General RIFF File Background

General RIFF description provided by
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General RIFF File Format

RIFF is a Windows file format for storing chunks of multi-media data, associated descriptions, formats, playlists, etc. The *Waveform Audio File Format* (.WAV) description below provides a precise description of the data unique to .WAV files, but does not describe the RIFF file structure within which the .WAV data is stored, so I have added this section to describe general RIFF files.

If you read the raw file data you will need to process the structures described in this section. If you use RIFF access functions within windows, they will strip this information off and you will not see it.

RIFF Header

A RIFF file has an **8-byte RIFF header**, identifying the file, and giving the residual length after the header (i.e. file_length - 8):

```
struct {
   char  id[4];   // identifier string = "RIFF"
   DWORD len;     // remaining length after this header
} riff_hdr;
```

The riff_hdr is immediately followed by a **4-byte data type** identifier. For .WAV files this is "WAVE" as follows:

```
char wave_id[4];  // WAVE file identifier = "WAVE"
```

RIFF Chunks

The entire remainder of the RIFF file is "chunks". Each chunk has an **8-byte chunk header** identifying the type of chunk, and giving the length in bytes of the data following the chunk header, as follows:

```
struct {          // CHUNK 8-byte header
   char  id[4];   // identifier, e.g. "fmt " or "data"
   DWORD len;     // remaining chunk length after header
} chunk_hdr;
                  // data bytes follow chunk header
```

This concludes the general RIFF file description. The types of chunks to expect for .WAV files (unexpected chunks should be allowed for in processing RIFF files) and the format of the content data of each chunk type are described in the sections that follow.

RIFF WAVE (.WAV) file format

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I found the following lengthy excerpt in a document rmrtf.zrt (it is actually a .zip file) in the vendor/microsoft/multimedia subdirectory at the ftp.uu.net ftp site. It is presumably beyond the scope (in terms of the amount of detail) of your document, but nevertheless, I thought that it may help you in including references to the Windows .WAV format in the future.

Let me know if you have any questions/comments. Again, thank you for your helpful summary. Keep it up!

The following is taken from RIFFMCI.RTF, "Multimedia Programming Interface and Data Specification v1.0", a Windows RTF (Rich Text Format) file contained in the .zip file, RMRTF.ZRT. The original document is quite long and this constitutes pages 83-95 of the text format version (starting on roughly page 58 of the RTF version). If you would like a PostScript version, let me know and I can make one up for you.

Waveform Audio File Format (WAVE)

This section describes the Waveform format, which is used to represent digitized sound.

The WAVE form is defined as follows. Programs must expect(and ignore) any unknown chunks encountered, as with all RIFF forms. However, <*fmt-ck*> must always occur before <*wave-data*>, and both of these chunks are mandatory in a WAVE file.<

```
WAVE-form> ->
      RIFF( 'WAVE'
      <fmt-ck>                 // Format
      [<fact-ck>]              // Fact chunk
      [<cue-ck>]               // Cue points
      [<playlist-ck>]          // Playlist
      [<assoc-data-list>]      // Associated data list
      <wave-data>   )          // Wave data
```

WAVE chunks are described in the following sections.

WAVE Format Chunk

The WAVE format chunk ***<fmt-ck>*** specifies the format of the <*wave-data*>. The <*fmt-ck*> is defined as follows:

```
<fmt-ck> ->   fmt( <common-fields> <format-specific-fields> )

<common-fields> ->
      struct
      {
            WORD wFormatTag;          // Format category
            WORD wChannels;           // Number of channels
            DWORDdwSamplesPerSec;     // Sampling rate
            DWORDdwAvgBytesPerSec;    // For buffer estimation
```

```
          WORD wBlockAlign;        // Data block size
      }
```

Common Fields Chunk

The fields in the ***<common-fields>*** chunk are as follows:

Field	Description
wFormatTag	A number indicating the WAVE format category of the file. The content of the <*format-specific-fields*> portion of the `fmt' chunk, and the interpretation of the waveform data,on this value. must register any new WAVE format categories. See ``Registering Multimedia Formats'' in Chapter 1, ``Overview of Multimedia,'' for information on registering WAVE format categories. ``Wave Format Categories,'' following this section, lists the currently defined WAVE format categories.
wChannels	The number of channels represented in the waveform data, such as 1 for mono or 2 for stereo.
dwSamplesPerSec	The sampling rate (in samples per second) at which each channel should be played.
dwAvgBytesPerSec	The average number of bytes per second at which the waveform data should be transferred. Playback software can estimate the buffer size using this value.
wBlockAlign	The block alignment (in bytes) of the waveform data. Playback software needs to process a multiple of wBlockAlign bytes of data at a time, so the value of wBlockAlign can be used for buffer alignment.

Format Specific Fields Chunk

The ***<format-specific-fields>*** consists of zero or more bytes of parameters. Which parameters occur depends on the WAVE format category-see the following section for details. Playback software should be written to allow for (and ignore) any unknown <*format-specific-fields*> parameters that occur at the end of this field.

WAVE Format Categories

The format category of a WAVE file is specified by the value of the wFormatTag field of the **`fmt'** chunk. The representation of data in <wave-data>, and the content of the <format-specific-fields> of the `fmt' chunk, depend on the format category.

The currently defined open non-proprietary WAVE format categories are as follows:

wFormatTag Value	Format Category_

WAVE_FORMAT_PCM	(0x0001)	Microsoft Pulse Code Modulation (PCM)

The following are the registered proprietary WAVE format categories:

wFormatTag Value		Format Category
FORMAT_MULAW	(0x0101)	IBM mu-law format
IBM_FORMAT_ALAW	(0x0102)	IBM a-law format
IBM_FORMAT_ADPCM	(0x0103)	IBM AVC Adaptive Differential PCM format

Microsoft WAVE_FORMAT_PCM format

The following sections describe the Microsoft WAVE_FORMAT_PCM format. If the *wFormatTag* field of the <*fmt-ck*> is set to WAVE_FORMAT_PCM, then the waveform data consists of samples represented in pulse code modulation (PCM) format. For PCM waveform data, the <*format-specific-fields*> is defined as follows:

```
<PCM-format-specific> ->
      struct
      {
            WORD wBitsPerSample;    // Sample size
      }
```

The ***wBitsPerSample*** field specifies the number of bits of data used to represent each sample of each channel. If there are multiple channels, the sample size is the same for each channel.

For PCM data, the ***wAvgBytesPerSec*** field of the `fmt' chunk should be equal to the following formula rounded up to the next whole number:

```
                             wBitsPerSample
wChannels x wBitsPerSecond x --------------
                                   8
```

The ***wBlockAlign*** field should be equal to the following formula, rounded to the next whole number:

```
            wBitsPerSample
wChannels x --------------
                  8
```

Data Packing for PCM WAVE Files

In a single-channel WAVE file, samples are stored consecutively. For stereo WAVE files, channel 0 represents the left channel, and channel 1 represents the right channel. The speaker position mapping for more than two channels is currently undefined. In multiple-channel WAVE files, samples are interleaved.

The following diagrams show the data packing for a **8-bit** mono and stereo WAVE files:

Data Packing for 8-Bit Mono PCM:

```
      Sample 1    Sample 2    Sample 3    Sample 4
      ---------   ---------   ---------   ---------
```

```
            Channel 0   Channel 0   Channel 0   Channel 0
```

Data Packing for 8-Bit Stereo PCM:

```
                  Sample 1                Sample 2
            ---------------------   ---------------------
            Channel 0   Channel 1   Channel 0   Channel 0
             (left)      (right)     (left)      (right)
```

The following diagrams show the data packing for **16-bit** mono and stereo WAVE files:

Data Packing for 16-Bit Mono PCM:

```
                  Sample 1                Sample 2
            ----------------------  ----------------------
            Channel 0   Channel 0   Channel 0   Channel 0
            low-order   high-order  low-order   high-order
            byte        byte        byte        byte
```

Data Packing for 16-Bit Stereo PCM:

```
                              Sample 1
            ---------------------------------------------
            Channel 0   Channel 0   Channel 1   Channel 1
            (left)      (left)      (right)     (right)
            low-order   high-order  low-order   high-order
            byte        byte        byte        byte
```

Data Format of the Samples

Each sample is contained in an integer i. The size of i is the smallest number of bytes required to contain the specified sample size. The least significant byte is stored first. The bits that represent the sample amplitude are stored in the most significant bits of i, and the remaining bits are set to zero.

For example, if the sample size (recorded in nBitsPerSample) is 12 bits, then each sample is stored in a two-byte integer. The least significant four bits of the first (least significant) byte is set to zero. The data format and maximum and minimums values for PCM waveform samples of various sizes are as follows:

SampleSize	DataFormat	Max.Value	MinimumValue
One to eight bits	Unsigned integer	255 (0xFF)	0
Nine or more bits	Signed integer i	Largest positive value of i	Most negative value of i

For example, the maximum, minimum, and midpoint values for 8-bit and 16-bit PCM waveform data are as follows:

Format	Max.Value	Min.Value	MidpointValue
8-bit PCM	255 (0xFF)	0	128 (0x80)
16-bit PCM	32767 (0x7FFF)	-32768 (-0x8000)	0

Examples of PCM WAVE Files

Example of a PCM WAVE file with 11.025 kHz sampling rate, mono, 8 bits per sample:

```
RIFF( 'WAVE'      fmt(1, 1, 11025, 11025, 1, 8)
                  data( <wave-data> ) )
```

Example of a PCM WAVE file with 22.05 kHz sampling rate, stereo, 8 bits per sample:

```
RIFF( 'WAVE'      fmt(1, 2, 22050, 44100, 2, 8)
                  data( <wave-data> ) )
```

Example of a PCM WAVE file with 44.1 kHz sampling rate, mono, 20 bits per sample:

```
RIFF( 'WAVE'     INFO(INAM("O Canada"Z))
                  fmt(1, 1, 44100, 132300, 3, 20)
                  data( <wave-data> ) )
```

Storage of WAVE Data

The *<wave-data>* contains the waveform data. It is defined as follows:

```
<wave-data> ->   { <data-ck> : <data-list> }
<data-ck>   ->   data( <wave-data> )
<wave-list> ->   LIST( 'wavl' { <data-ck> :     // Wave samples
                        <silence-ck> }... )     // Silence
<silence-ck> ->  slnt( <dwSamples:DWORD> )      // Count of
                                                // silent samples
```

Note: The `slnt' chunk represents silence, not necessarily a repeated zero volume or baseline sample. In 16-bit PCM data, if the last sample value played before the silence section is a 10000, then if data is still output to the D to A converter, it must maintain the 10000 value. If a zero value is used, a click may be heard at the start and end of the silence section. If play begins at a silence section, then a zero value might be used since no other information is available. A click might be created if the data following the silent section starts with a nonzero value.

FACT Chunk

The <fact-ck> fact chunk stores important information about the contents of the WAVE file. This chunk is defined as follows:

```
<fact-ck> -> fact( <dwFileSize:DWORD> )   // Number of samples
```

The `fact'' chunk is required if the waveform data is contained in a **`wavl''** LIST chunk and for all compressed audio formats. The chunk is not required for PCM files using the **`data''** chunk format.

The "fact" chunk will be expanded to include any other information required by future WAVE formats. Added fields will appear following the

<*dwFileSize*> field. Applications can use the chunk size field to determine which fields are present.

Cue-Points Chunk

The <*cue-ck*> cue-points chunk identifies a series of positions in the waveform data stream. The <cue-ck> is defined as follows:

```
<cue-ck> ->   cue( <dwCuePoints:DWORD>    // Count of cue points
                  <cue-point>... )        // Cue-point table
<cue-point> ->    struct
                  {
                        DWORD  dwName;
                        DWORD  dwPosition;
                        FOURCC fccChunk;
                        DWORD  dwChunkStart;
                        DWORD  dwBlockStart;
                        DWORD  dwSampleOffset;
                  }
```

The <*cue-point*> fields are as follows:

Field	Description
dwName	Specifies the cue point name. Each <*cue-point*> record must have a unique dwName field.
dwPosition	Specifies the sample position of the cue point.This is the sequential sample number within the play order. See ``Playlist Chunk,'' later in this document, for a discussion of the play order.
fccChunk	Specifies the name or chunk ID of thechunk containing the cue point.
dwChunkStart	Specifies the file position of the start of the chunk containing the cue point. This is a byte offset relative to the start of the data section of the `wavl' LIST chunk.
dwBlockStart	Specifies the file position of the start of the block containing the position. This is a byte offset relative to the start of the data section of the `wavl' LIST chunk.
dwSampleOffset	Specifies the sample offset of the cuepoint relative to the start of the block.

Examples of File Position Values

The following table describes the <cue-point> field values for a WAVE file containing multiple `data' and `slnt' chunks enclosed in a `wavl' LIST chunk:

CuePointLoc.	Field	Value
a `slnt'	fccChunk	FOURCC value `slnt'.
	dwChunkStart	File position of the`slnt' chunk relative to the start of the data section in the `wavl' LIST chunk.
	dwBlockStart	File position of the datasection of

		the `slnt' chunk relative to the start of the data section of the `wavl' LIST chunk.
	dwSampleOffset	Sample position of the cuepoint relative to the start of the `slnt' chunk.
In a PCM `data' chunk	fccChunk	FOURCC value `data'.
	dwChunkStart	File position of the`data' chunk relative to the start of the data section in the `wavl' LIST chunk.
	dwBlockStart	File position of the cuepoint relative to the start of the data section of the `wavl' LIST chunk.
	dwSampleOffset	Zero value.
In a compressed `data' chunk	fccChunk	FOURCC value `data'.
	dwChunkStart	File position of the startof the `data' chunk relative to the start of the data section of the `wavl' LIST chunk.
	dwBlockStart	File position of theenclosing block relative to the start of the data section of the `wavl' LIST chunk. The software can begin the decompression at this point.
	dwSampleOffset	Sample position of the cuepoint relative to the start of the block.

The following table describes the <cue-point> field values for a WAVE file containing a single `data' chunk:

CuePointLoc.	Field	Value
Within PCM data	fccChunk	FOURCC value `data'.
	dwChunkStart	Zero value.
	dwBlockStart	Zero value.
	dwSampleOffset	Sample position of the cuepoint relative to the start of the `data' chunk.
In a compressed `data' chunk	fccChunk	FOURCC value `data'.
	dwChunkStart	Zero value.
	dwBlockStart	File position of theenclosing block

	relative to the start of the `data' chunk. The software can begin the decompression at this point.
dwSampleOffset	Sample position of the cuepoint relative to the start of the block.

Playlist Chunk

The *<playlist-ck>* playlist chunk specifies a play order for a series of cue points. The <playlist-ck> is defined as follows:

```
<playlist-ck> -> plst(  <dwSegments:DWORD>   // Count of play segments
                        <play-segment>... )  // Play-segment table

<play-segment> ->  struct {
                              DWORD dwName;
                              DWORD dwLength;
                              DWORD dwLoops;
                           }
```

The *<play-segment>* fields are as follows:

Field	Description
dwName	Specifies the cue point name. This value must match one of the names listed in the <cue-ck> cue-point table.
dwLength	Specifies the length of the section in samples.
dwLoops	Specifies the number of times to play the section.

Associated Data Chunk

The *<assoc-data-list>* associated data list provides the ability to attach information like labels to sections of the waveform data stream. The *<assoc-data-list>* is defined as follows:

```
<assoc-data-list> ->  LIST('adtl'
                              <labl-ck>         // Label
                              <note-ck>         // Note
                              <ltxt-ck>         // Text with data length
                              <file-ck> )       // Media file

<labl-ck> ->      labl( <dwName:DWORD> <data:ZSTR> )

<note-ck> ->      note( <dwName:DWORD> <data:ZSTR> )

<ltxt-ck> ->      ltxt( <dwName:DWORD>
                        <dwSampleLength:DWORD>
                        <dwPurpose:DWORD>
                        <wCountry:WORD>
                        <wLanguage:WORD>
                        <wDialect:WORD>
                        <wCodePage:WORD>
                        <data:BYTE>... )
```

```
<file-ck> ->      file( <dwName:DWORD>
                        <dwMedType:DWORD>
                        <fileData:BYTE>...)
```

Label and Note Information

The `labl' and `note' chunks have similar fields. The `labl' chunk contains a label, or title, to associate with a cue point. The `note' chunk contains comment text for a cue point. The fields are as follows:

Field	Description
dwName	Specifies the cue point name. This value must match one of the names listed in the <*cue-ck*> cue-point table.
data	Specifies a NULL-terminated string containing a text label (for the *`labl'* chunk) or comment text (for the *`note'* chunk).

Text with Data Length Information

The `ltxt'' chunk contains text that is associated with a data segment of specific length. The chunk fields are as follows:

Field	Description
dwName	Specifies the cue point name. This value must match one of the names listed in the <*cue-ck*> cue-point table.
dwSampleLength	Specifies the number of samples in the segment of waveform data.
dwPurpose	Specifies the type or purpose of the text. For example, dwPurpose can specify a FOURCC code like *`scrp'* for script text or *`capt'* for close-caption text.
wCountry	Specifies the country code for the text. See *``Country Codes''* in Chapter 2, *``Resource Interchange File Format,''* for a current list of country codes.
wLanguage, wDialect	Specify the language and dialect codes for the text. See ``Language and Dialect Codes'' in Chapter 2, ``Resource Interchange File Format,'' for a current list of language and dialect codes.
wCodePage	Specifies the code page for the text.

Embedded File Information

The `file' chunk contains information described in other file formats (for example, an `RDIB' file or an ASCII text file). The chunk fields are as follows:

Field	Description
dwName	Specifies the cue point name. This value must match one of the names listed in the <*cue-ck*> cue-point table.
dwMedType	Specifies the file type contained in the fileData field. If the fileData section contains a RIFF form, the *dwMedType* field is the same as the RIFF form type for the file. This field can contain a zero value.
fileData	Contains the media file.

Version:
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Microsoft Technical Support

Subject:
Rich Text Format (RTF) Specification
Specification

Contents:

The Rich Text Format (RTF) Specification is a method of encoding formatted text and graphics for easy transfer between applications. Currently, users depend on special translation software to move word-processing documents between different MS-DOSÆ, MicrosoftÆ WindowsÆ, OS/2, Macintosh, and Power Macintosh applications.

The RTF Specification provides a format for text and graphics interchange that can be used with different output devices, operating environments, and operating systems. RTF uses the ANSI, PC-8, Macintosh, or IBM PC character set to control the representation and formatting of a document, both on the screen and in print. With the RTF Specification, documents created under different operating systems and with different software applications can be transferred between those operating systems and applications. RTF files created in Microsoft Word 6.0 (and later) for the Macintosh and Power Macintosh have a file type of ìRTF.î

Software that takes a formatted file and turns it into an RTF file is called an RTF writer. An RTF writer separates the application's control information from the actual text and writes a new file containing the text and the RTF groups associated with that text. Software that translates an RTF file into a formatted file is called an RTF reader.

A sample RTF reader application is available

Appendix A: Sample RTF Reader Application

). It is designed for use with the specification to assist those interested in developing their own RTF readers. This application and its use are described in

Appendix A

. The sample RTF reader is not a for-sale product, and Microsoft does not provide technical or any other type of support for the sample RTF reader code or the RTF specification.

RTF version 1.7 includes all new control words introduced by Microsoft Word for Windows 95 version 7.0, Word 97 for Windows, Word 98 for the Macintosh, Word 2000 for Windows, and Word 2002 for Windows, as well as other Microsoft products.

RTF Syntax

An RTF file consists of unformatted text, control words, control symbols, and groups. For ease of transport, a standard RTF file can consist of only 7-bit ASCII characters. (Converters that communicate with Microsoft Word for Windows or Microsoft Word for the Macintosh should expect 8-bit characters.) There is no set maximum line length for an RTF file.

A control word is a specially formatted command that RTF uses to mark printer control codes and information that applications use to manage documents. A control word cannot be longer than 32 characters. A control word takes the following form:

```
\LetterSequence<Delimiter>
```

Note that a backslash begins each control word.

The LetterSequence is made up of lowercase alphabetic characters (a through z). RTF is case sensitive. Control words (also known as Keywords) may not contain any uppercase alphabetic characters.

The following keywords found in Word 97 through Word 2002 do not currently follow the requirement that keywords may not contain any uppercase alphabetic characters. All writers should still follow this rule, and Word will also emit completely lowercase versions of all these keywords in the next version. In the meantime, those implementing readers are advised to treat them as exceptions.

```
\clFitText
\clftsWidthN
\clNoWrap
\clwWidthN
\tdfrmtxtBottomN
\tdfrmtxtLeftN
\tdfrmtxtRightN
\tdfrmtxtTopN
\trftsWidthAN
\trftsWidthBN
\trftsWidthN
\trwWidthAN
\trwWidthBN
\trwWidthN
\sectspecifygenN
\ApplyBrkRules
```

The delimiter marks the end of an RTF control word, and can be one of the following:

A space. In this case, the space is part of the control word.

