labor-intensive and does not yield 100% accuracy.

Creating a fully electronic case file is a worthy goal, and to do that, some imaging is necessary. However, it might not be possible to convert some exhibits and other documents into an electronic format. For others, it might be possible but not economic.

### Creating PDF documents from a word processing package

The optimal method for creating a PDF document for filing in CM/ECF is a simple method: create it directly from a word processing application using Adobe Acrobat's PDFWriter. PDF files created in this way have two advantages: they are much smaller in size than documents that have been scanned and they are text-searchable by users. The CM/ECF project team recommends this method for creating a PDF file from a word processing application. (Similar commercial PDF products such as "activePDF" are under review, but are not yet recommended.)

## ADOBE ACROBAT

The price of Adobe Acrobat is approximately \$250; the attorney discount has been discontinued. However, for law firms and courts that need to purchase more than 10 copies, Adobe provides a volume discount; see the <http://www.adobe.com/store/openoptions/main.html> web site for more information.

### PDFWriter

PDFWriter is part of the Adobe Acrobat package. The CM/ECF project team recommends this tool for use in creating a PDF document from a word processing application because it:

- creates a file that is smaller in size than a scanned document
- creates a file that is text searchable
- converts the document more quickly than Distiller (see below)

To ensure that the formatting and appearance of the document remain the same when viewed through the word processor and when viewed or printed through the PDF reader, the printer (File/Print menu) must be set to “Acrobat PDFWriter” *before* beginning to compose or edit the document. If a document is initially prepared with some other printer specified, the ultimate conversion to PDF is very likely to introduce changes in pagination, fonts, spacing, or other formatting elements, requiring further proofreading and further editing. Once the document is saved as a PDF file, always print from the PDF reader (rather than from the word processor) to be sure that the printed copy matches the electronic copy.

If Acrobat PDFWriter is set as the default printer, no other steps should be needed. If some other printer is set as the default, Acrobat PDFWriter must be selected as the current printer immediately after opening the word processing application (or immediately after choosing to create a new document). In WordPerfect, each time the document is opened for editing, before the final version is ready for filing, the printer should be set again to Acrobat PDFWriter. In Word, Acrobat PDFWriter is retained as the printer until the Word application is closed, i.e., if just the document has been closed and then reopened, the printer will still be set to Acrobat PDFWriter.

The latest version, 5.0, has been tested by the CM/ECF project team; there is no difference between this and Adobe versions 3.0 and 4.0 in either docketing the PDF documents into the application or in accessing the documents from the application. Also, documents created in the 5.0 version can be accessed by earlier versions of Adobe Reader. The CM/ECF project team also tested the integrity of 32 fonts when converted from either WordPerfect version 8 or Word 97 into PDF using Adobe Acrobat 5.0 PDFWriter. The tests showed that while characteristics of some fonts were lost in the conversion, every font conversion produced legible results. The details of the tests appear in Appendix A to this document.

## **Distiller**

This tool can also be used to create a PDF document but it is not recommended unless there is a need for embedded images in the document because there are a couple of drawbacks to using this tool:

- it creates a file significantly larger than that created by PDFWriter
- it takes significantly longer for the file to be created

*Note that the default installation of Adobe Acrobat 5.0 includes the installation of Distiller but not PDFWriter. To load PDFWriter, you must choose the “custom” installation. (This procedure is different from the installations of Adobe 3.0 and 4.0, which included PDFWriter in the default installation.)*

## **WORD PERFECT**

Although WordPerfect versions 9 and 10 offer a feature (“Publish-to-PDF”) that allows a document to be converted directly into PDF format, it is not recommended; the file created in this way is unnecessarily large.

Testing by the CM/ECF project team shows that an eight page document converted to PDF with WordPerfect 9.0’s Publish-to-PDF feature is three times larger in size than the same document converted with Acrobat PDFWriter. When a one page document with an image embedded in it (a small agency seal) is converted, the difference in size is much greater; the PDF file created by WordPerfect is nearly 100 times larger than the file created with PDFWriter. This difference in size can be lessened by changing the bitmap compression setting from the default of ZIP to JPEG (through the Details tab) and the quality factor from 2 (the highest quality) to 255 (the lowest quality). However, even with the quality set to 255, the file is still three times greater and with the quality set to 2, the file is 11 times greater. These tests were done with the Advanced Output setting set to the default of RGB; changing this setting to gray does not significantly change the size of the file. The quality of the seal is better at the highest quality setting (and better than the quality of the seal created through PDFWriter).