A digit or a hyphen (-), which indicates that a numeric parameter follows. The subsequent digital sequence is then delimited by a space or any character other than a letter or a digit. The parameter can be a positive or negative number. The range of the values for the number is generally ñ32767 through 32767. However, Word tends to restrict the range to ñ31680 through 31680. Word allows values in the range ñ2,147,483,648 to 2,147,483,648 for a small number of keywords (specifically \bin, \revdttm, and some picture properties). An RTF parser must handle an arbitrary string of digits as a legal value for a keyword. If a numeric parameter immediately follows the control word, this parameter becomes part of the control word. The control word is then delimited by a space or a nonalphabetic or nonnumeric character in the same manner as any other control word.

Any character other than a letter or a digit. In this case, the delimiting character terminates the control word but is not actually part of the control word.

If a space delimits the control word, the space does not appear in the document. Any characters following the delimiter, including spaces, will appear in the document. For this reason, you should use spaces only where necessary; do not use spaces merely to break up RTF code.

A control symbol consists of a backslash followed by a single, nonalphabetic character. For example, \~ represents a nonbreaking space. Control symbols take no delimiters.

A group consists of text and control words or control symbols enclosed in braces ({ }). The opening brace ({) indicates the start of the group and the closing brace (}) indicates the end of the group. Each group specifies the text affected by the group and the different attributes of that text. The RTF file can also include groups for fonts, styles, screen color, pictures, footnotes, comments (annotations), headers and footers, summary information, fields, and bookmarks, as well as document-, section-, paragraph-, and character-formatting properties. If the font, file, style, screen color, revision mark, and summary-information groups and document-formatting properties are included, they must precede the first plain-text character in the document. These groups form the RTF file header. If the group for fonts is included, it should precede the group for styles. If any group is not used, it can be omitted. The groups are discussed in the following sections.

The control properties of certain control words (such as bold, italic, keep together, and so on) have only two states. When such a control word has no parameter or has a nonzero parameter, it is assumed that the control word turns on the property. When such a control word has a parameter of 0, it is assumed that the control word turns off the property. For example, \b turns on bold, whereas \b0 turns off bold.

Certain control words, referred to as destinations, mark the beginning of a collection of related text that could appear at another position, or destination, within the document. Destinations may also be text that is used but should not appear within the document at all. An example of a destination is the \footnote group, where the footnote text follows the control word. Page breaks cannot occur in destination text. Destination control words and their following text must be enclosed in braces. No other control words or text may appear within the destination group. Destinations added after the RTF Specification published in the March 1987 Microsoft Systems Journal may be preceded by the control symbol *. This control symbol identifies destinations whose related text should be ignored if the RTF reader does not recognize the destination. (RTF writers should follow the convention of using this control symbol when adding new destinations or groups.) Destinations whose related text should be inserted into the document even if the RTF reader does not recognize the destination should not use *. All destinations that were not included in the March 1987 revision of the RTF Specification are shown with * as part of the control word.

Formatting specified within a group affects only the text within that group. Generally, text within a group inherits the formatting of the text in the preceding group. However, Microsoft implementations of RTF assume that the footnote, annotation, header, and footer groups (described later in this specification) do not inherit the formatting of the preceding text. Therefore, to ensure that these groups are always formatted correctly, you should set the formatting within these groups to the default with the \sectd, \pard, and \plain control words, and then add any desired formatting.

The control words, control symbols, and braces constitute control information. All other characters in the file are plain text. Here is an example of plain text that does not exist within a group:

```
{\rtf\ansi\deff0{\fonttbl{\f0\froman Tms Rmn;}{\f1\fdecor
Symbol;}{\f2\fswiss Helv;}}{\colortbl;\red0\green0\blue0;
\red0\green0\blue255;\red0\green255\blue255;\red0\green255\
blue0;\red255\green0\blue255;\red255\green0\blue0;\red255\
green255\blue0;\red255\green255\blue255;}{\stylesheet{\fs20 \
snext0Normal;}}{\info{\author John Doe}
{\creatim\yr1990\mo7\dy30\hr10\min48}{\version1}{\edmins0}
{\nofpages1}{\nofwords0}{\nofchars0}{\vern8351}}\widoctrl\ftnbj \sectd\
linex0\endnhere \pard\plain \fs20 This is plain text.\par}
```

The phrase ìThis is plain text.î is not part of a group and is treated as document text.

As previously mentioned, the backslash (\) and braces ({ }) have special meaning in RTF. To use these characters as text, precede them with a backslash, as in \\, \{, and \}.

Conventions of an RTF Reader

The reader of an RTF stream is concerned with the following:

Separating control information from plain text.

Acting on control information.

Collecting and properly inserting text into the document, as directed by the current group state.

Acting on control information is designed to be a relatively simple process. Some control information simply contributes special characters to the plain text stream. Other information serves to change the program state, which includes properties of the document as a whole, or to change any of a collection of group states, which apply to parts of the document.

As previously mentioned, a group state can specify the following:

The destination, or part of the document that the plain text is constructing.

Character-formatting properties, such as bold or italic.

Paragraph-formatting properties, such as justified or centered.

Section-formatting properties, such as the number of columns.

Table-formatting properties, which define the number of cells and dimensions of a table row.

In practice, an RTF reader will evaluate each character it reads in sequence as follows:

If the character is an opening brace ({), the reader stores its current state on the stack. If the character is a closing brace (}), the reader retrieves the current state from the stack.

If the character is a backslash (\), the reader collects the control word or control symbol and its parameter, if any, and looks up the control word or control symbol in a table that maps control words to actions. It then carries out the action prescribed in the lookup table. (The possible actions are discussed in the following table.) The read pointer is left before or after a control-word delimiter, as appropriate.

If the character is anything other than an opening brace ({), closing brace (}), or backslash (\), the reader assumes that the character is plain text and writes the character to the current destination using the current formatting properties.

If the RTF reader cannot find a particular control word or control symbol in the lookup table described in the preceding list, the control word or control symbol should be ignored. If a control word or control symbol is preceded by an opening brace ({), it is part of a group. The current state should be saved on the stack, but no state change should occur. When a closing brace (}) is encountered, the current state should be retrieved from the stack, thereby resetting the current state. If the * control symbol precedes a control word, then it defines a destination group and was itself preceded by an opening brace ({). The RTF reader should discard all text up to and including the closing brace (}) that closes this group. All RTF readers must recognize all destinations defined in the March 1987 RTF Specification. The reader may skip past the group, but it is not allowed to simply discard the control word. Destinations defined since March 1987 are marked with the * control symbol.

Note All RTF readers must implement the * control symbol so that they can read RTF files written by newer RTF writers.

For control words or control symbols that the RTF reader can find in the lookup table, the possible actions are as follows.

Action	Description
Change Destination	The RTF reader changes the destination to the destination described in the table entry. Destination changes are legal only immediately after an opening brace ({). (Other restrictions may also apply; for example, footnotes cannot be nested.) Many destination changes imply that the current property settings will be reset to their default settings. Examples of control words that change destination are \footnote, \header, \footer, \pict, \info, \fonttbl, \stylesheet, and \colortbl. This specification identifies all destination control words where they appear in control-word tables.
Change Formatting Property	The RTF reader changes the property as described in the table entry. The entry will specify whether a parameter is required. HYPERLINK \l "APPENDIX_B_INDEX_OF_RTF_CONTROL_WORDS" Appendix B: Index of RTF Control Words at the end of this Specification also specifies which control words require parameters. If a parameter is needed and not specified, then a default value will be used. The default value used depends on the control word. If the control word does not specify a default, then all RTF readers should assume a default of 0.
Insert Special Character	The reader inserts into the document the character code or codes described in the table entry.
Insert Special Character and Perform Action	The reader inserts into the document the character code or codes described in the table entry and performs whatever other action the entry specifies. For example, when Microsoft Word interprets \par, a paragraph mark is inserted in the document and special code is run to record the paragraph properties

belonging to that paragraph mark.

Formal Syntax

RTF uses the following syntax, based on Backus-Naur Form.

Syntax

Meaning

#PCDATA

Text (without control words).

#SDATA

Hexadecimal data.

#BDATA

Binary data.

'c'

A literal.

<text>

A nonterminal.

A

The (terminal) control word a, without a parameter.

a or aN

The (terminal) control word a, with a parameter.

A?

Item a is optional.

A+

One or more repetitions of item a.

A*

Zero or more repetitions of item a.

A b

Item a followed by item b.

A | b

Item a or item b.

a & b

Item a and/or item b, in any order.

Contents of an RTF File

An RTF file has the following syntax:

<File>

'{' <header> <document> '}'

This syntax is the standard RTF syntax; any RTF reader must be able to correctly interpret RTF written to this syntax. It is worth mentioning again that RTF readers do not have to use all control words, but they must be able to harmlessly ignore unknown (or unused) control words, and they must correctly skip over destinations marked with the * control symbol. There may, however, be RTF writers that generate RTF that does not conform to this syntax, and as such, RTF readers should be robust enough to handle some minor variations. Nonetheless, if an RTF writer generates RTF conforming to this specification, then any correct RTF reader should be able to interpret it.

Header

The header has the following syntax:

<header>
\rtf <charset> <deffont> \deff? <fonttbl> <filetbl>? <colortbl>? <stylesheet>? <listtables>? <revtbl>? <rsidtable>? <generator>?

Each of the various header tables should appear, if they exist, in this order. Document properties can occur before and between the header tables. A property must be defined before being referenced. Specifically,

The style sheet must occur before any style usage.

The font table must precede any reference to a font.

The \deff keyword must precede any text without an explicit reference to a font, because it specifies the font to use in such cases.

RTF Version

An entire RTF file is considered a group and must be enclosed in braces. The \rtfN control word must follow the opening brace. The numeric parameter N identifies the major version of the RTF Specification used. The RTF standard described in this specification, although titled as version 1.7, continues to correspond syntactically to RTF Specification version 1. Therefore, the numeric parameter N for the \rtf control word should still be emitted as 1.

Character Set

After specifying the RTF version, you must declare the character set used in this document. The control word for the character set must precede any plain text or any table control words. The RTF Specification currently supports the following character sets.

Control word	Character set
\ansi	ANSI (the default)
\mac	Apple Macintosh
\pc	IBM PC code page 437
\pca	IBM PC code page 850, used by IBM Personal System/2 (not implemented in version 1 of Microsoft Word for OS/2)

Unicode RTF

Word 2002 is a Unicode-enabled application. Text is handled using the 16-bit Unicode character encoding scheme. Expressing this text in RTF requires a new mechanism, because until this release (version 1.6), RTF has only handled 7-

bit characters directly and 8-bit characters encoded as hexadecimal. The Unicode mechanism described here can be applied to any RTF destination or body text.

Control word
Meaning

\ansicpgN
This keyword represents the ANSI code page used to perform the Unicode to ANSI conversion when writing RTF text. N represents the code page in decimal. This is typically set to the default ANSI code page of the run-time environment (for example, \ansicpg1252 for U.S. Windows). The reader can use the same ANSI code page to convert ANSI text back to Unicode. Possible values include the following:
437
United States IBM
708
Arabic (ASMO 708)
709
Arabic (ASMO 449+, BCON V4)
710
Arabic (transparent Arabic)
711
Arabic (Nafitha Enhanced)
720
Arabic (transparent ASMO)
819
Windows 3.1 (United States and Western Europe)
850
IBM multilingual
852
Eastern European
860
Portuguese
862
Hebrew
863
French Canadian
864
Arabic
865
Norwegian
866
Soviet Union
874
Thai
932
Japanese
936
Simplified Chinese
949
Korean
950
Traditional Chinese

1250

Windows 3.1 (Eastern European)

1251

Windows 3.1 (Cyrillic)

1252

Western European

1253

Greek

1254

Turkish

1255

Hebrew

1256

Arabic

1257

Baltic

1258

Vietnamese

1361

Johab

This keyword should be emitted in the RTF header section right after the \ansi, \mac, \pc or \pca keyword.

\upr

This keyword represents a destination with two embedded destinations, one represented using Unicode and the other using ANSI. This keyword operates in conjunction with the \ud keyword to provide backward compatibility. The general syntax is as follows:

```
{\upr{keyword ansi_text}{\*\ud{keyword Unicode_text}}}
```

Notice that this keyword destination does not use the * keyword; this forces the old RTF readers to pick up the ANSI representation and discard the Unicode one.

\ud

This is a destination that is represented in Unicode. The text is represented using a mixture of ANSI translation and use of \uN keywords to represent characters that do not have the exact ANSI equivalent.

\uN

This keyword represents a single Unicode character that has no equivalent ANSI representation based on the current ANSI code page. N represents the Unicode character value expressed as a decimal number.

This keyword is followed immediately by equivalent character(s) in ANSI representation. In this way, old readers will ignore the \uN keyword and pick up the ANSI representation properly. When this keyword is encountered, the reader should ignore the next N characters, where N corresponds to the last \ucN value encountered.

As with all RTF keywords, a keyword-terminating space may be present (before the ANSI characters) that is not counted in the characters to skip. While this is not likely to occur (or recommended), a \bin keyword, its argument, and the binary data that follows are considered one character for skipping purposes. If an RTF scope delimiter character (that is, an opening or closing brace) is encountered while scanning skippable data, the skippable data is considered to be ended before the delimiter. This makes it possible for a reader to perform some rudimentary error recovery. To include an RTF delimiter in skippable data, it must be represented using the appropriate control symbol (that is, escaped with a backslash,) as in plain text. Any RTF control word or symbol is considered a single character for the purposes of counting skippable characters.

An RTF writer, when it encounters a Unicode character with no corresponding ANSI character, should output \uN followed by the best ANSI representation it can manage. Also, if the Unicode character translates into an ANSI character stream with count of bytes differing from the current Unicode Character Byte Count, it should emit the \ucN keyword prior to the \uN keyword to notify the reader of the change.

RTF control words generally accept signed 16-bit numbers as arguments. For this reason, Unicode values greater than 32767 must be expressed as negative numbers.

\ucN

This keyword represents the number of bytes corresponding to a given \uN Unicode character. This keyword may be used at any time, and values are scoped like character properties. That is, a \ucN keyword applies only to text following the keyword, and within the same (or deeper) nested braces. On exiting the group, the previous \uc value is restored. The reader must keep a stack of counts seen and use the most recent one to skip the appropriate number of characters when it encounters a \uN keyword. When leaving an RTF group that specified a \uc value, the reader must revert to the previous value. A default of 1 should be assumed if no \uc keyword has been seen in the current or outer scopes.

A common practice is to emit no ANSI representation for Unicode characters within a Unicode destination context (that is, inside a \ud destination). Typically, the destination will contain a \uc0 control sequence. There is no need to reset the count on leaving the \ud destination, because the scoping rules will ensure the previous value is restored.

Document Text

Document text should be emitted as ANSI characters. If there are Unicode characters that do not have corresponding ANSI characters, they should be output using the \ucN and \uN keywords.

For example, the text Lab
symbol 71 \f "Symbol" \s 10
G
Value (Unicode characters 0x004c, 0x0061, 0x0062, 0x0393, 0x0056, 0x0061, 0x006c, 0x0075, 0x0065) should be represented as follows (assuming a previous \ucl):

Lab\u915GValue

Destination Text

Destination text is defined as any text represented in an RTF destination. A good example is the bookmark name in the \bkmkstart destination.

Any destination containing Unicode characters should be emitted as two destinations within a \upr destination to ensure that old readers can read it properly and that no Unicode character encoding is lost when read with a new reader.

For example, a bookmark name Lab
symbol 71 \f "Symbol" \s 10
G
Value (Unicode characters 0x004c, 0x0061, 0x0062, 0x0393, 0x0056, 0x0061,

0x006c, 0x0075, 0x0065) should be represented as follows:

```
{\upr{\*\bkmkstart LabGValue}{\*\ud{\*\bkmkstart Lab\u915Value}}}
```

The first subdestination contains only ANSI characters and is the representation that old readers will see. The second subdestination is a *\ud destination that contains a second copy of the \bkmkstart destination. This copy can contain Unicode characters and is the representation that Unicode-aware readers must pay attention to, ignoring the ANSI-only version.

Default Fonts

Default font settings can be used to tell the program what regional settings are appropriate as defaults. For example, having a Japanese font set in \stshfdbchN would tell Word to enable Japanese formatting options. N refers to an entry in the font table.

```
<deffont>
\stshfdbchN \stshflochN \stshfhichN \stshfbi
```

\stshfdbchN

Defines what font should be used by default in the style sheet for Far East characters.

\stshflochN

Defines what font should be used by default in the style sheet for ACSII characters.

\stshfhichN

Defines what font should be used by default in the style sheet for High-ANSI characters.

\stshfbi

Defines what font should be used by default in the style sheet for Complex Scripts (BiDi) characters.

Default font settings can be used to tell the program what regional settings are appropriate as defaults. For example, having a Japanese font set in \stshfdbchN would tell Word to enable Japanese formatting options. N refers to an entry in the font table.

Font Table

The \fonttbl control word introduces the font table group. Unique \fN control words define each font available in the document, and are used to reference that font throughout the document. The font table group has the following syntax.

```
<fonttbl>
'{' \fonttbl (<fontinfo> | ('{' <fontinfo> '}'))+ '}'

<fontinfo>
<fontnum> <fontfamily> <fcharset>? <fprq>? <panose>? <nontaggedname>? <fontemb>? <codepage>? <fontname> <fontaltname>? ';'

<fontnum>
\f

<fontfamily>
\fnil | \froman | \fswiss | \fmodern | \fscript | \fdecor | \ftech | \fbidi
```

<fcharset>
\fcharset

<fprq>
\fprq

<panose>
<data>

<nontaggedname>
*\fname

<fontname>
#PCDATA

<fontaltname>
'{*' \falt #PCDATA '}'

<fontemb>
'{*' \fontemb <fonttype> <fontfname>? <data>? '}'

<fonttype>
\ftnil | \fttruetype

<fontfname>
'{*' \fontfile <codepage>? #PCDATA '}'

<codepage>
\cpg

Note for <fontemb> that either <fontfname> or <data> must be present, although both may be present.
All fonts available to the RTF writer can be included in the font table, even if the document doesn't use all the fonts.
RTF also supports font families so that applications can attempt to intelligently choose fonts if the exact font is not present on the reading system. RTF uses the following control words to describe the various font families.
Control word
Font family
Examples

\fnil
Unknown or default fonts (the default)
Not applicable

\froman
Roman, proportionally spaced serif fonts
Times New Roman, Palatino

\fswiss
Swiss, proportionally spaced sans serif fonts

Arial

\fmodern
Fixed-pitch serif and sans serif fonts
Courier New, Pica

\fscript
Script fonts
Cursive

\fdecor
Decorative fonts
Old English, ITC Zapf Chancery

\ftech
Technical, symbol, and mathematical fonts
Symbol

\fbidi
Arabic, Hebrew, or other bidirectional font
Miriam

If an RTF file uses a default font, the default font number is specified with the \deffN control word, which must precede the font-table group. The RTF writer supplies the default font number used in the creation of the document as the numeric argument N. The RTF reader then translates this number through the font table into the most similar font available on the reader's system.
The following control words specify the character set, alternative font name, pitch of a font in the font table, and nontagged font name.
Control word
Meaning

\fcharsetN
Specifies the character set of a font in the font table. Values for N are defined by Windows header files:
0
ANSI
1
Default
2
Symbol
3
Invalid
77
Mac
128
Shift Jis
129
Hangul
130
Johab
134
GB2312

136	Big5
161	Greek
162	Turkish
163	Vietnamese
177	Hebrew
178	Arabic
179	Arabic Traditional
180	Arabic user
181	Hebrew user
186	Baltic
204	Russian
222	Thai
238	Eastern European
254	PC 437
255	OEM

\falt
Indicates alternate font name to use if the specified font in the font table is not available. '{*' \falt <Alternate Font Name>'}'

\fprqN
Specifies the pitch of a font in the font table.

*\panose
Destination keyword. This destination contains a 10-byte Panose 1 number. Each byte represents a single font property as described by the Panose 1 standard specification.

*\fname
This is an optional control word in the font table to define the nontagged font name. This is the actual name of the font without the tag, used to show which character set is being used. For example, Arial is a nontagged font name, and Arial (Cyrillic) is a tagged font name. This control word is used by WordPad. Word ignores this control word (and never creates it).

\fbiasN
Used to arbitrate between two fonts when a particular character can exist in either non-Far East or Far East font. Word 97 through Word 2002 emit the \fbiasN keyword only in the context of bullets or list information (that is, a

\listlevel destination). The default value of 0 for N indicates a non-Far East font. A value of 1 indicates a Far East font. Additional values may be defined in future releases.

If \fprq is specified, the N argument can be one of the following values.

Pitch	Value
Default pitch	0
Fixed pitch	1
Variable pitch	2

Font Embedding

RTF supports embedded fonts with the \fontemb group located inside a font definition. An embedded font can be specified by a file name, or the actual font data may be located inside the group. If a file name is specified, it is contained in the \fontfile group. The \cpg control word can be used to specify the character set for the file name.

RTF supports TrueType
symbol 210 \f "Symbol" \s 6
″
and other embedded fonts. The type of the embedded font is described by the following control words.

Control word	Embedded font type
\ftnil	Unknown or default font type (the default)
\fttruetype	TrueType font

Code Page Support

A font may have a different character set from the character set of the document. For example, the Symbol font has the same characters in the same positions both on the Macintosh and in Windows. RTF describes this with the \cpg control word, which names the character set used by the font. In addition, file names (used in field instructions and in embedded fonts) may not necessarily be the same as the character set of the document; the \cpg control word can change the character set for these file names as well. However, all RTF documents must still declare a character set (that is, \ansi, \mac, \pc, or \pca) to maintain backward compatibility with earlier RTF readers.

The following table describes valid values for \cpg.

Value	Description

United States IBM

708
Arabic (ASMO 708)

709
Arabic (ASMO 449+, BCON V4)

710
Arabic (transparent Arabic)

711
Arabic (Nafitha Enhanced)

720
Arabic (transparent ASMO)

819
Windows 3.1 (United States and Western Europe)

850
IBM multilingual

852
Eastern European

860
Portuguese

862
Hebrew

863
French Canadian

864
Arabic

865
Norwegian

866
Soviet Union

874
Thai

932
Japanese

936
Simplified Chinese

949

Korean

950
Traditional Chinese

1250
Windows 3.1 (Eastern European)

1251
Windows 3.1 (Cyrillic)

1252
Western European

1253
Greek

1254
Turkish

1255
Hebrew

1256
Arabic

1257
Baltic

1258
Vietnamese

1361
Johab

File Table

The \filetbl control word introduces the file table destination. The only time a file table is created in RTF is when the document contains subdocuments. The file table group defines the files referenced in the document and has the following syntax:

```
<filetbl>
'{\*' \filetbl ('{' <fileinfo> '}')+ '}'

<fileinfo>
\file <filenum><relpath>?<osnum>? <filesource>+ <file name>

<filenum>
\fid

<relpath>
\frelative

<osnum>
\fosnum
```

<filesource>
\fvalidmac | \fvaliddos | \fvalidntfs | \fvalidhpfs | \fnetwork | \
fnonfilesys

<file name>
#PCDATA

Note that the file name can be any valid alphanumeric string for the named file system, indicating the complete path and file name.
Control word
Meaning

\filetbl
A list of documents referenced by the current document. The file table has a structure analogous to the style or font table. This is a destination control word output as part of the document header.

\file
Marks the beginning of a file group, which lists relevant information about the referenced file. This is a destination control word.

\fidN
File ID number. Files are referenced later in the document using this number.

\frelativeN
The character position within the path (starting at 0) where the referenced file's path starts to be relative to the path of the owning document. For example, if a document is saved to the path C:\Private\Resume\File1.doc and its file table contains the path C:\Private\Resume\Edu\File2.doc, then that entry in the file table will be \frelative18, to point at the character "e" in "edu". This allows preservation of relative paths.

\fosnumN
Currently only filled in for paths from the Macintosh file system. It is an operating systemñspecific number for identifying the file, which may be used to speed up access to the file or find the file if it has been moved to another folder or disk. The Macintosh operating system name for this number is the "file id." Additional meanings of the \fosnumN control word may be defined for other file systems in the future.

\fvalidmac
Macintosh file system.

\fvaliddos
MS-DOS file system.

\fvalidntfs
NTFS file system.

\fvalidhpfs
HPFS file system.

\fnetwork
Network file system. This control word may be used in conjunction with any of the previous file source control words.

\fnonfilesys
Indicates http/odma.

Color Table

The \colortbl control word introduces the color table group, which defines screen colors, character colors, and other color information. The color table group has the following syntax:

```
<colortbl>
'{' \colortbl <colordef>+ '}'

<colordef>
\red ? & \green ? & \blue ? ';'
```

The following are valid control words for this group.

Control word	Meaning
\redN	Red index
\greenN	Green index
\blueN	Blue index

Each definition must be delimited by a semicolon, even if the definition is omitted. If a color definition is omitted, the RTF reader uses its default color. The following example defines the default color table used by Word. The first color is omitted, as shown by the semicolon following the \colortbl control word. The missing definition indicates that color 0 is the ëíautoíí color.

```
{\colortbl;\red0\green0\blue0;\red0\green0\blue255;\red0\green255\blue255;\
red0\green255\blue0;\red255\green0\blue255;\red255\green0\blue0;\red255\
green255\blue0;\red255\green255\blue255;\red0\green0\blue128;\red0\green128\
blue128;\red0\green128\blue0;\red128\green0\blue128;\red128\green0\blue0;\
red128\green128\blue0;\red128\green128\blue128;\red192\green192\blue192;}
```

The foreground and background colors use indexes into the color table to define a color. For more information on color setup, see your Windows documentation.

The following example defines a block of text in color (where supported). Note that the cf/cb index is the index of an entry in the color table, which represents a red/green/blue color combination.

```
{\f1\cb1\cf2 This is colored text. The background is color
1 and the foreground is color 2.}
```

If the file is translated for software that does not display color, the reader ignores the color table group.

Style Sheet

The \stylesheet control word introduces the style sheet group, which contains definitions and descriptions of the various styles used in the document. All styles in the document's style sheet can be included, even if not all the styles are used. In RTF, a style is a form of shorthand used to specify a set of character, paragraph, or section formatting.

The style sheet group has the following syntax:

```
<stylesheet>
'{' \stylesheet <style>+ '}'

<style>
'{' <styledef>?<keycode>? <formatting> <additive>? <based>? <next>? <autoupd>
? <hidden>? <personal>? <compose>? <reply>? <styleid>? <semihidden>? <
stylename>? ';' '}'

<styledef>
\s  |\*\cs  | \ds | \ts\tsrowd

<keycode>
'{' \keycode <keys> '}'

<keys>
( \shift? & \ctrl? & \alt?) <key>

<key>
\fn | #PCDATA

<additive>
\additive

<based>
\sbasedon

<next>
\snext

<autoupd>
\sautoupd

<hidden>
\shidden

<personal>
\spersonal

<compose>
\scompose

<reply>
\sreply

<formatting>
(<brdrdef> | <parfmt> | <apoctl> | <tabdef> | <shading> | <chrfmt>)+

<styleid>
```

\styrsidN

<semihidden>
\ssemihidden

<stylename>
#PCDATA

For <style>, both <styledef> and <stylename> are optional; the default is paragraph style 0. Note for <stylename> that Microsoft Word for the Macintosh interprets commas in #PCDATA as separating style synonyms. Also, for <key>, the data must be exactly one character.
Control word
Meaning

*\csN
Designates character style. Like \s, \cs is not a destination control word. However, it is important to treat it like one inside the style sheet; that is, \cs must be prefixed with * and must appear as the first item inside a group. Doing so ensures that readers that do not understand character styles will skip the character style information correctly. When used in body text to indicate that a character style has been applied, do not include the * prefix.

\sN
Designates paragraph style.

\dsN
Designates section style.

\tsN
Designates table style, in the same style as \cs for placement and prefixes.

\tsrowd
Like \trowd but for table style definitions.

\additive
Used in a character style definition ('{*'\csº'}'). Indicates that character style attributes are to be added to the current paragraph style attributes, rather than setting the paragraph attributes to only those defined in the character style definition.

\sbasedonN
Defines the number of the style on which the current style is based (the default is 222óno style).

\snextN
Defines the next style associated with the current style; if omitted, the next style is the current style.

\sautoupd
Automatically update styles.

\shidden
Style does not appear in the Styles drop-down list in the Style dialog box (on the Format menu, click Styles).

\spersonal
Style is a personal e-mail style.

\scompose
Style is the e-mail compose style.

\sreply
Style is the e-mail reply style.

\styrsidN
Tied to the rsid table, N is the rsid of the author who implemented the style.

\ssemihidden
Style does not appear in drop-down menus.

\keycode
This group is specified within the description of a style in the style sheet in the RTF header. The syntax for this group is '{*í\keycode <keys>'}' where <keys> are the characters used in the key code. For example, a style, Normal, may be defined {\s0 {*\keycode \shift\ctrl n}Normal;} within the RTF style sheet. See the
HYPERLINK \l "_Special_Characters_and_AñB"

Special Character
control words for the characters outside the alphanumeric range that may be used.

\alt
The alt modifier key. Used to describe shortcut key codes for styles.

\shift
The shift modifier key. Used to describe shortcut key codes for styles.

\ctrl
The ctrl modifier key. Used to describe shortcut key codes for styles.

\fnN
Specifies a function key where N is the function key number. Used to describe shortcut-key codes for styles.

Table Styles
Word 2002 introduced table styles. Table styles are like other styles in that they contain properties to be shared by many tables. Unlike other styles, table styles allow for conditional formatting, such as specifically coloring the first row.
To address the issue of older readers opening newer RTF files, raw properties were implemented. Older readers can still see the regular properties and edit them, but newer readers should be able to read the RTF back in and not lose

any style functionality. This leaves two types of properties, those applied by older emitters that are readable by older readers, and those the user applied directly to override aspects of the style. The user-applied changes are referred to as ìrawî and have a higher priority than their non-raw counterparts.
The following table describes keywords available for style definitions. Any older table formatting properties may be used as well.
Control word
Meaning

\tscellwidthN
Currently emitted but has no effect.

\tscellwidthftsN
Currently emitted but has no effect.

\tscellpaddtN
Top padding value.

\tscellpaddlN
Left padding value.

\tscellpaddrN
Right padding value

\tscellpaddbN
Bottom padding value

\tscellpaddftN
Units for \tscellpaddtN
0
Auto
3
Twips

\tscellpaddflN
Units for \tscellpaddlN
0
Auto
3
Twips

\tscellpaddfrN
Units for \tscellpaddrN
0
Auto
3
Twips

\tscellpaddfbN
Units for \tscellpaddbN
0
Auto
3

Twips

\tsvertalt
Top vertical alignment of cell

\tsvertalc
Center vertical alignment of cell

\tsvertalb
Bottom vertical alignment of cell

\tsnowrap
No cell wrapping

\tscellcfpat
Foreground cell shading color

\tscellcbpatN
Background cell shading color

\tscellpctN
Cell shading percentage ñ N is the shading of a table cell in hundredths of a percent

\tsbgbdiag
Cell shading pattern ñ backward diagonal (////)

\tsbgfdiag
Cell shading pattern ñ forward diagonal (\\\\)

\tsbgdkbdiag
Cell shading pattern ñ dark backward diagonal (////)

\tsbgdkfdiag
Cell shading pattern ñ dark forward diagonal (\\\\)

\tsbgcross
Cell shading pattern ñ cross

\tsbgdcross
Cell shading pattern ñ diagonal cross

\tsbgdkcross
Cell shading pattern ñ dark cross

\tsbgdkdcross
Cell shading pattern ñ dark diagonal cross

\tsbghoriz
Cell shading pattern ñ horizontal

\tsbgvert
Cell shading pattern ñ vertical

\tsbgdkhor
Cell shading pattern ñ dark horizontal

\tsbgdkvert
Cell shading pattern ñ dark vertical

\tsbrdrt
Top border for cell

\tsbrdrb
Bottom border for cell

\tsbrdrl
Left border for cell

\tsbrdrr
Right border for cell

\tsbrdrh
Horizontal (inside) border for cell

\tsbrdrv
Vertical (inside) border for cell

\tsbrdrdgl
Diagonal (top left to bottom right) border for cell

\tsbrdrdgr
Diagonal (bottom left to top right) border for cell

\tscbandshN
Count of rows in a row band

\tscbandsvN
Count of cells in a cell band

The following is an example of an RTF style sheet:

```
{\stylesheet{\ql \li0\ri0\widctlpar\aspalpha\aspnum\faauto\adjustright\rin0\
lin0\itap0 \fs24\lang1033\langfe1033\cgrid\langnp1033\langfenp1033 \snext0
Normal;}{\*\cs10 \additive Default Paragraph Font;}{\*\cs15 \additive \b\ul\
cf6 \sbasedon10 UNDERLINE;} {\*\ts11\tsrowd\trftsWidthB3\trpaddl108\
trpaddr108\trpaddfl3 \trpaddft3\trpaddfb3\trpaddfr3\tscellwidthfts0\
tsvertalt\tsbrdrt\tsbrdrl\tsbrdrb\tsbrdrr\tsbrdrdgl\tsbrdrdgr\tsbrdrh\tsbrdrv
\ql \li0\ri0\widctlpar\aspalpha\aspnum\faauto\adjustright\rin0 \lin0\itap0 \
fs20\lang1024\langfe1024\cgrid\langnp1024 \langfenp1024 \snext11 \ssemihidden
Normal Table;  }{\s16\qc \li0\ri0\widctlpar\aspalpha\aspnum\faauto\
adjustright\rin0\lin0\itap0 \b\fs24\cf2\lang1033\langfe1033\cgrid\langnp1033\
langfenp1033 \sbasedon0 \snext16 \sautoupd CENTER;}}
```

and RTF paragraphs to which the styles are applied:

```
\pard\plain \ql \li0\ri0\widctlpar\aspalpha\aspnum\faauto\outlinelevel0\
adjustright\rin0\lin0\itap0 \fs24\lang1033\langfe1033\cgrid\langnp1033\
langfenp1033 {This is the Normal Style
\par }\pard \ql \li0\ri0\widctlpar\aspalpha\aspnum\faauto\adjustright\rin0\
lin0\itap0 {\par }\pard\plain \s16\qc \li0\ri0\widctlpar\aspalpha\aspnum\
faauto\outlinelevel0\adjustright
\rin0\lin0\itap0 \b\fs24\cf2\lang1033\langfe1033\cgrid\langnp1033\
langfenp1033
{This is a centered paragraph with blue, bold font. I call the style CENTER.\
par }
\pard\plain \ql \li0\ri0\widctlpar\aspalpha\aspnum\faauto\adjustright\rin0\
lin0\itap0 \fs24\lang1033\langfe1033\cgrid\langnp1033\langfenp1033
{\par The word \'93}{\cs15\b\ul\cf6 style}{\'94 is red and underlined. I used
a style I called UNDERLINE.\par }
```

Some of the control words in this example are discussed in later sections. In the example, note that the properties of the style were emitted following the application of the style. This was done for two reasons: (1) to allow RTF readers that donít support styles to still retain all formatting; and (2) to allow the additive model for styles, where additional property changes are ìaddedî on top of the defined style. Some RTF readers may not ìapplyî a style upon only encountering the style number without the accompanying formatting information because of this.

List Tables

Word 97, Word 2000, and Word 2002 store bullets and numbering information very differently from earlier versions of Word. In Word 6.0, for example, number formatting data is stored individually with each paragraph. In Word 97 and later versions, however, all of the formatting information is stored in a pair of document-wide list tables that act as a style sheet, and each individual paragraph stores only an index to one of the tables, like a style index.

There are two list tables in Word: the List table (destination \listtable), and the List Override table (destination \listoverridetable).

List Table

The first table Word stores is the List table. A List table is a list of lists (destination \list). Each list contains a number of list properties that pertain to the entire list, and a list of levels (destination \listlevel), each of which contains properties that pertain only to that level. The \listpicture destination contains all of the picture bullets used in the document, with a \shppict headed list of \pict entries. These are referenced within the list by the \levelpictureN keyword, with N referring to an element in the list, starting at 0.

The syntax for the List table is as follows:

```
<listtable>
ë{ë \*\listtable <listpicture>? <list>+ ë}í

<listpicture>
ë{ë \*\listpicture <shppictlist> ë}í

<list>
\list \listemplateid & (\listsimple | listhybrid)? & <listlevel>+ & \
listrestarthdn & \listid & (\listname #PCDATA ë;í) \liststyleid? \
liststylename?

<listlevel>
<number> <justification> & \leveljcnN? & \levelstartatN & (\leveloldN & \
levelprevN? & \levelprevspaceN? & \levelspaceN? & \levelindentN?)? & <
leveltext> & <levelnumbers> & \levelfollowN & \levellegalN? & \
levelnorestartN? & <chrfmt>? & \levelpictureN & \li? & \fi? & (\jclisttab \
```

tx)?

<number>
\levelnfcN | \levelnfcnN | (\levelnfcN & \levelnfcnN)

<justification>
\leveljcN | \leveljcnN | (\leveljcN & \leveljcnN)

<leveltext>
ë{ë \leveltext \leveltemplateid? #SDATA ';' '}'

<levelnumbers>
ë{ë \levelnumbers #SDATA ';' '}'

Top-Level List Properties
Control word
Meaning

\listidN
Each list must have a unique list ID that should be randomly generated. The value N is a long integer. The list ID cannot be between ñ1 and ñ5.

\listtemplateidN
Each list should have a unique template ID as well, which also should be randomly generated. The template ID cannot be ñ1. The value N is a long integer.

\listsimpleN
1 if the list has one level; 0 (default) if the list has nine levels.

\listhybrid
Present if the list has 9 levels, each of which is the equivalent of a simple list. Only one of \listsimple and \listhybrid should be present. Word 2000 will write lists with the \listhybrid property.

\listrestarthdnN
1 if the list restarts at each section; 0 if not. Used for Word 7.0 compatibility only.

\listname
The argument for \listname is a string that is the name of this list. Names allow ListNum fields to specify the list they belong to. This is a destination control word.

\liststyleidN
This identifies the style of this list from the list style definition that has this ID as its \listid. There can be more than one list style reference to a list style definition. This keyword follows the same numbering convention as \listid.
\liststyleidN and \liststylename are exclusive; either zero or one of each can exist per \list definition, but never both.

\liststylename

Identifies this list as a list style definition. This creates a new list style with the given name and the properties of the current list. \liststyleidN and \liststylename are exclusive; either zero or one of each can exist per \list definition, but never both.

While Word 97 emitted simple or multilevel (not simple) lists, Word 2000 and Word 2002 emit hybrid lists, which are essentially collections of simple lists. The main difference between Word 2000 and Word 2002 hybrid lists and Word 97 multilevel lists is that each level of a hybrid list has a unique identifier.

List Levels

Each list consists of either one or nine list levels depending upon whether the \listsimple flag is set. Each list level contains a number of properties that specify the formatting for that level, such as the start-at value, the text string surrounding the number, its justification and indents, and so on.

Control word

Meaning

\levelstartatN

N specifies the start-at value for the level.

\levelnfcN

Specifies the number type for the level:

0

Arabic (1, 2, 3)

1

Uppercase Roman numeral (I, II, III)

2

Lowercase Roman numeral (i, ii, iii)

3

Uppercase letter (A, B, C)

4

Lowercase letter (a, b, c)

5

Ordinal number (1st, 2nd, 3rd)

6

Cardinal text number (One, Two Three)

7

Ordinal text number (First, Second, Third)

10

Kanji numbering without the digit character (*dbnum1)

11

Kanji numbering with the digit character (*dbnum2)

12

46 phonetic katakana characters in "aiueo" order (*aiueo)

13

46 phonetic katakana characters in "iroha" order (*iroha)

14

Double-byte character

15

Single-byte character

16

Kanji numbering 3 (*dbnum3)
17
Kanji numbering 4 (*dbnum4)
18
Circle numbering (*circlenum)
19
Double-byte Arabic numbering

20
46 phonetic double-byte katakana characters (*aiueo*dbchar)
21
46 phonetic double-byte katakana characters (*iroha*dbchar)
22
Arabic with leading zero (01, 02, 03, ..., 10, 11)
23
Bullet (no number at all)
24
Korean numbering 2 (*ganada)
25
Korean numbering 1 (*chosung)
26
Chinese numbering 1 (*gb1)
27
Chinese numbering 2 (*gb2)
28
Chinese numbering 3 (*gb3)
29
Chinese numbering 4 (*gb4)
30
Chinese Zodiac numbering 1 (* zodiac1)
31
Chinese Zodiac numbering 2 (* zodiac2)
32
Chinese Zodiac numbering 3 (* zodiac3)
33
Taiwanese double-byte numbering 1

34
Taiwanese double-byte numbering 2

35
Taiwanese double-byte numbering 3

36
Taiwanese double-byte numbering 4
37
Chinese double-byte numbering 1

38
Chinese double-byte numbering 2

39
Chinese double-byte numbering 3

40
Chinese double-byte numbering 4

41
Korean double-byte numbering 1

42
Korean double-byte numbering 2

43
Korean double-byte numbering 3

44
Korean double-byte numbering 4

45
Hebrew non-standard decimal
46
Arabic Alif Ba Tah
47
Hebrew Biblical standard
48
Arabic Abjad style
255
No number

\leveljcN
0
Left justified
1
Center justified
2
Right justified

\levelnfcnN
Same arguments as \levelnfc. Takes priority over \levelnfc if both are present. In Word 97 \levelnfc was interpreted differently by the Hebrew/ Arabic versions. \levelnfcnN in Word 2000 and Word 2002 eliminates dual interpretation, while \levelnfc is still needed for backward compatibility.