Preliminary testing of this feature in WordPerfect 10 shows that improvements have been made in the size of the file created. However, compared to the file created by PDFWriter, the WordPerfect-created PDF file is still nearly three times greater for a plain text file and eight times greater for a file with an image embedded in it. The size of the imaged file can be diminished to about four times greater by changing settings.

## **MICROSOFT WORD**

Microsoft Word 97, Word 2000, and Word 2002 do not currently provide a PDF converter and the Product Guide for Microsoft Office XP makes no reference to it.

There is, however, a macro installed with Adobe Acrobat (beginning with the 3.01 version) called PDFMaker that provides enhanced features for creating PDF files from Word. It is installed by Acrobat in the Microsoft Office/Office/Startup folder and is accessed through the File/Create Adobe PDF menu item or through an Adobe icon on the toolbar. It uses Acrobat PDFWriter or Distiller and converts Word features such as headings to PDF bookmarks, URLs to PDF Weblinks, crossreferences within a document to PDF links, etc. A full list of these features can be found at the <http://www.adobe.com> web site (search for PDFMaker) or for users who have already installed Adobe Acrobat, a help file can be found in the Program Files/Adobe/Acrobatx.0/Help/ENU folder. (Adobe Acrobat 4.0 users who wish to use PDFMaker with Word 2000 must upgrade [this is a free upgrade from Adobe] to Acrobat 4.05; the PDFMaker that shipped with Acrobat 4.0 does not work with Word 2000.) PDFMaker is not available for the Macintosh operating system.

The PDF files created in Word using the File/Print to Acrobat PDFWriter method and the File/Create Adobe PDF (the PDFMaker macro) method are nearly identical in size. There do not appear to be any differences in the quality of the PDF files produced, but it has not been fully tested by the CM/ECF project team. The advantage of the PDFMaker macro is the additional conversion features that it provides for Word documents. If these particular Word features are not used, the File/Print to Acrobat PDFWriter method is adequate.

### **Creating PDF documents from a scanning system**

For those documents that must be imaged because a word-processed version does not exist, the preferred method is to scan the document directly into PDF format using Adobe Acrobat (both 4.0 and 5.0 provide this feature). (From the File menu, choose Import/Scan.) Scanning to a format other than PDF (e.g., TIFF) would add both delay and labor, requiring not only the scan, but then a conversion to PDF.

#### **Factors to consider when scanning**

There are several factors to consider when determining how the scanning will be done.

- ▶ The quality of the document when scanned is determined by the level of detail recorded by the scanner. This detail is referred to as the resolution, which is measured by the dots per inch (dpi). A higher resolution:
  - is slower to scan (this is dependent also on the scanner and the number of pages that are scanned).
  - creates a document with a larger file size. This, in turn, causes the loading of the document into the case management application and the retrieval of the document from the application, to be slower.

There is a trade-off between the resolution, the speed at which the document is scanned, and the file size of the scanned document. For example, using a Ricoh IS-430 scanner (rated at 30- 45 pages per minute), a 100 page document scanned at 300 dpi produces a file of 6.97 MB and takes 3 minutes and 51 seconds to scan. The same document, scanned at 150 dpi produces a file of 3.67 MB and takes 2 minutes, 15 seconds to scan.

It is therefore important to find a resolution that will provide a high quality document, with a file size that does not hamper the length of time it takes to scan, load, and retrieve the document. Of those surveyed, most courts that scan recommend a resolution between 200-300 dpi. The CM/ECF project team recommends 200 dpi resolution.