\leveljcnN
0
Left justified for left-to-right paragraphs and right justified for right-to-left paragraphs
1
Center justified
2
Right justified for left-to-right paragraphs and left justified for right-to-left paragraphs
Word 2000 and Word 2002 prefer \leveljcnN over \leveljc if both are present, but it will be written for backward compatibility with older readers.

\leveloldN
1 if this level was converted from Word 6.0 or Word 7.0; 0 if it is a native

Word 97 through Word 2002 level.

\levelprevN
1 if this level includes the text from the previous level (used for Word 7.0 compatibility only); otherwise, the value is 0. This keyword will only be valid if the \leveloldN keyword is emitted.

\levelprevspaceN
1 if this level includes the indentation from the previous level (used for Word 7.0 compatibility only); otherwise, the value is 0. This keyword will only be valid if the \leveloldN keyword is emitted.

\levelindentN
Minimum distance from the left indent to the start of the paragraph text (used for Word 7.0 compatibility only). This keyword will only be valid if the \leveloldN keyword is emitted.

\levelspaceN
Minimum distance from the right edge of the number to the start of the paragraph text (used for Word 7.0 compatibility only). This keyword will only be valid if the \leveloldN keyword is emitted.

\leveltext
If the list is hybrid, as indicated by \listhybrid, the \leveltemplateidN keyword will be included, whose argument is a unique level ID that should be randomly generated. The value N is a long integer. The level ID cannot be between ñ1 and ñ5.
The second argument for this destination should be the number format string for this level. The first character is the length of the string, and any numbers within the level should be replaced by the index of the level they represent. For example, a level three number such as ì1.1.1.î would generate the following RTF: ì{\leveltext \leveltemplateidN \'06\'00.\'01.\'02.}î where the í06 is the string length, the \í00, \í01, and \í02 are the level placeholders, and the periods are the surrounding text. This is a destination control word.

\levelnumbers
The argument for this destination should be a string that gives the offsets into the \leveltext of the level placeholders. In the preceding example, ì1.1.1.î, the \levelnumbers RTF should be
{\levelnumbers \í01\í03\í05}
because the level placeholders have indices 1, 3, and 5. This is a destination control word.

\levelfollowN
Specifies which character follows the level text:
0
Tab
1
Space
2
Nothing

\levellegalN

1 if any list numbers from previous levels should be converted to Arabic numbers; 0 if they should be left with the format specified by their own levelís definition.

\levelnorestartN
1 if this level does not restart its count each time a number of a higher level is reached; 0 if this level does restart its count each time a number of a higher level is reached.

\levelpictureN
Determines which picture bullet from the \listpicture destination should be applied.

In addition to all of these properties, each list level can contain any character properties (all of which affect all text for that level) and any combination of three paragraph properties: left indents, first line left indents, and tabsóeach of which must be of a special type: jclisttab. These paragraph properties will be automatically applied to any paragraph in the list.

List Override Table

The List Override table is a list of list overrides (destination \listoverride). Each list override contains the listid of one of the lists in the List table, as well as a list of any properties it chooses to override. Each paragraph will contain a list override index (keyword ls), which is a 1-based index into this table. Most list overrides donít override any propertiesóinstead, they provide a level of indirection to a list. There are generally two types of list overrides: (1) formatting overrides, which allow a paragraph to be part of a list and are numbered along with the other members of the list, but have different formatting properties; and (2) start-at overrides, which allow a paragraph to share the formatting properties of a list, but have different start-at values. The first element in the document with each list override index takes the start-at value that the list override specifies as its value, while each subsequent element is assigned the number succeeding the previous element of the list.

List overrides have a few top-level keywords, including a \listoverridecount, which contains a count of the number of levels whose format is overridden. This \listoverridecount should always be either 1 or 9, depending upon whether the list to be overridden is simple or hybrid/multilevel. All of the actual override information is stored within a list of list override levels (destination \lfolevel).

Control word
Meaning

\listidN
Should exactly match the \listid of one of the lists in the List table. The value N is a long integer.

\listoverridecountN
Number of list override levels within this list override (1 or 9).

\ls
The (1-based) index of this \listoverride in the \listoverride table. This

value should never be zero inside a \listoverride and must be unique for all \listoverrides within a document. The valid values are from 1 to 2000.

List Override Level

Each list override level contains flags to specify whether the formatting or start-at values are being overridden for each level. If the format flag (listoverrideformat) is given, the lfolevel should also contain a list level (listlevel). If the start-at flag (listoverridestartat) is given, a start-at value must be provided. If the start-at is overridden but the format is not, then a levelstartat should be provided in the lfolevel itself. If both start-at and format are overridden, put the levelstartat inside the listlevel contained in the lfolevel.

Control word	Meaning
\listoverridestartat	Indicates an override of the start-at value.
\listoverrideformatN	Number of list override levels within this list override (should be either 1 or 9).

Paragraph Group Properties

Word 2002 introduced paragraph group properties, similar to style sheets. A document making use of these places a \pgptbl entry in the header. Elements in the Paragraph Group Properties (PGP) table are entered as they are created in the document. In the program, the \ipgpN values are assigned random numbers, but for storage the numbers are converted to numbers in the integer range. Internally, this numbering system is left up to the developer. The formatting options are taken from the regular paragraph formatting options. PGP table entries may exist with different \ipgpN values but with the same properties. Any paragraph that references an entry in the PGP table does so by emitting \ipgpN, which sets paragraph formatting options according to the entry in the PGP table. Additional formatting options may also be employed. The PGP syntax is as follows:

<pgptbl>	ë{ë *\pgptbl <entry>+ ë}í
<entry>	ë{ë \pgp<value> ë}í
<value>	\ipgpN<parfmt>+

The following is a sample PGP table with two entries:

```
{\*\pgptbl {\pgp\ipgp13\itap0\li0\ri0\sb0\sa0}{\pgp\ipgp80\itap0\li720\ri0\sb100\sa100}}
```

Track Changes (Revision Marks)

This table allows tracking of multiple authors and reviewers of a document, and is used in conjunction with the character properties for tracking changes (using revision marks).

Control word
Meaning

*\revtbl
This group consists of subgroups that each identify the author of a revision in the document, as in {Author1;}. This is a destination control word. Revision conflicts, such as those that result when one author deletes another's additions, are stored as one group, in the following form:
CurrentAuthor\'00\'<length of previous author's name>PreviousAuthor\'00
PreviousRevisionTime
The 4 bytes of the Date/Time (DTTM) structure are emitted as ASCII characters, so values greater than 127 should be emitted as hexadecimal values enclosed in quotation marks.

All time references for revision marks use the following bit field structure, DTTM.
Bit numbers
Information
Range

0ñ5
Minute
0ñ59

6ñ10
Hour
0ñ23

11ñ15
Day of month
1ñ31

16ñ19
Month
1ñ12

20ñ28
Year
= Year - 1900

29ñ31
Day of week
0 (Sun)ñ6 (Sat)

RSID
In Word 2002, a new style of revision tracking was established. RSIDs (Revision Save IDs) indicate when text or a property was changed. Whenever text is added or deleted or properties are changed, that text or property is tagged with the current "Save ID," which is a random number that changes each time the document is saved. They are primarily used when merging or comparing two documents with a common history but no revision marks. By looking at the

RSID we can tell which of the two authors made the change. Without the RSID we can only tell that there is a difference, but we don't know if (for example) it was an addition by author A or a deletion by author B. An RSID table is placed after all other style definitions and before the <generator> and <info> groups.

The syntax for an RSID table is as follows:

```
<rsidtable>
ë{ë \*\rsidtbl <rsidlist>+ ë;í ë}í

<rsidlist>
\rsidN
```

Control word	Meaning
\rsidN	Each time a document is saved a new entry is added to this table, with N being the random number assigned to represent the unique session.

\insrsidN	An RSID is inserted to denote the session in which particular text was inserted. Example:
	{\insrsid8282541 This is text.}
	For use in lists:
	{\insrsid8282541 Item in List \par{\listtext\pard\plain\f3\insrsid8282541 \loch\af3\dbch\af0 \hich\f3 \íb7\tab}}

\rsidrootN	Designates the start of the documentís history (first save).
\delrsidN	RSID value identifying when text was marked as deleted.
\charrsidN	RSID value identifying when character formatting was changed.
\sectrsidN	RSID identifying when section formatting was changed.
\pararsidN	RSID identifying when paragraph formatting was changed.
\tblrsidN	RSID identifying when table formatting was changed.

Old Properties

With tracking enabled, changes to formatting can be documented. To keep track of the property before the changes were made, Old Properties were created. This tracking uses the following syntax:

```
<oldprop>
ë{ë \*\<oldproptype> <oldproperties>+ <trackinginfo> ë;í ë}í
```

<oldproptype>
\oldcprops | \oldpprops | \oldtprops | \oldsprops

<oldproperties>
This section includes any of the relevant format tags that would have to be put in place to revert the document to its pre-edit form. For example, this would be ì\b0î if the user had chosen to make the selection bold.

<trackinginfo>
This can be any tag used to track the author, revision ID, and date.

Control word	Meaning
\oldcprops	Old character formatting properties.
\oldpprops	Old paragraph formatting properties.
\oldtprops	Old table formatting properties.
\oldsprops	Old section formatting properties.

The following is an example of the correct use of the Old Properties when bold and italics are applied to a section of existing text. If the original text ìThis is a test.î is changed to ìThis is a test.î the following code snippet will be formed, which would tell an RTF reader that to undo the change to the character property bold and italic would have to be disabled:

```
{\rtlch\fcs1 \af0 \ltrch\fcs0 \insrsid2778197 \hich\af0\dbch\af13\loch\f0
This }{\rtlch\fcs1 \ab\af0 \ltrch\fcs0 \b\i\crauth1\crdate1717000906\
insrsid2778197\charrsid2778197 {\*\oldcprops \b0\i0\crauth1\crdate1717000906\
insrsid2778197\charrsid2778197 }\hich\af0\dbch\af13\loch\f0 is a}{\rtlch\fcs1
\af0 \ltrch\fcs0 \insrsid2778197 \hich\af0\dbch\af13\loch\f0  test.}{\rtlch\
fcs1 \af0 \ltrch\fcs0 \insrsid15803535
```

Generator

Word 2002 allows the RTF emitter application to stamp the document with its name, version, and build number. The generator area has the following syntax:

<generator>
ë{ë *\generator <name> ë;í ë}í

<name>
#PCDATA, the name of the program, the version, the build, and any other information about the emitting program can be listed here. Word 2002 lists {*\generator Microsoft Word 10.0.XXXX} in which XXXX is replaced by the build number. Only ASCII text is allowed in this field.

Document Area

Once the RTF header is defined, the RTF reader has enough information to

correctly read the actual document text. The document area has the following syntax:
<document>
<info>? <docfmt>* <section>+

Information Group

The \info control word introduces the information group, which contains information about the document. This can include the title, author, keywords, comments, and other information specific to the file. This information is for use by a document-management utility, if available.
The information group has the following syntax:
<info>
'{' <title>? & <subject>? & <author>? & <manager>? & <company>? <operator>? &
<category>? & <keywords>? & <comment>? & \version? & <doccomm>? & \vern? & <
creatim>? & <revtim>? & <printim>? & <buptim>? & \edmins? & \nofpages? & \
nofwords? \nofchars? & \id? '}'

<title>
'{' \title #PCDATA '}'

<subject>
'{' \subject #PCDATA '}'

<author>
'{' \author #PCDATA '}'

<manager>
{' \manager #PCDATA '}'

<company>
{' \company #PCDATA '}'

<operator>
'{' \operator #PCDATA '}'

<category>
{' \category #PCDATA '}'

<keywords>
'{' \keywords #PCDATA '}'

<comment>
'{' \comment #PCDATA '}'

<doccomm>
'{' \doccomm #PCDATA '}'

<hlinkbase>
'{' \hlinkbase #PCDATA '}'

<creatim>
'{' \creatim <time> '}'

<revtim>

```
'{' \revtim <time> '}'

<printim>
'{' \printim <time> '}'

<buptim>
'{' \buptim <time> '}'

<time>
\yr? \mo? \dy? \hr? \min? \sec?
```

Some applications, such as Word, ask the user to type this information when saving the document in its native format. If the document is then saved as an RTF file or translated into RTF, the RTF writer specifies this information using control words in the following table. These control words are destinations, and both the control words and the text should be enclosed in braces ({ }).

Control word	Meaning
\title	Title of the document. This is a destination control word.
\subject	Subject of the document. This is a destination control word.
\author	Author of the document. This is a destination control word.
\manager	Manager of the author. This is a destination control word.
\company	Company of the author. This is a destination control word.
\operator	Person who last made changes to the document. This is a destination control word.
\category	Category of the document. This is a destination control word.
\keywords	Selected keywords for the document. This is a destination control word.
\comment	Comments; text is ignored. This is a destination control word.
\versionN	Version number of the document.
\doccomm	Comments displayed in the Summary Info or Properties dialog box in Word. This

is a destination control word.

\hlinkbase
The base address that is used for the path of all relative hyperlinks inserted in the document. This can be a path or an Internet address (URL).

The \userprops control word introduces the user-defined document properties. Unique \propname control words define each user-defined property in the document. This group has the following syntax:
<userprops>
ë{*í \userprops (ë{í <propinfo> ë}í*) ë}í

<propinfo>
<propname> <proptype> <staticval> <linkval>?

<propname>
ë{í \propname #PCDATA ë}í

<proptype>
\proptype

<staticval>
\staticval

<linkval>
\linkval

Control word
Meaning

\propname
The name of the user-defined property.

\staticval
The value of the property.

\linkval
The name of a bookmark that contains the text to display as the value of the property.

\proptypeN
Specifies the type of the property:
3
Integer
5
Real number
7
Date
11
Boolean
30
Text

The RTF writer may automatically enter other control words, including those in the following table.

Control word	Meaning
\vernN	Internal version number
\creatim	Creation time
\revtim	Revision time
\printim	Last print time
\buptim	Backup time
\edminsN	Total editing time (in minutes)
\yrN	Year
\moN	Month
\dyN	Day
\hrN	Hour
\minN	Minute
\secN	Seconds
\nofpagesN	Number of pages
\nofwordsN	Number of words
\nofcharsN	Number of characters including spaces
\nofcharswsN	Number of characters not including spaces

\idN
Internal ID number

Any control word described in the previous table that does not have a numeric parameter specifies a date; all dates are specified with the \yr \mo \dy \hr \min \sec controls. An example of an information group follows:

```
{\info{\title Template}{\author John Doe}{\operator JOHN DOE}{\creatim\
yr1999\mo4\dy27\min1}{\revtim\yr1999\mo4\dy27\min1}{\printim\yr1999\mo3\dy17\
hr23\min5}{\version2}{\edmins2}{\nofpages183}{\nofwords53170}{\
nofchars303071}{\*\company Microsoft}{\nofcharsws372192}{\vern8247}}
```

Document Formatting Properties

After the information group (if there is one), there may be some document formatting control words (described as <docfmt> in the document area syntax description). These control words specify the attributes of the document, such as margins and footnote placement. These attributes must precede the first plain-text character in the document.

The control words that specify document formatting are listed in the following table (measurements are in twips; a twip is one-twentieth of a point). For omitted control words, RTF uses the default values.

Note that the three document-protection control words (\formprot, \revprot, and \annotprot) are mutually exclusive; only one of the three can apply to any given document. Also, there is currently no method for storing passwords in RTF, so any document that associates a password with a protection level will lose the password protection in RTF.

For more information about bidirectional controls, see
 HYPERLINK \l "Bidirectional_Language_Support"

Bidirectional Language Support
 in this specification.

Control word
Meaning

\deftabN
Default tab width in twips (the default is 720).

\hyphhotzN
Hyphenation hot zone in twips (the amount of space at the right margin in which words are hyphenated).

\hyphconsecN
N is the maximum number of consecutive lines that will be allowed to end in a hyphen. 0 means no limit.

\hyphcaps
Toggles hyphenation of capitalized words (the default is on). Append 1 or leave control word by itself to toggle property on; append 0 to turn it off.

\hyphauto
Toggles automatic hyphenation (the default is off). Append 1 or leave control word by itself to toggle property on; append 0 to turn it off.

\linestartN
Beginning line number (the default is 1).

\fracwidth
Uses fractional character widths when printing (QuickDraw only).

*\nextfile
The argument is the name of the file to print or index next; it must be enclosed in braces. This is a destination control word.

*\template
The argument is the name of a related template file; it must be enclosed in braces. This is a destination control word.

\makebackup
Backup copy is made automatically when the document is saved.

\defformat
Tells the RTF reader that the document should be saved in RTF format.

\psover
Prints PostScript over the text.

\doctemp
Document is a boilerplate document. For Word for Windows, this is a template; for Word for the Macintosh, this is a stationery file.

\deflangN
Defines the default language used in the document used with a \plain control word. See the section on
 HYPERLINK \l "Font_character_Formatting_Properties"

Font/Character Formatting Properties
 in this Specification for a list of possible values for N.

\deflangfeN
Default language ID for Asian/Middle Eastern text in Word.

\windowcaption
Sets the caption text for the document window. This is a string value.

\doctypeN
An integer (0ñ2) that describes the document type for AutoFormat.
0
General document (for formatting most documents, the default)
1
Letter (for formatting letters, and used by Letter Wizard)
2
E-mail (for formatting e-mail, and used by WordMail)

\fromtext
Indicates document was originally plain text.

\fromhtml

Indicates the document was originally HTML and may contain encapsulated HTML tags. This keyword may be followed by a version number (currently 1).

\horzdoc
Horizontal rendering.

\vertdoc
Vertical rendering.

\jcompress
Compressing justification (default).

\jexpand
Expanding justification.

\lnongrid
Define line based on the grid.

Document Views and Zoom Level

\viewkindN
An integer (0 through 5) that represents the view mode of the document.
0
None
1
Page Layout view
2
Outline view
3
Master Document view
4
Normal view
5
Online Layout view

\viewscaleN
Zoom level of the document; the N argument is a value representing a percentage (the default is 100).

\viewzkN
An integer (0 through 2) that represents the zoom kind of the document.
0
None
1
Full page
2
Best fit

\private
Obsolete destination. It has no leading *. It should be skipped.

Footnotes and Endnotes

\fetN

Footnote/endnote type. This indicates what type of notes are present in the document.
0
Footnotes only or nothing at all (the default)
1
Endnotes only
2
Both footnotes and endnotes
For backward compatibility, if \fet1 is emitted, \endnotes or \enddoc will be emitted along with \aendnotes or \aenddoc. RTF readers that understand \fet will need to ignore the footnote-positioning control words and use the endnote control words instead.

\ftnsep
Text argument separates footnotes from the document. This is a destination control word.

\ftnsepc
Text argument separates continued footnotes from the document. This is a destination control word.

\ftncn
Text argument is a notice for continued footnotes. This is a destination control word.

\aftnsep
Text argument separates endnotes from the document. This is a destination control word.

\aftnsepc
Text argument separates continued endnotes from the document. This is a destination control word.

\aftncn
Text argument is a notice for continued endnotes. This is a destination control word.

\endnotes
Footnotes at the end of the section (the default).

\enddoc
Footnotes at the end of the document.

\ftntj
Footnotes beneath text (top justified).

\ftnbj
Footnotes at the bottom of the page (bottom justified).

\aendnotes
Endnotes at end of section (the default).

\aenddoc
Endnotes at end of document.

\aftnbj
Endnotes at bottom of page (bottom justified).

\aftntj
Endnotes beneath text (top justified).

\ftnstartN
Beginning footnote number (the default is 1).

\aftnstartN
Beginning endnote number (the default is 1).

\ftnrstpg
Restart footnote numbering each page.

\ftnrestart
Footnote numbers restart at each section. Microsoft Word for the Macintosh uses this control to restart footnote numbering at each page.

\ftnrstcont
Continuous footnote numbering (the default).

\aftnrestart
Restart endnote numbering each section.

\aftnrstcont
Continuous endnote numbering (the default).

\ftnnar
Footnote numbering
 Arabic numbering (1, 2, 3, º).

\ftnnalc
Footnote numbering
 Alphabetic lowercase (a, b, c, º).

\ftnnauc
Footnote numbering
 Alphabetic uppercase (A, B, C, º).

\ftnnrlc
Footnote numbering
 Roman lowercase (i, ii, iii, º).

\ftnnruc
Footnote numbering
 Roman uppercase (I, II, III, º).