► Another factor to consider is the mode of scanning. Almost always, it should be done in black and white, so that the file size will be as small as possible. However, there are some documents (those with shaded boxes, for example) that may need grayscale instead; this, however, will produce a file that is much larger in size than the document scanned in black and white. Never scan in color, unless absolutely necessary (perhaps for exhibits originally produced in color). This, too, will produce a document with an extremely large file size, which will take longer to load into the application and longer to retrieve for viewing purposes.

## **OCR and Adobe Capture**

A document that has been scanned using an OCR feature will be text-searchable, unlike the pure image file. However, the drawback to creating a document through the OCR process is that it is generally only about 95% - 97% accurate. Different packages claim different accuracy rates, but no package claims 100% accuracy. Even a 3% error rate can add up to a fair number of errors, depending on the size of the document, and fixing each error can substantially increase the amount of time needed to prepare the documents for loading into the application.

Adobe has a package called Capture that allows conversion of scanned pages to PDF files that are text searchable, using an OCR process. However, as with all documents produced through OCR, correcting the errors slows the process. It does, however, create a PDF file that is substantially smaller in size than the scanned document (estimated at 1/16 the size of the scanned file).

## Appendix A

Adobe Acrobat 5.0 was tested for its ability to maintain font integrity through conversions to PDF of documents created in WordPerfect version 8 and Microsoft Word 97. All of the 32 fonts tested were done with a 12 point size. The results show that while characteristics of some fonts were lost in the conversion (e.g., appeared smaller), every font conversion produced legible results and none produced a problem with either character spacing or character overlap (superimposition).

### Fonts that maintained integrity in the conversion from WordPerfect 8 to PDF

|                          |                           |
|--------------------------|---------------------------|
| Albertus Extra Bold      | Courier New               |
| Albertus Medium Bold     | Haettenschweiler          |
| Antique Olive            | Impact                    |
| Arial                    | Letter Gothic             |
| Arial Black              | Letter Gothic MT          |
| Arial NarrowBook Antiqua | Line Printer              |
| Bookman Old Style        | Marigold                  |
| Century Gothic           | Modern                    |
| Century Schoolbook       | Symbol (2 styles)         |
| CG Omega                 | Tahoma                    |
| CG Times                 | Times New Roman           |
| Clarendon Condensed Bold | Times New Roman (bold)    |
| Comic Sans MS            | Univers                   |
| Coronet                  | Univers Condensed Regular |
| Courier                  | Verdana                   |

### Fonts that were altered in the conversion from WordPerfect 8 to PDF

|              |  |
|--------------|--|
| Coronet      | appears much larger and in a different font, an Adobe default font |
| Line Printer | appears much larger and in a different font, an Adobe default font |
| Marigold     | appears much larger and in a different font, an Adobe default font |

### Fonts that maintained integrity in the conversion from Word 97 to PDF

|                          |                   |
|--------------------------|-------------------|
| Arial                    | Garamond          |
| Arial Black              | Haettenschweiler  |
| Arial NarrowBook Antiqua | Impact            |
| Bookman Old Style        | Letter Gothic     |
| Century Gothic           | Symbol (2 styles) |
| Century Schoolbook       | Tahoma            |
| CG Times                 | Times New Roman   |

|               |                           |
|---------------|---------------------------|
| Comic Sans MS | Univers                   |
| Courier       | Univers Condensed Regular |
| Courier New   | Verdana                   |

### Fonts that were altered in the conversion from Word 97 to PDF

|                          |  |
|--------------------------|--|
| Albertus Extra Bold      | bold characteristic lost, appears in a different font, an Adobe default font |
| Albertus Medium Bold     | appears in a different font, an Adobe default font                           |
| Antique Olive            | appears much smaller and in a different font, an Adobe default font          |
| CG Omega                 | appears much smaller and in a different font, an Adobe default font          |
| Clarendon Condensed Bold | appears much smaller and in a different font, an Adobe default font          |
| Coronet                  | appears much larger and in a different font, an Adobe default font           |
| Line Printer             | appears much larger and in a different font, an Adobe default font           |
| Marigold                 | appears much larger and in a different font, an Adobe default font           |
| Modern                   | appears in a different font, an Adobe default font                           |
| Times New Roman (bold)   | appears in a different font, an Adobe default font                           |