\ftnnchi
Footnote numberingóChicago Manual of Style (*, Ü, á, ß).

\ftnnchosung
Footnote Korean numbering 1 (*chosung).

\ftnncnum
Footnote Circle numbering (*circlenum).

\ftnndbnum
Footnote kanji numbering without the digit character (*dbnum1).

\ftnndbnumd
Footnote kanji numbering with the digit character (*dbnum2).

\ftnndbnumt
Footnote kanji numbering 3 (*dbnum3).

\ftnndbnumk
Footnote kanji numbering 4 (*dbnum4).

\ftnndbar
Footnote double-byte numbering (*dbchar).

\ftnnganada
Footnote Korean numbering 2 (*ganada).

\ftnngbnum
Footnote Chinese numbering 1 (*gb1).

\ftnngbnumd
Footnote Chinese numbering 2 (*gb2).

\ftnngbnuml
Footnote Chinese numbering 3 (*gb3).

\ftnngbnumk
Footnote Chinese numbering 4 (*gb4).

\ftnnzodiac
Footnote numberingóChinese Zodiac numbering 1 (* zodiac1).

\ftnnzodiacd
Footnote numberingóChinese Zodiac numbering 2 (* zodiac2).

\ftnnzodiacl
Footnote numberingóChinese Zodiac numbering 3 (* zodiac3).

\aftnnar
Endnote numberingóArabic numbering (1, 2, 3, º).

\aftnnalc
Endnote numbering
Alphabetic lowercase (a, b, c, º).

\aftnnauc
Endnote numbering
 Alphabetic uppercase (A, B, C, º).

\aftnnrlc
Endnote numbering
 Roman lowercase (i, ii, iii, º).

\aftnnruc
Endnote numbering
 Roman uppercase (I, II, III, º).

\aftnnchi
Endnote numberingóChicago Manual of Style (*, Ü, á, ß).

\aftnnchosung
Endnote Korean numbering 1 (*chosung).

\aftnncnum
Endnote Circle numbering (*circlenum).

\aftnndbnum
Endnote kanji numbering without the digit character (*dbnum1).

\aftnndbnumd
Endnote kanji numbering with the digit character (*dbnum2).

\aftnndbnumt
Endnote kanji numbering 3 (*dbnum3).

\aftnndbnumk
Endnote kanji numbering 4 (*dbnum4).

\aftnndbar
Endnote double-byte numbering (*dbchar).

\aftnnganada
Endnote Korean numbering 2 (*ganada).

\aftnngbnum
Endnote Chinese numbering 1 (*gb1).

\aftnngbnumd
Endnote Chinese numbering 2 (*gb2).

\aftnngbnuml
Endnote Chinese numbering 3 (*gb3).

\aftnngbnumk
Endnote Chinese numbering 4 (*gb4).

\aftnnzodiac
Endnote numberingóChinese Zodiac numbering 1 (* zodiac1).

\aftnnzodiacd
Endnote numberingóChinese Zodiac numbering 2 (* zodiac2).

\aftnnzodiacl
Endnote numberingóChinese Zodiac numbering 3 (* zodiac3).

Page Information

\paperwN
Paper width in twips (the default is 12,240).

\paperhN
Paper height in twips (the default is 15,840).

\pszN
Used to differentiate between paper sizes with identical dimensions in Microsoft Windows NTÆ. Values 1 through 41 correspond to paper sizes defined in DRIVINI.H in the Windows 3.1 SDK (DMPAPER_ values). Values greater than or equal to 42 correspond to user-defined forms in Windows NT.

\marglN
Left margin in twips (the default is 1800).

\margrN
Right margin in twips (the default is 1800).

\margtN
Top margin in twips (the default is 1440).

\margbN
Bottom margin in twips (the default is 1440).

\facingp
Facing pages (activates odd/even headers and gutters).

\gutterN
Gutter width in twips (the default is 0).

\rtlgutter
Gutter is positioned on the right.

\gutterprl
Parallel gutter.

\margmirror
Switches margin definitions on left and right pages. Used in conjunction with \facingp.

\landscape
Landscape format.

\pgnstartN

Beginning page number (the default is 1).

\widowctrl
Enable widow and orphan control.

\twoonone
Print two logical pages on one physical page.

\bookfold
Book fold printing. Allows for printing documents that can easily be made into pamphlets. This will print two pages side by side in landscape mode, and will print to the back of the sheet if the printer supports duplex printing.

\bookfoldrev
Reverse book fold printing for bidirectional languages.

\bookfoldsheetsN
Sheets per booklet; this should be a multiple of four.

Linked Styles

\linkstyles
Update document styles automatically based on template.

Compatibility Options

\notabind
Don't add automatic tab stop for hanging indent.

\wraptrsp
Wrap trailing spaces onto the next line.

\prcolbl
Print all colors as black.

\noextrasprl
Don't add extra space to line height for showing raised/lowered characters.

\nocolbal
Don't balance columns.

\cvmme
Treat old-style escaped quotation marks (\") as current style ("") in mail merge data documents.

\sprstsp
Suppress extra line spacing at top of page. Basically, this means to ignore any line spacing larger than Auto at the top of a page.

\sprsspbf
Suppress space before paragraph property after hard page or column break.

\otblrul
Combine table borders as done in Word 5.x for the Macintosh. Contradictory

table border information is resolved in favor of the first cell.

\transmf
Metafiles are considered transparent; don't blank the area behind metafiles.

\swpbdr
If a paragraph has a left border (not a box) and the Different Odd And Even or Mirror Margins check box is selected, Word will print the border on the right for odd-numbered pages.

\brkfrm
Show hard (manual) page breaks and column breaks in frames.

\sprslnsp
Suppress extra line spacing like WordPerfect version 5.x.

\subfontbysize
Substitute fonts based on size first.

\truncatefont
height
Round down to the nearest font size instead of rounding up.

\truncex
Don't add leading (extra space) between rows of text.

\bdbfhdr
Print body before header/footer. Option for compatibility with Word 5.x for the Macintosh.

\dntblnsbdb
Don't balance SBCS/DBCS characters. Option for compatibility with Word 6.0 (Japanese).

\expshrtn
Expand character spaces on line-ending with shift+return. Option for compatibility with Word 6.0 (Japanese).

\lytexcttp
Donít center exact line height lines.

\lytprtmet
Use printer metrics to lay out document.

\msmcap
Small caps like Word 5.x for the Macintosh.

\nolead
No external leading. Option for compatibility with Word 5.x for the Macintosh.

\nospaceforul
Don't add space for underline. Option for compatibility with Word 6.0 (Japanese).

\noultrlspc
Don't underline trailing spaces. Option for compatibility with Word 6.0 (Japanese).

\noxlattoyen
Don't translate backslash to Yen sign. Option for compatibility with Word 6.0 (Japanese).

\oldlinewrap
Lines wrap like Word 6.0.

\sprsbsp
Suppress extra line spacing at bottom of page.

\sprstsm
Does nothing. This keyword should be ignored.

\wpjst
Do full justification like WordPerfect 6.x for Windows.

\wpsp
Set the width of a space like WordPerfect 5.x.

\wptab
Advance to next tab stop like WordPerfect 6.x.

\splytwnine
Donít lay out AutoShapes like Word 97.

\ftnlytwnine
Donít lay out footnotes like Word 6.0, Word 95, and Word 97.

\htmautsp
Use HTML paragraph auto spacing.

\useltbaln
Donít forget last tab alignment.

\alntblind
Donít align table rows independently.

\lytcalctblwd
Donít lay out tables with raw width.

\lyttblrtgr
Donít allow table rows to lay out apart.

\oldas
Use Word 95 Auto spacing.

\lnbrkrule
Donít use Word 97 line breaking rules for Asian text.

\bdrrlswsix
Use Word 6.0/Word 95 borders rules.

\nolnhtadjtbl
Don't adjust line height in table.

\ApplyBrkRules
Use line breaking rules compatible with Thai text.

\rempersonalinfo
This will indicate to the emitting program to remove personal information such as the authorís name as a document property or in a comment.

\snapgridtocell
Snap text to grid inside table with inline objects.

\wrppunct
Allow hanging punctuation in character grid.

\asianbrkrule
Use Asian rules for line breaks with character grid.

\nobrkwrptbl
Donít break wrapped tables across pages.

\toplinepunct
Turns on a check box in the Paragraph Formatting dialogue box with a setting to allow punctuation at the start of the line to compress.

\viewnobound
Hide white space between pages.

\donotshowmarkup
Don't show markup while reviewing.

\donotshowcomments
Don't show comments while reviewing.

\donotshowinsdel
Don't show insertions and deletions while reviewing.

\donotshowprops
Don't show formatting while reviewing.

\allowfieldendsel
Enables selecting the entire field with the first or last character.

\nocompatoptions
Specifies that all compatibility options should be set to default.

Forms

\formprot
This document is protected for forms.

\allprot
This document has no unprotected areas.

\formshade
This document has form field shading on.

\formdisp
This document currently has a forms drop-down box or check box selected.

\printdata
This document has print form data only on.

Revision Marks

\revprot
This document is protected for revisions. The user can edit the document, but revision marking cannot be disabled.

\revisions
Turns on revision marking.

\revpropN
Argument indicates how revised text will be displayed:
0
No properties shown
1
Bold
2
Italic
3
Underline (default)
4
Double underline

\revbarN
Vertical lines mark altered text, based on the argument:
0
No marking
1
Left margin
2
Right margin
3
Outside (the default: left on left pages, right on right pages)

Tables

\tsdN
Sets the default table style for this document. N references an entry in the table styles list.

Comments (Annotations)

\annotprot
This document is protected for comments (annotations). The user cannot edit the document but can insert comments (annotations).

Bidirectional Controls

\rtldoc
This document will be formatted to have Arabic-style pagination.

\ltrdoc
This document will have English-style pagination (the default).

Click-and-Type

\ctsN
Index to the style to be used for Click-and-Type (0 is the default).

Kinsoku Characters (Far East)

\jsksu
Indicates that the strict Kinsoku set must be used for Japanese; \jsku should not be present if \ksulangN is present and the language N is Japanese.

\ksulangN
N indicates which language the customized Kinsoku characters defined in the \fchars and \lchars destinations belong to.

*\fchars
List of following Kinsoku characters.

*\lchars
List of leading Kinsoku characters.

Drawing Grid

\dghspaceN
Drawing grid horizontal spacing in twips (the default is 120).

\dgvspaceN
Drawing grid vertical spacing in twips (the default is 120).

\dghoriginN
Drawing grid horizontal origin in twips (the default is 1701).

\dgvoriginN
Drawing grid vertical origin in twips (the default is 1984).

\dghshowN
Show Nth horizontal gridline (the default is 3).

\dgvshowN
Show Nth vertical gridline (the default is 0).

\dgsnap

Snap to drawing grid.

\dgmargin
Drawing grid to follow margins.

Page Borders

\pgbrdrhead
Page border surrounds header.

\pgbrdrfoot
Page border surrounds footer.

\pgbrdrt
Page border top.

\pgbrdrb
Page border bottom.

\pgbrdrl
Page border left.

\pgbrdrr
Page border right.

\brdrartN
Page border art; the N argument is a value from 1 to165 representing the number of the border.

\pgbrdroptN
8
Page border measure from text. Always display in front option is set to off.
32
Page border measure from edge of page. Always display in front option is set to on.
40
Page border measure from edge of page. Always display in front option is set to off.

\pgbrdrsnap
Align paragraph borders and table edges with page border.

The color, width, border style, and border spacing keywords for page borders are the same as the keywords defined for paragraph borders.

Section Text

Each section in the RTF file has the following syntax:

```
<section>
 <secfmt>* <hdrftr>? <para>+ (\sect <section>)?
```

Section Formatting Properties

At the beginning of each section, there may be some section-formatting control words (described as <secfmt> in the section text syntax description).

These control words specify section-formatting properties, which apply to the text following the control word, with the exception of the section-break control words (those beginning with \sbk). Section-break control words describe the break preceding the text. These control words can appear anywhere in the section, not just at the start.
Note that if the \sectd control word is not present, the current section inherits all section properties defined in the previous section.
The section-formatting control words are listed in the following table.
Control word
Meaning

\sect
New section.

\sectd
Reset to default section properties.

\endnhere
Endnotes included in the section.

\binfsxnN
N is the printer bin used for the first page of the section. If this control is not defined, then the first page uses the same printer bin as defined by the \binsxnN control.

\binsxnN
N is the printer bin used for the pages of the section.

\dsN
Designates section style. If a section style is specified, style properties must be specified with the section.

\pnseclvlN
Used for multilevel lists. This property sets the default numbering style for each corresponding \pnlvlN control word (bullets and numbering property for paragraphs) within that section. This is a destination control word.

\sectunlocked
This section is unlocked for forms.

Section Break

\sbknone
No section break.

\sbkcol
Section break starts a new column.

\sbkpage
Section break starts a new page (the default).

\sbkeven
Section break starts at an even page.

\sbkodd
Section break starts at an odd page.

Columns

\colsN
Number of columns for "snaking" (the default is 1).

\colsxN
Space between columns in twips (the default is 720).

\colnoN
Column number to be formatted; used to specify formatting for variable-width columns.

\colsrN
Space to right of column in twips; used to specify formatting for variable-width columns.

\colwN
Width of column in twips; used to override the default constant width setting for variable-width columns.

\linebetcol
Line between columns.

Footnotes and Endnotes

\sftntj
Footnotes beneath text (top justified).

\sftnbj
Footnotes at the bottom of the page (bottom justified).

\sftnstartN
Beginning footnote number (the default is 1).

\saftnstartN
Beginning endnote number (the default is 1).

\sftnrstpg
Restart footnote numbering each page.

\sftnrestart
Footnote numbers restart at each section. Microsoft Word for the Macintosh uses this control to restart footnote numbering at each page.

\sftnrstcont
Continuous footnote numbering (the default).

\saftnrestart
Restart endnote numbering each section.

\saftnrstcont

Continuous endnote numbering (the default).

\sftnnar
Footnote numbering
 Arabic numbering (1, 2, 3, º).

\sftnnalc
Footnote numbering
 Alphabetic lowercase (a, b, c, º).

\sftnnauc
Footnote numbering
 Alphabetic uppercase (A, B, C, º).

\sftnnrlc
Footnote numbering
 Roman lowercase (i, ii, iii, º).

\sftnnruc
Footnote numbering
 Roman uppercase (I, II, III, º).

\sftnnchi
Footnote numbering
 Chicago Manual of Style (*,   , ! , ß).

\sftnnchosung
Footnote Korean numbering 1 (*chosung).

\sftnncnum
Footnote Circle numbering (*circlenum).

\sftnndbnum
Footnote kanji numbering without the digit character (*dbnum1).

\sftnndbnumd
Footnote kanji numbering with the digit character (*dbnum2).

\sftnndbnumt
Footnote kanji numbering 3 (*dbnum3).

\sftnndbnumk
Footnote kanji numbering 4 (*dbnum4).

\sftnndbar
Footnote double-byte numbering (*dbchar).

\sftnnganada
Footnote Korean numbering 2 (*ganada).

\sftnngbnum
Footnote Chinese numbering 1 (*gb1).

\sftnngbnumd

Footnote Chinese numbering 2 (*gb2).

\sftnngbnuml
Footnote Chinese numbering 3 (*gb3).

\sftnngbnumk
Footnote Chinese numbering 4 (*gb4).

\sftnnzodiac
Footnote numberingóChinese Zodiac numbering 1 (* zodiac1).

\sftnnzodiacd
Footnote numberingóChinese Zodiac numbering 2 (* zodiac2).

\sftnnzodiacl
Footnote numberingóChinese Zodiac numbering 3 (* zodiac3).

\saftnnar
Endnote numberingóArabic numbering (1, 2, 3, º).

\saftnnalc
Endnote numbering
Alphabetic lowercase (a, b, c, º).

\saftnnauc
Endnote numbering
Alphabetic uppercase (A, B, C, º).

\saftnnrlc
Endnote numbering
Roman lowercase (i, ii, iii, º).

\saftnnruc
Endnote numbering
Roman uppercase (I, II, III, º).

\saftnnchi
Endnote numbering
Chicago Manual of Style (*,   , ! , ß).

\saftnnchosung
Endnote Korean numbering 1 (*chosung).

\saftnncnum
Endnote Circle numbering (*circlenum).

\saftnndbnum
Endnote kanji numbering without the digit character (*dbnum1).

\saftnndbnumd

Endnote kanji numbering with the digit character (*dbnum2).

\saftnndbnumt
Endnote kanji numbering 3 (*dbnum3).

\saftnndbnumk
Endnote kanji numbering 4 (*dbnum4).

\saftnndbar
Endnote double-byte numbering (*dbchar).

\saftnnganada
Endnote Korean numbering 2 (*ganada).

\saftnngbnum
Endnote Chinese numbering 1 (*gb1).

\saftnngbnumd
Endnote Chinese numbering 2 (*gb2).

\saftnngbnuml
Endnote Chinese numbering 3 (*gb3).

\saftnngbnumk
Endnote Chinese numbering 4 (*gb4).

\saftnnzodiac
Endnote numberingóChinese Zodiac numbering 1 (* zodiac1).

\saftnnzodiacd
Endnote numberingóChinese Zodiac numbering 2 (* zodiac2).

\saftnnzodiacl
Endnote numberingóChinese Zodiac numbering 3 (* zodiac3).

Line Numbering

\linemodN
Line-number modulus amount to increase each line number (the default is 1).

\linexN
Distance from the line number to the left text margin in twips (the default is 360). The automatic distance is 0.

\linestartsN
Beginning line number (the default is 1).

\linerestart
Line numbers restart at \linestarts value.

\lineppage
Line numbers restart on each page.

\linecont
Line numbers continue from the preceding section.

Page Information

\pgwsxnN
N is the page width in twips. A \sectd resets the value to that specified by \paperwN in the document properties.

\pghsxnN
N is the page height in twips. A \sectd resets the value to that specified by \paperhN in the document properties.

\marglsxnN
N is the left margin of the page in twips. A \sectd resets the value to that specified by \marglN in the document properties.

\margrsxnN
N is the right margin of the page in twips. A \sectd resets the value to that specified by \margrN in the document properties.

\margtsxnN
N is the top margin of the page in twips. A \sectd resets the value to that specified by \margtN in the document properties.

\margbsxnN
N is the bottom margin of the page in twips. A \sectd resets the value to that specified by \margbN in the document properties.

\guttersxnN
N is the width of the gutter margin for the section in twips. A \sectd resets the value to that specified by \gutterN from the document properties. If Facing Pages is turned off, the gutter will be added to the left margin of all pages. If Facing Pages is turned on, the gutter will be added to the left side of odd-numbered pages and the right side of even-numbered pages.

\margmirsxn
Switches margin definitions on left and right pages. Used in conjunction with \facingp.

\lndscpsxn
Page orientation is in landscape format. To mix portrait and landscape sections within a document, the \landscape control should not be used so that the default for a section is portrait, which may be overridden by the \lndscpsxn control.

\titlepg
First page has a special format.

\headeryN
Header is N twips from the top of the page (the default is 720).

\footeryN

Footer is N twips from the bottom of the page (the default is 720).

Page Numbers

\pgnstartsN
Beginning page number (the default is 1).

\pgncont
Continuous page numbering (the default).

\pgnrestart
Page numbers restart at \pgnstarts value.

\pgnxN
Page number is N twips from the right margin (the default is 720). This control word is understood but not used by current versions (6.0 or later) of Word.

\pgnyN
Page number is N twips from the top margin (the default is 720). This control word is understood but not used by current versions (6.0 or later) of Word.

\pgndec
Page-number format is decimal.

\pgnucrm
Page-number format is uppercase Roman numeral.

\pgnlcrm
Page-number format is lowercase Roman numeral.

\pgnucltr
Page-number format is uppercase letter.

\pgnlcltr
Page-number format is lowercase letter.

\pgnbidia
Page-number format is Abjad Jawaz if language is Arabic and Biblical Standard if language is Hebrew.

\pgnbidib
Page-number format is Alif Ba Tah if language is Arabic and Non-standard Decimal if language is Hebrew.

\pgnchosung
Korean numbering 1 (* chosung).

\pgncnum
Circle numbering (*circlenum).

\pgndbnum
Kanji numbering without the digit character.

\pgndbnumd
Kanji numbering with the digit character.

\pgndbnumt
Kanji numbering 3 (*dbnum3).

\pgndbnumk
Kanji numbering 4 (*dbnum4).

\pgndecd
Double-byte decimal numbering.

\pgnganada
Korean numbering 2 (*ganada).

\pgngbnum
Chinese numbering 1 (*gb1).

\pgngbnumd
Chinese numbering 2 (*gb2).

\pgngbnuml
Chinese numbering 3 (*gb3).

\pgngbnumk
Chinese numbering 4 (*gb4).

\pgnzodiac
Chinese Zodiac numbering 1 (*zodiac1).

\pgnzodiacd
Chinese Zodiac numbering 2 (*zodiac2).

\pgnzodiacl
Chinese Zodiac numbering 3 (*zodiac3).

\pgnhindia
Hindi vowel numeric format.

\pgnhindib
Hindi consonants.

\pgnhindic
Hindi digits.

\pgnhindid
Hindi descriptive (cardinal) text.

\phnthaia
Thai letters.

\pgnthaib
Thai digits.

\pgnthaic
Thai descriptive.

\pgnvieta
Vietnamese descriptive.

\pgnid
Page number in dashes (Korean).

\pgnhnN
Indicates which heading level is used to prefix a heading number to the page number. This control word can only be used in conjunction with numbered heading styles. 0 specifies to not show heading level (the default). Values 1 through 9 correspond to heading levels 1 through 9.

\pgnhnsh
Hyphen separator character. This separator and the successive ones appear between the heading level number and the page number.

\pgnhnsp
Period separator character.

\pgnhnsc
Colon separator character.

\pgnhnsm
Em dash (ó) separator character.

\pgnhnsn
En dash (ñ) separator character.

Vertical Alignment

\vertalt
Text is top-aligned (the default).

\vertalb
Text is bottom-aligned.

\vertalc
Text is centered vertically.

\vertalj
Text is justified vertically.

Bidirectional Controls

\rtlsect
This section will snake (newspaper style) columns from right to left.

\ltrsect
This section will snake (newspaper style) columns from left to right (the default).

Asian Controls

\horzsect
Horizontal rendering.

\vertsect
Vertical rendering.

Text Flow

\stextflow
Section property for specifying text flow:
0
Text flows left to right and top to bottom
1
Text flows top to bottom and right to left, vertical
2
Text flows left to right and bottom to top
3
Text flows right to left and top to bottom
4
Text flows left to right and top to bottom, vertical
5
Text flows vertically, non-vertical font

Page Borders

\pgbrdrhead
Page border surrounds header.

\pgbrdrfoot
Page border surrounds footer.

\pgbrdrt
Page border top.

\pgbrdrb
Page border bottom.

\pgbrdrl
Page border left.

\pgbrdrr
Page border right.

\brdrartN
Page border art; the N argument is a value from 1 through 165 representing the number of the border.

\pgbrdroptN
8
Page border measure from text. Always display in front option is set to off.
32
Page border measure from edge of page. Always display in front option is set

to on.
40
Page border measure from edge of page. Always display in front option is set to off.

\pgbrdrsnap
Align paragraph borders and table edges with page border.

Line and Character Grid

\sectexpandN
Character space basement (character pitch minus font size) N in device-independent units (a device-independent unit is 1/294912th of an inch).

\sectlinegridN
Line grid, where N is the line pitch in 20ths of a point.

\sectdefaultcl
Default state of section. Indicates \sectspecifycl and \sectspecifyl are not emitted.

\sectspecifycl
Specify number of characters per line only.

\sectspecifyl
Specify both number of characters per line and number of lines per page.

\sectspecifygenN
Indicates that text should snap to the character grid. Note that the N is part of the keyword.

The color, width, border style, and border spacing keywords for page borders are the same as the keywords defined for paragraph borders.

Headers and Footers

Headers and footers are RTF destinations. Each section in the document can have its own set of headers and footers. If no headers or footers are defined for a given section, the headers and footers from the previous section (if any) are used. Headers and footers have the following syntax:

```
<hdrftr>
'{' <hdrctl> <para>+ '}' <hdrftr>?

<hdrctl>
\header | \footer | \headerl | \headerr | \headerf | \footerl | \footerr | \
footerf
```

Note that each separate <hdrftr> group must have a distinct <hdrctl> introducing it.
Control word
Meaning

\header
Header on all pages. This is a destination control word.

\footer
Footer on all pages. This is a destination control word.

\headerl
Header on left pages only. This is a destination control word.

\headerr
Header on right pages only. This is a destination control word.

\headerf
Header on first page only. This is a destination control word.

\footerl
Footer on left pages only. This is a destination control word.

\footerr
Footer on right pages only. This is a destination control word.

\footerf
Footer on first page only. This is a destination control word.

The \headerl, \headerr, \footerl, and \footerr control words are used in conjunction with the \facingp control word, and the \headerf and \footerf control words are used in conjunction with the \titlepg control word. Many RTF readers will not function correctly if the appropriate document properties are not set. In particular, if \facingp is not set, then only \header and \footer should be used; if \facingp is set, then only \headerl, \headerr, \footerl, and \footerr should be used. Combining both \facingp and \titlepg is allowed. You should not use \header to set the headers for both pages when \facingp is set. You can use \headerf if \titlepg is not set, but no header will appear. For more information, see
 HYPERLINK \l "Document_Formatting_Properties"

Document Formatting Properties
 and
 HYPERLINK \l "Section_Formatting_Properties"

Section Formatting Properties
 in this Specification.
If the previous section had a first page header or footer and had \titlepg set, and the current section does not, then the previous section's first page header or footer is disabled. However, it is not destroyed; if subsequent sections have \titlepg set, then the first page header or footer is restored.
Paragraph Text
There are two kinds of paragraphs: plain and table. A table is a collection of paragraphs, and a table row is a continuous sequence of paragraphs partitioned into cells. The \intbl paragraph-formatting control word identifies the paragraph as part of a table. Additional keywords related to table styles are documented next, and refer to properties of the cell within which the paragraph resides. For more information, see the
 HYPERLINK \l "Table_Definitions"

Table Definitions

section of this Specification. This control is inherited between paragraphs that do not have paragraph properties reset with \pard.

<para>

<textpar> | <row>

<textpar>

<pn>? <brdrdef>? <parfmt>* <apoctl>* <tabdef>? <shading>? (/v /spv)? (\subdocument | <char>+) (\par <para>)?

<row>

(<tbldef> <cell>+ <tbldef> \row) | (<tbldef> <cell>+ \row) | (<cell>+ <tbldef> \row)

<cell>

(<nestrow>? <tbldef>?) & <textpar>+ \cell

<nestrow>

<nestcell>+ ë{*í\nesttableprops <tbldef> \nestrow ë}í

<nestcell>

<textpar>+ \nestcell

Paragraph Formatting Properties

These control words (described as <parfmt> in the paragraph-text syntax description) specify generic paragraph formatting properties. These control words can appear anywhere in the body of the paragraph, not just at the beginning.

Note that if the \pard control word is not present, the current paragraph inherits all paragraph properties defined in the previous paragraph.

The paragraph-formatting control words are listed in the following table.

Control word

Meaning

\par

New paragraph.

\ pard

Resets to default paragraph properties.

\spv

Style separator feature that causes the paragraph mark to not appear even in ShowAll. Used to nest paragraphs within the document view or outline without generating a new heading.

\hyphpar

Toggles automatic hyphenation for the paragraph. Append 1 or nothing to toggle property on; append 0 to turn it off.

\intbl

Paragraph is part of a table.

\itapN

Paragraph nesting level, where 0 is the main document, 1 is a table cell, 2 is a nested table cell, 3 is a doubly nested table cell, and so forth. The default is 1.

\keep
Keep paragraph intact.

\keepn
Keep paragraph with the next paragraph.

\levelN
N is the outline level of the paragraph.

\noline
No line numbering.

\nowidctlpar
No widow/orphan control. This is a paragraph-level property and is used to override the document-level \widowctrl.

\widctlpar
Widow/orphan control is used for the current paragraph. This is a paragraph property used to override the absence of the document-level \widowctrl.

\outlinelevelN
Outline level of paragraph. The N argument is a value from 0 to 8 representing the outline level of the paragraph. In the default case, no outline level is specified (same as body text).

\pagebb
Break page before the paragraph.

\sbys
Side-by-side paragraphs.

\sN
Designates paragraph style. If a paragraph style is specified, style properties must be specified with the paragraph. N references an entry in the style sheet.

Table Style Specific

\yts
Designates the table style that was applied to the row/cell.

\tscfirstrow
This cell is in the first row.

\tsclastrow
This cell is in the last row.

\tscfirstcol
This cell is in the first column.

\tsclastcol
This cell is in the last column.

\tscbandhorzodd
This cell is in the odd row band.

\tscbandhorzeven
This cell is in the even row band.

\tscbandvertodd
This cell is in the odd column band.

\tscbandverteven
This cell is in the even column band.

\tscnwcell
This is the NW cell in the table (top left).

\tscnecell
NE cell.

\tscswcell
SW cell.

\tscsecell
SE cell.

Alignment

\qc
Centered.

\qj
Justified.

\ql
Left-aligned (the default).

\qr
Right-aligned.

\qd
Distributed.

\qkN
Percentage of line occupied by Kashida justification (0 ñ low, 10 ñ medium, 20 ñ high).

\qt
For Thai distributed justification.

Font Alignment

\faauto
Font alignment. The default setting for this is "Auto."

\fahang
Font alignment: Hanging.

\facenter
Font alignment: Center.

\faroman
Font alignment†: Roman (default).

\favar
Font alignment: Upholding variable.

\fafixed
Font alignment: Upholding fixed.

Indentation

\fiN
First-line indent (the default is 0).

\cufiN
First-line indent in hundredths of a character unit; overrides \fiN, although they should both be emitted with equivalent values.

\liN
Left indent (the default is 0).

\linN
Left indent for left-to-right paragraphs; right indent for right-to-left paragraphs (the default is 0). \linN defines space before the paragraph.

\culiN
Left indent (space before) in hundredths of a character unit. Behaves like \linN and overrides \liN and \linN, although they should all be emitted with equivalent values.

\riN
Right indent (the default is 0).

\rinN
Right indent for left-to-right paragraphs; left indent for right-to-left paragraphs (the default is 0). \rinN defines space after the paragraph.

\curiN
Right indent (space after) in hundredths of a character unit. Behaves like \rinN and overrides \riN and \rinN, although they should all be emitted with equivalent values.

\adjustright
Automatically adjust right indent when document grid is defined.

Spacing

\sbN

Space before (the default is 0).

\saN
Space after (the default is 0).

\sbautoN
Auto spacing before:
0
Space before determined by \sb
1
Space before is Auto (ignores \sb)
The default is 0.

\saautoN
Auto spacing after:
0
Space after determined by \sa
1
Space after is Auto (ignores \sa)
The default is 0.

\lisbN
Space before in hundredths of a character unit. Overrides \sbN, although they should both be emitted with equivalent values.

\lisaN
Space after in hundredths of a character unit. Overrides \saN, although they should both be emitted with equivalent values.

\slN
Space between lines. If this control word is missing or if \sl0 is used, the line spacing is automatically determined by the tallest character in the line. If N is a positive value, this size is used only if it is taller than the tallest character (otherwise, the tallest character is used); if N is a negative value, the absolute value of N is used, even if it is shorter than the tallest character.

\slmultN
Line spacing multiple. Indicates that the current line spacing is a multiple of "Single" line spacing. This control word can follow only the \sl control word and works in conjunction with it.
0
"At Least" or "Exactly" line spacing
1
Multiple line spacing, relative to "Single"

\nosnaplinegrid
Disable snap line to grid.

Subdocuments

\subdocumentN
Indicates that a subdocument in a master document/subdocument relationship should occur here. N represents an index into the file table. This control

word must be the only item in a paragraph.

Bidirectional Controls

\rtlpar
Text in this paragraph will be displayed with right-to-left precedence.

\ltrpar
Text in this paragraph will be displayed with left-to-right precedence (the default).

Asian Typography

\nocwrap
No character wrapping.

\nowwrap
No word wrapping.

\nooverflow
No overflow period and comma.

\aspalpha
Auto spacing between DBC and English.

\aspnum
Auto spacing between DBC and numbers.

Pocket Word

\collapsed
Paragraph property active in outline view that specifies that the paragraph is collapsed (not viewed).

Tabs

Any paragraph may have its own set of tabs. Tabs must follow this syntax:
<tabdef>
(<tab> | <bartab>)+

<tab>
<tabkind>? <tablead>? \tx

<bartab>
<tablead>? \tb

<tabkind>
\tqr | \tqc | \tqdec

<tablead>
\tldot | \tlmdot | \tlhyph | \tlul | \tlth | \tleq

Control word
Meaning

\txN
Tab position in twips from the left margin.

\tqr
Flush-right tab.

\tqc
Centered tab.

\tqdec
Decimal tab.

\tbN
Bar tab position in twips from the left margin.

\tldot
Leader dots.

\tlmdot
Leader middle dots.

\tlhyph
Leader hyphens.

\tlul
Leader underline.

\tlth
Leader thick line.

\tleq
Leader equal sign.

Bullets and Numbering

Word 6.0 and Word 95 RTF

To provide compatibility with existing RTF readers, all applications that can automatically format paragraphs with bullets or numbers will also emit the generated text as plain text in the \pntext group. This will allow existing RTF readers to capture the plain text and safely ignore the auto number instructions. This group precedes all bulleted or numbered paragraphs, and will contain all the text and formatting that would be automatically generated. It should precede the '{'*\pn º '}' destination, and it is the responsibility of RTF readers that understand the '{'*\pn º '}' destination to ignore the \pntext group. The following table defines the grammar of this group.

<pn>
<pnseclvl> | <pnpara>

<pnseclvl>
'{*' \pnseclvl <pndesc>'}'

<pnpara>
<pntext> <pnprops>

```
<pntext>
'{' \pntext <char> '}'

<pnprops>
'{\*' \pn <pnlevel> <pndesc>'}'

<pnlevel>
\pnlvl | \pnlvlblt | \pnlvlbody | \pnlvlcont

<pndesc>
<pnnstyle> & <pnchrfmt> & <pntxtb> & <pntxta> & <pnfmt>

<pnnstyle>
\pncard | \pndec | \pnucltr | \pnucrm | \pnlcltr | \pnlcrm | \pnord | \pnordt
| \pnbidia | \pnbidib | \pnaiu | \pnaiud | \pnaiueo | \pnaiueod | \pnchosung
| \pncnum | \pndbnum | \pndbnumd | \pndbnumk | \pndbnuml | \pndbnumt | \
pndecd | \pnganada | \pnganada | \pngbnum | \pngbnumd | \pngbnumk | \pngbnuml
| \pniroha | \pnirohad | \pnuldash | \pnuldashd | \pnuldashdd | \pnulhair | \
pnulth | \pnulwave | \pnzodiac | \pnzodiacd | \pnzodiacl

<pnchrfmt>
\pnf? & \pnfs? & \pnb? & \pni? & \pncaps? & \pnscaps? & <pnul>? & \pnstrike?
& \pncf?

<pnul>
\pnul | \pnuld | \pnuldb | \pnulnone | \pnulw

<pnfmt>
\pnnumonce? & \pnacross? & \pnindent? & \pnsp? & \pnprev? & <pnjust>? & \
pnstart? & \pnhang? & \pnrestart?

<pnjust>
\pnqc | \pnql | \pnqr

<pntxtb>
'{' \pntxtb #PCDATA'}'

<pntxta>
'{' \pntxta #PCDATA'}'
```

Settings in the following table marked with an asterisk can be turned off by appending 0 to the control word.

Control word

Meaning

\pntext

This group precedes all numbered/bulleted paragraphs and contains all automatically generated text and formatting. It should precede the '{*'\pn º '}' destination, and it is the responsibility of RTF readers that understand the '{*'\pn º '}' destination to ignore this preceding group. This is a destination control word.

\pn

Turns on paragraph numbering. This is a destination control word.

\pnlvlN
Paragraph level, where N is a level from 1 to 9. Default set by \pnseclvlN section formatting property.

\pnlvlblt
Bulleted paragraph (corresponds to level 11). The actual character used for the bullet is stored in the \pntxtb group.

\pnlvlbody
Simple paragraph numbering (corresponds to level 10).

\pnlvlcont
Continue numbering but do not display number (ìskip numberingî).

\pnnumonce
Number each cell only once in a table (the default is to number each paragraph in a table).

\pnacross
Number across rows (the default is to number down columns).

\pnhang
Paragraph uses a hanging indent.

\pnrestart
Restart numbering after each section break. Note that this control word is used only in conjunction with the Heading Numbering feature (applying multilevel numbering to Heading style definitions).

\pncard
Cardinal numbering (One, Two, Three).

\pndec
Decimal numbering (1, 2, 3).

\pnucltr
Uppercase alphabetic numbering (A, B, C).

\pnucrm
Uppercase Roman numbering (I, II, III).

\pnlcltr
Lowercase alphabetic numbering (a, b, c).

\pnlcrm
Lowercase Roman numbering (i, ii, iii).

\pnord
Ordinal numbering (1st, 2nd, 3rd).

\pnordt
Ordinal text numbering (First, Second, Third).

\pnbidia
Abjad Jawaz if language is Arabic and Biblical Standard if language is Hebrew.

\pnbidib
Alif Ba Tah if language is Arabic and Non-standard Decimal if language is Hebrew.

\pnaiu
46 phonetic katakana characters in "aiueo" order (*aiueo).

\pnaiud
46 phonetic double-byte katakana characters (*aiueo*dbchar).

\pnaiueo
46 phonetic katakana characters in "aiueo" order (*aiueo).

\pnaiueod
46 phonetic double-byte katakana characters (*aiueo*dbchar).

\pnchosung
Korean numbering 2 (*chosung).

\pncnum
20 numbered list in circle (*circlenum).

\pndbnum
Kanji numbering without the digit character (*dbnum1).

\pndbnumd
Kanji numbering with the digit character (*dbnum2).

\pndbnumk
Kanji numbering 4 (*dbnum4).

\pndbnuml
Kanji numbering 3 (*dbnum3).

\pndbnumt
Kanji numbering 3 (*dbnum3).

\pndecd
Double-byte decimal numbering (*arabic*dbchar).

\pnganada
Korean numbering 2 (*ganada).

\pnganada
Korean numbering 1 (*ganada).

\pngbnum
Chinese numbering 1 (*gb1).

\pngbnumd
Chinese numbering 2 (*gb2).

\pngbnumk
Chinese numbering 4 (*gb4).

\pngbnuml
Chinese numbering 3 (*gb3).

\pniroha
46 phonetic katakana characters in "iroha" order (*iroha).

\pnirohad
46 phonetic double-byte katakana characters (*iroha*dbchar).

\pnuldash
Dashed underline.

\pnuldashd
Dash-dotted underline.

\pnuldashdd
Dash-dot-dotted underline.

\pnulhair
Hairline underline.

\pnulth
Thick underline.

\pnulwave
Wave underline.

\pnzodiac
Chinese Zodiac numbering 1 (*zodiac1).

\pnzodiacd
Chinese Zodiac numbering 2 (*zodiac2).

\pnzodiacl
Chinese Zodiac numbering 3 (*zodiac3).

\pnb
Bold numbering.*

\pni
Italic numbering.*

\pncaps
All caps numbering.*

\pnscaps
Small caps numbering.*

\pnul
Continuous underline.*

\pnuld
Dotted underline.

\pnuldb
Double underline.

\pnulnone
Turns off underlining.

\pnulw
Word underline.

\pnstrike
Strikethrough numbering.*

\pncfN
Foreground coloróindex into color table (the default is 0).

\pnfN
Font number.

\pnfsN
Font size (in half-points).

\pnindentN
Minimum distance from margin to body text.

\pnspN
Distance from number text to body text.

\pnprev
Used for multilevel lists. Include information from previous level in this level; for example, 1, 1.1, 1.1.1, 1.1.1.1

\pnqc
Centered numbering.

\pnql
Left-justified numbering.

\pnqr
Right-justified numbering.

\pnstartN
Start at number.

\pntxta
Text after. This group contains the text that succeeds the number. This is a destination control word.

\pntxtb

Text before. This group contains the text that precedes the number. This is a destination control word.

Note that there is a limit of 32 characters total for the sum of text before and text after for simple numbering. Multilevel numbering has a limit of 64 characters total for the sum of all levels.

Word 97 through Word 2002 RTF

Each paragraph that is part of a list must contain some keyword to indicate which list itís in, and which level of the list it belongs to. Word 97 through Word 2002 also provide the flat text representation of each number (in the \listtext destination); so, RTF readers that donít understand Word 97 numbering will get the paragraph number, along with appropriate character properties, inserted into their document at the beginning of the paragraph. Any RTF reader that does understand Word 97 through Word 2002 numbering should ignore the entire \listtext destination.

Control word
Meaning

\ls
Should exactly match the ls for one of the list overrides in the List Override table.

\ilvl
The 0-based level of the list to which the paragraph belongs. For all simple lists, this should always be 0. For multilevel lists, it can be 0 through 8.

\listtext
Contains the flat text representation of the number, including character properties. Should be ignored by any reader that understands Word 97 through Word 2002 numbering. This is a destination control word.

Revision Marks for Paragraph Numbers and ListNum Fields

Paragraph numbers and ListNum fields track revision information with special properties applied to the paragraph mark and ListNum field, respectively. The special properties hold the "old" value of the numberóthe value it held when revision-mark tracking began. At display time, Word checks the number's current value and compares it with this "old" value to determine whether it has changed. If the numbers are different, the old value shows up as deleted and the new value as inserted; if the numbers are the same, Word displays the new value normally, with no revision information. If there was no old value, the new value shows up as inserted. The following table lists the RTF specifications for these special properties.

Control word
Meaning

\pnrauthN
Index into the revision table. The content of the Nth group in the revision table is considered to be the author of that revision.
Note This keyword is used to indicate paragraph number revisions.

\pnrdateN
Time of the revision. The 32-bit DTTM structure is emitted as a long integer.

\pnrnot
Indicates whether the paragraph number for the current paragraph is marked as "inserted."

\pnrxstN
The keywords \pnrxst, \pnrrgb, \pnrpnbr, and \pnrnfc describe the "deleted number" text for the paragraph number. Their values are binary. Each of these keywords is represented as an array. The deleted number is written out with a \pnrstart keyword, followed by the arrayís keyword, followed by the first byte of the array, followed by the arrayís keyword, followed by the second byte of the arrayís keyword, followed by the arrayís keyword, followed by the third byte of the arrayís keyword, and so on. This sequence is followed by the \pnrstop keyword.
\pnrxst is a 32-item Unicode character array (double bytes for each character) with a length byte as the first numberóit has the actual text of the number, with "level" place holders written out as digits from 0 through 8.

\pnrrgbN
Nine-item array of indices of the level place holders in the \pnrxst array.

\pnrnfcN
Nine-item array containing the number format codes of each level (using the same values as the \levelnfc keyword). The number format code is represented as a short integer.

\pnrpnbrN
Nine-item array of the actual values of the number in each level. The number is represented as a long integer.

\pnrstartN
The \pnrxst, \pnrrgb, \pnrpnbr, and \pnrnfc arrays are each preceded by the \
pnrstart keyword, whose argument is 0 through 3, depending on the array.

\pnrstopN
The \pnrxst, \pnrrgb, \pnrpnbr, and \pnrnfc arrays are each terminated by the \pnrstop keyword, whose argument is the number of bytes written out in the array.

Example
Letís take an example of the number "3-4b." which represents the third level of the list. The following table lists the values of each array.
Array
Binary
Comment

pnrxst
\'05\'00-\'01\'02
The length of the string is 5. Then, first level (level 0), followed by a dash, followed by the second and third levels (levels 1 and 2), followed by a period.

pnrrgb
\'01\'03\'04
The level place holders are at indices 1, 3, and 4 in the string.

pnrnfc
\'00\'00\'04
The nfc values are Arabic (0), Arabic (0), and lowercase letter (4).

pnrpnbr
\'03\'04\'02
The numbers or 3, 4, and 2 (b)

Here is the RTF for this number:

```
\pnrstart0
\pnrxst0\pnrxst5\pnrxst0\pnrxst1\pnrxst0\pnrxst45\pnrxst0\pnrxst2\pnrxst0\
pnrxst3\pnrxst0\pnrxst46
\pnrstop12

\pnrstart1
\pnrrgb1\pnrrgb3\pnrrgb4
\pnrrgb0\pnrrgb0\pnrrgb0
\pnrrgb0\pnrrgb0\pnrrgb0
\pnrstop9

\pnrstart2
\pnrnfc0\pnrnfc0\pnrnfc0\pnrnfc0\pnrnfc0\pnrnfc4
\pnrnfc0\pnrnfc0\pnrnfc0\pnrnfc0\pnrnfc0\pnrnfc0
\pnrnfc0\pnrnfc0\pnrnfc0\pnrnfc0\pnrnfc0\pnrnfc0
\pnrstop18

\pnrstart3
\pnrpnbr0\pnrpnbr0\pnrpnbr0\pnrpnbr3
\pnrpnbr0\pnrpnbr0\pnrpnbr0\pnrpnbr4
\pnrpnbr0\pnrpnbr0\pnrpnbr0\pnrpnbr2
\pnrpnbr0\pnrpnbr0\pnrpnbr0\pnrpnbr0
\pnrpnbr0\pnrpnbr0\pnrpnbr0\pnrpnbr0
\pnrpnbr0\pnrpnbr0\pnrpnbr0\pnrpnbr0
\pnrpnbr0\pnrpnbr0\pnrpnbr0\pnrpnbr0
\pnrpnbr0\pnrpnbr0\pnrpnbr0\pnrpnbr0
\pnrpnbr0\pnrpnbr0\pnrpnbr0\pnrpnbr0
\pnrstop36
```

Control word
Meaning

Track Changes (Revision Mark) Properties for ListNum Fields

\dfrauthN
Index into the revision table. The content of the Nth group in the revision table is considered the author of that revision.
Note This keyword is used to indicate the deleted value of a ListNum field.

\dfrdateN

Time of the revision. The 32-bit DTTM structure is emitted as a long integer.

\dfrxst
Unicode character array with a length byte.

\dfrstart
The \dfrxst array is preceded by the \dfrstart keyword.

\dfrstop
The \dfrxst array is terminated by the \dfrstop keyword.

Example
Letís look again at the preceding example, in which the deleted value is "3-4b." The RTF would then be
\dfrstart0\dfrxst0\dfrxst5\dfrxst0\dfrxst51\dfrxst0\dfrxst45\dfrxst0\dfrxst52\dfrxst0\dfrxst66\dfrxst0\dfrxst46\dfrstop10

where 5 is the length byte, 51 is Unicode for "3", 45 is Unicode for "-", 52 is Unicode for "4", and so on.

Paragraph Borders

Paragraph borders have the following syntax:
<brdrdef>
(<brdrseg> <brdr>)+

<brdrseg>
\brdrt | \brdrb | \brdrl | \brdrr | \brdrbtw | \brdrbar | \box

<brdr>
<brdrk> \brdrw? \brsp? \brdrcf?

<brdrk>
\brdrs | \brdrth | \brdrsh | \brdrdb | \brdrdot | \brdrdash | \brdrhair |
brdrinset | \brdrdashsm | \brdrdashd | \brdrdashdd | \brdrtriple | \
brdrtnthsg | \brdrthtnsg | \brdrtnthtnsg | \brdrtnthmg | \brdrthtnmg | \
brdrtnthtnmg | \brdrtnthlg | \brdrthtnlg | \brdrtnthtnlg | \brdrwavy | \
brdrwavydb | \brdrdashdotstr | \brdremboss | \brdrengrave \brdroutset | \
brdrnone | \brdrtbl | \brdrnil

Control word
Meaning

\brdrt
Border top.

\brdrb
Border bottom.

\brdrl
Border left.

\brdrr
Border right.

\brdrbtw
Consecutive paragraphs with identical border formatting are considered part of a single group with the border information applying to the entire group. To have borders around individual paragraphs within the group, the \brdrbtw control must be specified for that paragraph.

\brdrbar
Border outside (right side of odd-numbered pages, left side of even-numbered pages).

\box
Border around the paragraph (box paragraph).

\brdrs
Single-thickness border.

\brdrth
Double-thickness border.

\brdrsh
Shadowed border.

\brdrdb
Double border.

\brdrdot
Dotted border.

\brdrdash
Dashed border.

\brdrhair
Hairline border.

\brdrinset
Inset border.

\brdrdashsm
Dashed border (small).

\brdrdashd
Dot-dashed border.

\brdrdashdd
Dot-dot-dashed border.

\brdroutset
Outset border.

\brdrtriple
Triple border.

\brdrtnthsg

Thick-thin border (small).

\brdrthtnsg
Thin-thick border (small).

\brdrtnthtnsg
Thin-thick thin border (small).

\brdrtnthmg
Thick-thin border (medium).

\brdrthtnmg
Thin-thick border (medium).

\brdrtnthtnmg
Thin-thick thin border (medium).

\brdrtnthlg
Thick-thin border (large).

\brdrthtnlg
Thin-thick border (large).

\brdrtnthtnlg
Thin-thick-thin border (large).

\brdrwavy
Wavy border.

\brdrwavydb
Double wavy border.

\brdrdashdotstr
Striped border.

\brdremboss
Embossed border.

\brdrengrave
Engraved border.

\brdrframe
Border resembles a ìFrame.î

\brdrwN
N is the width in twips of the pen used to draw the paragraph border line. N cannot be greater than 75. To obtain a larger border width, the \brdth control word can be used to obtain a width double that of N.

\brdrcfN
N is the color of the paragraph border, specified as an index into the color table in the RTF header.

\brspN

Space in twips between borders and the paragraph.

\brdrnil
No border specified.

\brdrtbl
Table cell has no borders.

Paragraph Shading
Paragraph shading has the following syntax:
<shading>
(\shading | <pat>) \cfpat? \cbpat?

<pat>
\bghoriz | \bgvert | \bgfdiag | \bgbdiag | \bgcross | \bgdcross | \bgdkhoriz | \bgdkvert | \bgdkfdiag | \bgdkbdiag | \bgdkcross | \bgdkdcross

Control word
Meaning

\shadingN
N is the shading of the paragraph in hundredths of a percent.

\bghoriz
Specifies a horizontal background pattern for the paragraph.

\bgvert
Specifies a vertical background pattern for the paragraph.

\bgfdiag
Specifies a forward diagonal background pattern for the paragraph (\\\\).

\bgbdiag
Specifies a backward diagonal background pattern for the paragraph (////).

\bgcross
Specifies a cross background pattern for the paragraph.

\bgdcross
Specifies a diagonal cross background pattern for the paragraph.

\bgdkhoriz
Specifies a dark horizontal background pattern for the paragraph.

\bgdkvert
Specifies a dark vertical background pattern for the paragraph.

\bgdkfdiag
Specifies a dark forward diagonal background pattern for the paragraph (\\\\).

\bgdkbdiag
Specifies a dark backward diagonal background pattern for the paragraph (////

).

\bgdkcross
Specifies a dark cross background pattern for the paragraph.

\bgdkdcross
Specifies a dark diagonal cross background pattern for the paragraph.

\cfpatN
N is the fill color, specified as an index into the document's color table.

\cbpatN
N is the background color of the background pattern, specified as an index into the document's color table.

Positioned Objects and Frames
The following paragraph-formatting control words specify the location of a paragraph on the page. Consecutive paragraphs with the same frame formatting are considered part of the same frame. For two framed paragraphs to appear at the same position on a page, they must be separated by a paragraph with different or no frame information.
Note that if any paragraph in a table row has any of these control words specified, then all paragraphs in the table row must have the same control words specified, either by inheriting the properties from the previous paragraph or by re-specifying the controls.
Paragraph positioning has the following syntax:

```
<apoctl>
<framesize> & <horzpos> & <vertpos> & <txtwrap> & <dropcap> & <txtflow> & \
absnoovrlp?

<framesize>
\absw? & \absh?

<horzpos>
<hframe> & <hdist>

<vertpos>
<vframe> & <vdist>

<txtwrap>
\nowrap? & \dxfrtext? & \dfrmtxtx? &\dfrmtxty?

<dropcap>
\dropcapli? & \dropcapt?

<hframe>
\phmrg? | \phpg? | \phcol?

<hdist>
\posx? | \posnegx? | \posxc? | \posxi? | \posxo? | \posxl? | \posxr?

<vframe>
\pvmrg? | \pvpg? | \pvpara?
```

```
<vdist>
\posy? | \posnegy? | \posyt? | \posyil? | \posyb? | \posyc? | \posyin? | \
posyout? & \abslock?

<txtflow>
\frmtxlrtb | \frmtxtbrl | \frmtxbtlr | \frmtxlrtbv | \frmtxtbrlv
```

Control word
Meaning

Frame Size

\abswN
N is the width of the frame in twips.

\abshN
N is the height of the frame in twips. A positive number indicates the minimum height of the frame, and a negative number indicates the exact height of the frame. A value of zero indicates that the height of the frame adjusts to the contents of the frame. This is the default for frames where no height is given.

Horizontal Position

\phmrg
Use the margin as the horizontal reference frame.

\phpg
Use the page as the horizontal reference frame.

\phcol
Use the column as the horizontal reference frame. This is the default if no horizontal reference frame is given.

\posxN
Positions the frame N twips from the left edge of the reference frame.

\posnegxN
Same as \posx but allows arbitrary negative values.

\posxc
Centers the frame horizontally within the reference frame.

\posxi
Positions the paragraph horizontally inside the reference frame.

\posxo
Positions the paragraph horizontally outside the reference frame.

\posxr
Positions the paragraph to the right within the reference frame.

\posxl

Positions the paragraph to the left within the reference frame. This is the default if no horizontal positioning information is given.

Vertical Position

\pvmrg
Positions the reference frame vertically relative to the margin. This is the default if no vertical frame positioning information is given.

\pvpg
Positions the reference frame vertically relative to the page.

\pvpara
Positions the reference frame vertically relative to the top left corner of the next unframed paragraph in the RTF stream.

\posyN
Positions the paragraph N twips from the top edge of the reference frame.

\posnegyN
Same as \posy but allows arbitrary negative values.

\posyil
Positions the paragraph vertically to be inline.

\posyt
Positions the paragraph at the top of the reference frame.

\posyc
Centers the paragraph vertically within the reference frame.

\posyb
Positions the paragraph at the bottom of the reference frame.

\posyin
Positions the paragraph vertically inside the reference frame.

\posyout
Positions the paragraph vertically outside the reference frame.

\abslockN
Lock anchor:
0
Do not lock anchor (default).
1
Locks a frame anchor to the current paragraph that it is associated with.

Text Wrapping

\nowrap
Prevents text from flowing around the positioned object.

\dxfrtextN
Distance in twips of a positioned paragraph from text in the main text flow

in all directions.

\dfrmtxtxN
N is the horizontal distance in twips from text on both sides of the frame.

\dfrmtxtyN
N is the vertical distance in twips from text on both sides of the frame.

\overlay
Text flows underneath frame.

Drop Caps

\dropcapliN
Number of lines drop cap is to occupy. The range is 1 through 10.

\dropcaptN
Type of drop cap:
1
In-text drop cap
2
Margin drop cap

Overlap

\absnoovrlpN
Allow overlap with other frames or objects with similar wrapping:
0
Allow overlap (default)
1
Do not allow overlap

Text Flow

\frmtxlrtb
Frame box flows from left to right and top to bottom (default).

\frmtxtbrl
Frame box flows right to left and top to bottom.

\frmtxbtlr
Frame box flows left to right and bottom to top.

\frmtxlrtbv
Frame box flows left to right and top to bottom, vertical.

\frmtxtbrlv
Frame box flows top to bottom and right to left, vertical.

The following is an example of absolute-positioned text in a document:

```
\par \pard \pvpg\phpg\posxc\posyt\absw5040\dxfrtest173 First APO para
\par \pard \phmrg\posxo\posyc\dxfrtext1152 Second APO para
```

Table Definitions

There is no RTF table group; instead, tables are specified as paragraph properties. A table is represented as a sequence of table rows. A table row is a continuous sequence of paragraphs partitioned into cells. The table row begins with the \trowd control word and ends with the \row control word. Every paragraph that is contained in a table row must have the \intbl control word specified or inherited from the previous paragraph. A cell may have more than one paragraph in it; the cell is terminated by a cell mark (the \cell control word), and the row is terminated by a row mark (the \row control word). Table rows can also be positioned. In this case, every paragraph in a table row must have the same positioning controls (see the <apoctl> controls on the
HYPERLINK \l "Positioned_Objects_and_Frames"

Positioned Objects and Frames
subsection of this Specification. Table properties may be inherited from the previous row; therefore, a series of table rows may be introduced by a single <tbldef>.

An RTF table row has the following syntax, as shown in the general paragraph-text syntax shown in the
HYPERLINK \l "Paragraph_Text"

Paragraph Text
section of this Specification:

```
<row>
(<tbldef> <cell>+ <tbldef> \row) | (<tbldef> <cell>+ \row) | (<cell>+ <
tbldef> \row)

<cell>
(<nestrow>? <tbldef>?) & <textpar>+ \cell

<nestrow>
<nestcell>+ ë{\*í\nesttableprops <tbldef> \nestrow ë}í

<nestcell>
<textpar>+ \nestcell
```

Note that while Word 97 emitted the row properties (<tbldef>) at the beginning of the row, a reader should not assume that this is the case. Properties can be emitted at the end, and, in fact, Word 2002 does this. To avoid breaking readers that might make the aforementioned assumption, Word 2002 will write a copy at the beginning as well, so the properties of a typical row in a Word 2002 document are repeated at the beginning and at the end of the row. Note that for nested cells, Word 2002 writes the properties at the end only.

A table definition has the following syntax:

```
<tbldef>
\trowd \irowN \irowbandN \tsN \trgaph & <rowjust>? & <rowwrite>? & <rowtop>?
& <rowbot>? & <rowleft>? & <rowright>? & <rowhor>? & <rowvert>? & <rowpos> ?
& \trleft? & \trrh? \trhdr? & \trkeep? & <rowwidth>? & <rowinv>? & \
trautofit? & <rowspc>? & <rowpad>? & \taprtl? <trrevision>? <tflags>? <
celldef>+
<rowjust>
 \trql | \trqr | \trqc

<rowwrite>
\ltrrow | \rtlrow

<rowtop>
\trbrdrt <brdr>

<rowbot>
\trbrdrl <brdr>

<rowleft>
\trbrdrb <brdr>

<rowright>
\trbrdrr <brdr>

<rowhor>
\trbrdrh <brdr>

<rowvert>
\trbrdrv <brdr>

<rowpos>
<rowhorzpos> & <rowvertpos> & <rowwrap> & \tabsnoovrlp?

<rowhorzpos>
<rowhframe>& <rowhdist>

<rowvertpos>
<rowvframe>& <rowvdist>

<rowwrap>
\tdfrmtxtLeft? & \tdfrmtxtRight? & \tdfrmtxtTop? & \tdfrmtxtBottom?

<rowhframe>
\phmrg? | \phpg? | \phcol?

<rowhdist>
\tposx? | \tposnegx? | \tposxc? | \tposxi? | \tposxo? | \tposxl? | \tposxr?

<rowvframe>
\tpvmrg? | \tpvpg? | \tpvpara?

<rowvdist>
\tposy? | \tposnegy? | \tposyt? | \tposyil? | \tposyb? | \tposyc? | tposyin
| tposyout

<rowwidth>
\trftsWidth & \trwWidth?

<rowinv>
(\trftsWidthB & \trwWidthB?)? & (\trftsWidthA & \trwWidthA?)?
```

```
<rowspc>
(\trspdl & \trspdfl?)? & (\trspdt & \trspdft?)? & (\trspdb & \trspdfb?)? & (\
trspdr & \trspdfr?)?

<rowpad>
(\trpaddl & \trpaddfl?)? & (\trpaddt & \trpaddft?)? & (\trpaddb & \
trpaddfb?)? & (\trpaddr & \trpaddfr?)?

<trrevision>
\trauthN \trdateN

<tflags>
\tbllkborder & \tbllkshading  & \tbllkfont & \tbllkcolor & \tbllkbestfit & \
tbllkhdrrows & \tbllklastrow & \tbllkhdrcols & \tbllklastcol

<celldef>
(\clmgf? & \clmrg? & \clvmgf? & \clvmrg? <celldgu>? & <celldgl>? & <
cellalign>? & <celltop>? & <cellleft>? & <cellbot>? & <cellright>? & <
cellshad>? & <cellflow>? & clFitText? & clNoWrap? & <cellwidth>? & <cellpad>
?) \cellx

<celldgu>
\cldglu <brdr>

<celldgl>
\cldgll <brdr>

<cellalign>
\clvertalt | \clvertalc | \clvertalb

<celltop>
\clbrdrt <brdr>

<cellleft>
\clbrdrl <brdr>

<cellbot>
\clbrdrb <brdr>

<cellright>
\clbrdrr <brdr>

<cellshad>
<cellpat>? \clcfpat? & \clcbpat? & \clshdng

<cellpat>
\clbghoriz | \clbgvert | \clbgfdiag | \clbgbdiag | \clbgcross | \clbgdcross |
\clbgdkhor | \clbgdkvert | \clbgdkfdiag | \clbgdkbdiag | \clbgdkcross | \
clbgdkdcross

<cellflow>
\cltxlrtb | \cltxtbrl | \cltxbtlr | \cltxlrtbv | \cltxtbrlv
```

<cellwidth>
\clftsWidth & \clwWidth?

<cellpad>
(\clpadl & \clpadfl?)? & (\clpadt & \clpadft?)? & (\clpadb & \clpadfb?)? & (\clpadr & \clpadfr?)?

Note for <tbldef> that the number of \cellxs must match the number of \cells in the \row.
The following control words further define options for each row of the table.
Control word
Meaning

\trowd
Sets table row defaults.

\irowN
N is the row index of this row.

\irowbandN
N is the row index of the row, adjusted to account for header rows. A header row has a value of ñ1.

\row
Denotes the end of a row.

\lastrow
Output if this is the last row in the table.

\tcelld
Sets table cell defaults.

\nestcell
Denotes the end of a nested cell.

\nestrow
Denotes the end of a nested row.

\nesttableprops
Defines the properties of a nested table. This is a destination control word.

\nonesttables
Contains text for readers that do not understand nested tables. This destination should be ignored by readers that support nested tables.

\trgaphN
Half the space between the cells of a table row in twips.

\cellxN
Defines the right boundary of a table cell, including its half of the space between cells.

\cell

Denotes the end of a table cell.

\clmgf
The first cell in a range of table cells to be merged.

\clmrg
Contents of the table cell are merged with those of the preceding cell.

\clvmgf
The first cell in a range of table cells to be vertically merged.

\clvmrg
Contents of the table cell are vertically merged with those of the preceding cell.

Table Row Revision Tracking

\trauthN
With revision tracking enabled, this control word identifies the author of changes to a table rowís properties. N refers to a value in the revision table.

\trdateN
With revision tracking enabled, this control word identifies the date on which a revision was made.

Autoformatting Flags

\tbllkborder
Flag sets table autoformat to format borders.

\tbllkshading
Flag sets table autoformat to affect shading.

\tbllkfont
Flag sets table autoformat to affect font.

\tbllkcolor
Flag sets table autoformat to affect color.

\tbllkbestfit
Flag sets table autoformat to apply best fit.

\tbllkhdrrows
Flag sets table autoformat to format the first (header) row.

\tbllklastrow
Flag sets table autoformat to format the last row.

\tbllkhdrcols
Flag sets table autoformat to format the first (header) column.

\tbllklastcol
Flag sets table autoformat to format the last column.

Row Formatting

\taprtl
Table direction is right to left.

\trautofitN
AutoFit:
0
No AutoFit (default).
1
AutoFit is on for the row. Overridden by \clwWidthN and \trwWidthN in any table row.

\trhdr
Table row header. This row should appear at the top of every page on which the current table appears.

\trkeep
Keep table row together. This row cannot be split by a page break. This property is assumed to be off unless the control word is present.

\trkeepfollow
Keep row in the same page as the following row.

\trleftN
Position in twips of the leftmost edge of the table with respect to the left edge of its column.

\trqc
Centers a table row with respect to its containing column.

\trql
Left-justifies a table row with respect to its containing column.

\trqr
Right-justifies a table row with respect to its containing column.

\trrhN
Height of a table row in twips. When 0, the height is sufficient for all the text in the line; when positive, the height is guaranteed to be at least the specified height; when negative, the absolute value of the height is used, regardless of the height of the text in the line.

\trpaddbN
Default bottom cell margin or padding for the row.

\trpaddlN
Default left cell margin or padding for the row.

\trpaddrN
Default right cell margin or padding for the row.

\trpaddtN

Default top cell margin or padding for the row.

\trpaddfbN
Units for \trpaddbN:
0
Null. Ignore \trpaddbN in favor of \trgaph (Word 97 style padding).
3
Twips.

\trpaddflN
Units for \trpaddlN:
0
Null. Ignore \trpaddlN in favor of \trgaph (Word 97 style padding).
3
Twips.

\trpaddfrN
Units for \trpaddrN:
0
Null. Ignore \trpaddrN in favor of \trgaph (Word 97 style padding).
3
Twips.

\trpaddftN
Units for \trpaddtN:
0
Null. Ignore \trpaddtN in favor of \trgaph (Word 97 style padding).
3
Twips.

\trspdlN
Default left cell spacing for the row. The total horizontal spacing between adjacent cells is equal to the sum of \trspdlN from the rightmost cell and \trspdrN from the leftmost cell, both of which will have the same value when written by Word.

\trspdtN
Default top cell spacing for the row. The total horizontal spacing between adjacent cells is equal to the sum of \trspdtN from the bottom cell and \trspdbN from the top cell, both of which will have the same value when written by Word.

\trspdbN
Default bottom cell spacing for the row. The total horizontal spacing between adjacent cells is equal to the sum of \trspdtN from the bottom cell and \trspdbN from the top cell, both of which will have the same value when written by Word.

\trspdrN
Default right cell spacing for the row. The total horizontal spacing between adjacent cells is equal to the sum of \trspdlN from the rightmost cell and \trspdrN from the leftmost cell, both of which will have the same value when written by Word.

\trspdflN
Units for \trspdlN:
0
Null. Ignore \trspdlN.
3
Twips.

\trspdftN
Units for \trspdtN:
0
Null. Ignore \trspdtN.
3
Twips.

\trspdfbN
Units for \trspdbN:
0
Null. Ignore \trspdbN.
3
Twips.

\trspdfrN
Units for \trspdrN:
0
Null. Ignore \trspdrN.
3
Twips.

\trwWidthN
Preferred row width. Overrides \trautofitN.

\trftsWidthN
Units for \clwWidthN:
0
Null. Ignore \trwWidth in favor of \cellx (Word 97 style of determining cell and row width)
1
Auto, no preferred row width, ignores \clwWidthN if present; \clwWidthN will generally not be written, giving precedence to row defaults and autofit.
2
Percentage (in 50ths of a percent).
3
Twips.

\trwWidthBN
Width of invisible cell at the beginning of the row. Used only in cases where rows have different widths.

\trftsWidthBN
Units for \clwWidthBN:
0
Null. No invisible cell before.
1
Auto. ignores \clwWidthBN if present; \clwWidthBN will generally not be

written.
2
Percentage (in 50ths of a percent).
3
Twips.

\trwWidthAN
Width of invisible cell at the end of the row. Used only in cases where rows have different widths.

\trftsWidthAN
Units for \clwWidthBN:
0
Null. No invisible cell after.
1
Auto, ignores \clwWidthBN if present; \clwWidthBN will generally not be written.
2
Percentage (in 50ths of a percent).
3
Twips.

Row Shading and Background Color

\trcbpatN
Background pattern color for the table row shading.

\trcfpatN
Foreground pattern color for the table row shading.

\trpatN
Pattern for table row shading.

\trshdngN
Percentage shading for table row shading.

\trbgbdiag
Backward diagonal pattern.

\trbgcross
Cross pattern.

\trbgdcross
Diagonal cross pattern.

\trbgdkbdiag
Dark backward diagonal pattern.

\trbgdkcross
Dark cross pattern.

\trbgdkdcross
Dark diagonal cross pattern.

\trbgdkfdiag
Dark forward diagonal pattern.

\trbgdkhor
Dark horizontal pattern.

\trbgdkvert
Dark vertical pattern.

\trbgfdiag
Forward diagonal pattern.

\trbghoriz
Horizontal pattern.

\trbgvert
Vertical pattern.

Cell Formatting

\clFitText
Fit text in cell, compressing each paragraph to the width of the cell.

\clNoWrap
Do not wrap text for the cell. Only has an effect if the table cell does not have a preferred \clwWidthN, which overrides \trautofitN.

\clpadlN
Left cell margin or padding. Overrides \trpaddlN.

\clpadtN
Top cell margin or padding. Overrides \trpaddtN.

\clpadbN
Bottom cell margin or padding. Overrides \trpaddbN.

\clpadrN
Right cell margin or padding. Overrides \trpaddrN.

\clpadflN
Units for \clpadlN:
0
Null. Ignore \clpadl in favor of \trgaph (Word 97 style cell padding).
3
Twips.

\clpadftN
Units for \clpadtN:
0
Null. Ignore \clpadt in favor of \trgaph (Word 97 style cell padding).
3
Twips.

\clpadfbN

Units for \clpadbN:
0
Null. Ignore \clpadb in favor of \trgaph (Word 97 style cell padding).
3
Twips.

\clpadfrN
Units for \clpadrN:
0
Null. Ignore \clpadr in favor of \trgaph (Word 97 style cell padding).
3
Twips.

\clwWidthN
Preferred cell width. Overrides \trautofitN.

\clftsWidthN
Units for \clwWidthN:
0
Null. Ignore \clwWidth in favor of \cellx (Word 97 style of determining cell and row width).
1
Auto, no preferred cell width, ignores \clwWidthN if present; \clwWidthN will generally not be written, giving precedence to row defaults.
2
Percentage (in 50ths of a percent).
3
Twips.

Positioned Wrapped Tables (The following properties must be the same for all rows in the table.)

\tdfrmtxtLeftN
Distance in twips, between the left of the table and surrounding text (the default is 0).

\tdfrmtxtRightN
Distance in twips, between the right of the table and surrounding text (the default is 0).

\tdfrmtxtTopN
Distance in twips, between the top of the table and surrounding text (the default is 0).

\tdfrmtxtBottomN
Distance in twips, between the bottom of the table and surrounding text (the default is 0).

\tabsnoovrlp
Do not allow the table to overlap with other tables or shapes with similar wrapping not contained within it.

\tphcol
Use the column as the horizontal reference frame. This is the default if no

horizontal table positioning information is given.

\tphmrg
Use the margin as the horizontal reference frame.

\tphpg
Use the page as the horizontal reference frame.

\tposnegxN
Same as \tposx but allows arbitrary negative values.

\tposnegyN
Same as \tposy but allows arbitrary negative values.

\tposxN
Positions the table N twips from the left edge of the horizontal reference frame.

\tposxc
Centers the table within the horizontal reference frame.

\tposxi
Positions the table inside the horizontal reference frame.

\tposxl
Positions the table at the left of the horizontal reference frame.

\tposxo
Positions the table outside the horizontal reference frame.

\tposxr
Positions the table at the right of the horizontal reference frame.

\tposy
Positions the table N twips from the top edge of the vertical reference frame.

\tposyb
Positions the table at the bottom of the vertical reference frame.

\tposyc
Centers the table within the vertical reference frame

\tposyil
Positions the table to be inline.

\tposyin
Positions the table inside within the vertical reference frame.

\tposyout
Positions the table outside within the vertical reference frame.

\tposyt
Positions the table at the top of the vertical reference frame.

\tpvmrg
Positions the table vertically relative to the top margin. This is the default if no vertical table positioning information is given.

\tpvpara
Positions the table vertically relative to the top left corner of the next unframed paragraph in the stream.

\tpvpg
Positions the table vertically relative to the top of the page.

Bidirectional Controls

\rtlrow
Cells in this table row will have right-to-left precedence.

\ltrrow
Cells in this table row will have left-to-right precedence (the default).

Row Borders

\trbrdrt
Table row border top.

\trbrdrl
Table row border left.

\trbrdrb
Table row border bottom.

\trbrdrr
Table row border right.

\trbrdrh
Table row border horizontal (inside).

\trbrdrv
Table row border vertical (inside).

Cell Borders

\brdrnil
No border specified.

\clbrdrb
Bottom table cell border.

\clbrdrt
Top table cell border.

\clbrdrl
Left table cell border.

\clbrdrr
Right table cell border.

\cldglu
Diagonal line (top left to bottom right).

\cldgll
Diagonal line (top right to bottom left).

Cell Shading and Background Pattern

\clshdrawnil
No shading specified.

\clshdngN
N is the shading of a table cell in hundredths of a percent. This control should be included in RTF along with cell border information.

\clshdngrawN
Same as \clshdngN for use with table styles.

\clbghoriz
Specifies a horizontal background pattern for the cell.

\rawclbghoriz
Same as \clbghoriz for use with table styles.

\clbgvert
Specifies a vertical background pattern for the cell.

\rawclbgvert
Same as \clbgvert for use with table styles.

\clbgfdiag
Specifies a forward diagonal background pattern for the cell (\\\\).

\rawclbgfdiag
Same as \clbgfdiag for use with table styles.

\clbgbdiag
Specifies a backward diagonal background pattern for the cell (////).

\rawclbgbdiag
Same as \clbgbdiag for use with table styles.

\clbgcross
Specifies a cross background pattern for the cell.

\rawclbgcross
Same as \clbgcross for use with table styles.

\clbgdcross
Specifies a diagonal cross background pattern for the cell.

\rawclbgdcross
Same as clbgdcross for use with table styles.

\clbgdkhor
Specifies a dark horizontal background pattern for the cell.

\rawclbgdkhor
Same as \clbgdkhor for use with table styles.

\clbgdkvert
Specifies a dark vertical background pattern for the cell.

\rawclbgdkvert
Same as \clbgdkvert for use with table styles.

\clbgdkfdiag
Specifies a dark forward diagonal background pattern for the cell (\\\\).

\rawclbgdkfdiag
Same as \clbgdkfdiag for use with table styles.

\clbgdkbdiag
Specifies a dark backward diagonal background pattern for the cell (////).

\rawclbgdkbdiag
Same as \clbgdkbdiag for use with table styles.

\clbgdkcross
Specifies a dark cross background pattern for the cell.

\rawclbgdkcross
Same as \clbgdkcross for use with table styles.

\clbgdkdcross
Specifies a dark diagonal cross background pattern for the cell.

\rawclbgdkdcross
Same as \clbgdkdcross for use with table styles.

\clcfpatN
N is the line color of the background pattern.

\clcfpatrawN
Same as \clcfpatN for use with table styles.

\clcbpatN
N is the background color of the background pattern.

\clcbpatrawN
Same as \clcbpatN for use with table styles.

Cell Vertical Text Alignment

\clvertalt

Text is top-aligned in cell (the default).

\clvertalc
Text is centered vertically in cell.

\clvertalb
Text is bottom-aligned in cell.

Cell Text Flow

\cltxlrtb
Text in a cell flows from left to right and top to bottom (default).

\cltxtbrl
Text in a cell flows right to left and top to bottom.

\cltxbtlr
Text in a cell flows left to right and bottom to top.

\cltxlrtbv
Text in a cell flows left to right and top to bottom, vertical.

\cltxtbrlv
Text in a cell flows top to bottom and right to left, vertical.

Example

The following is an example of a complex Word 2000 table RTF. It does not take account of the table styles implemented in Word 2002. The BMP showing the tableís look and position is followed by the corresponding RTF, which is followed by a piece-by-piece analysis of the RTF.

The image shows a freely positioned Word table, with two cells at an offset. Inside the topmost cell is a nested table. The table has green borders, yellow shading, a small amount of spacing between cells, and inner cell margins or padding.

The following is the RTF for this table as emitted by Word 2000. Word 2000 also emits RTF that older readers (such as previous versions of Word) can understand, so new features degrade nicely.

```
\trowd \trgaph115\trleft388\trbrdrt\brdrs\brdrw15\brdrcf11 \trbrdrl\brdrs\
brdrw15\brdrcf11 \trbrdrb\brdrs\brdrw15\brdrcf11 \trbrdrr\brdrs\brdrw15\
brdrcf11
\trbrdrh\brdrs\brdrw15\brdrcf11 \trbrdrv\brdrs\brdrw15\brdrcf11
\tphmrg\tposxc\tposyc\tdfrmtxtLeft187\tdfrmtxtRight187\trftsWidth1\
trftsWidthB3\trwWidthB504\trftsWidthA3\trautofit1\trspdl14\trspdt14\trspdb14\
trspdr14\trspdfl3\trspdft3\trspdfb3\trspdfr3\trpaddl115\trpaddr115\trpaddfl3\
trpaddfr3 \clvertalc\clbrdrt
\brdrs\brdrw15\brdrcf11 \clbrdrl\brdrs\brdrw15\brdrcf11 \clbrdrb\brdrs\
brdrw15\brdrcf11 \clbrdrr\brdrs\brdrw15\brdrcf11 \clcbpat17\cltxlrtb\
clftsWidth3\clwWidth4644 \cellx5074\pard\plain
\qc \li0\ri0\widctlpar\intbl\phmrg\posxc\posyc\dxfrtext187\dfrmtxtx187\
dfrmtxty0\aspalpha\aspnum\faauto\adjustright\rin0\lin0 \fs24\lang1033\
langfe2052\loch\af0\hich\af0\dbch\af17\cgrid\langnp1033\langfenp2052 {\hich\
af0\dbch\af17\loch\f0 CELL ONE
\par }\pard \qc \li0\ri0\widctlpar\intbl\phmrg\posxc\posyc\dxfrtext187\
dfrmtxtx187\dfrmtxty0\aspalpha\aspnum\faauto\adjustright\rin0\lin0\itap2 {\
hich\af0\dbch\af17\loch\f0 NESTED TABLE\nestcell{\nonesttables
\par }}\pard \ql \li0\ri0\widctlpar\intbl\aspalpha\aspnum\faauto\adjustright\
rin0\lin0\itap2 {{\*\nesttableprops\trowd \trgaph108\trleft8\trbrdrt\brdrs\
brdrw15\brdrcf11 \trbrdrl\brdrs\brdrw15\brdrcf11 \trbrdrb\brdrs\brdrw15\
brdrcf11 \trbrdrr
\brdrs\brdrw15\brdrcf11 \trbrdrh\brdrs\brdrw15\brdrcf11 \trbrdrv\brdrs\
brdrw15\brdrcf11 \trftsWidth1\trautofit1\trpaddl108\trpaddr108\trpaddfl3\
trpaddfr3 \clvertalt\clbrdrt\brdrs\brdrw15\brdrcf11 \clbrdrl\brdrs\brdrw15\
brdrcf11 \clbrdrb
\brdrs\brdrw15\brdrcf11 \clbrdrr\brdrs\brdrw15\brdrcf11 \cltxlrtb\
clftsWidth3\clwWidth2340 \cellx2348\nestrow}{\nonesttables
\par }}\trowd \trgaph115\trleft388\trbrdrt\brdrs\brdrw15\brdrcf11 \trbrdrl\
brdrs\brdrw15\brdrcf11 \trbrdrb\brdrs\brdrw15\brdrcf11 \trbrdrr\brdrs\
brdrw15\brdrcf11 \trbrdrh\brdrs\brdrw15\brdrcf11 \trbrdrv\brdrs\brdrw15\
brdrcf11
\tphmrg\tposxc\tposyc\tdfrmtxtLeft187\tdfrmtxtRight187\trftsWidth1\
trftsWidthB3\trwWidthB504\trftsWidthA3\trautofit1\trspdl14\trspdt14\trspdb14\
trspdr14\trspdfl3\trspdft3\trspdfb3\trspdfr3\trpaddl115\trpaddr115\trpaddfl3\
trpaddfr3 \clvertalc\clbrdrt
\brdrs\brdrw15\brdrcf11 \clbrdrl\brdrs\brdrw15\brdrcf11 \clbrdrb\brdrs\
brdrw15\brdrcf11 \clbrdrr\brdrs\brdrw15\brdrcf11 \clcbpat17\cltxlrtb\
clftsWidth3\clwWidth4644 \cellx5074\pard
\qc \li0\ri0\widctlpar\intbl\phmrg\posxc\posyc\dxfrtext187\dfrmtxtx187\
dfrmtxty0\aspalpha\aspnum\faauto\adjustright\rin0\lin0 {\cell }\pard \ql \
li0\ri0\widctlpar\intbl\aspalpha\aspnum\faauto\adjustright\rin0\lin0 {\trowd
\trgaph115\trleft388\trbrdrt
\brdrs\brdrw15\brdrcf11 \trbrdrl\brdrs\brdrw15\brdrcf11 \trbrdrb\brdrs\
brdrw15\brdrcf11 \trbrdrr\brdrs\brdrw15\brdrcf11 \trbrdrh\brdrs\brdrw15\
brdrcf11 \trbrdrv\brdrs\brdrw15\brdrcf11
\tphmrg\tposxc\tposyc\tdfrmtxtLeft187\tdfrmtxtRight187\trftsWidth1\
trftsWidthB3\trwWidthB504\trftsWidthA3\trautofit1\trspdl14\trspdt14\trspdb14\
trspdr14\trspdfl3\trspdft3\trspdfb3\trspdfr3\trpaddl115\trpaddr115\trpaddfl3\
trpaddfr3 \clvertalc\clbrdrt
\brdrs\brdrw15\brdrcf11 \clbrdrl\brdrs\brdrw15\brdrcf11 \clbrdrb\brdrs\
brdrw15\brdrcf11 \clbrdrr\brdrs\brdrw15\brdrcf11 \clcbpat17\cltxlrtb\
clftsWidth3\clwWidth4644 \cellx5074\row }\trowd \trgaph115\trleft-158\
trbrdrt\brdrs\brdrw15\brdrcf11 \trbrdrl
\brdrs\brdrw15\brdrcf11 \trbrdrb\brdrs\brdrw15\brdrcf11 \trbrdrr\brdrs\
brdrw15\brdrcf11 \trbrdrh\brdrs\brdrw15\brdrcf11 \trbrdrv\brdrs\brdrw15\
brdrcf11
\tphmrg\tposxc\tposyc\tdfrmtxtLeft187\tdfrmtxtRight187\trftsWidth1\
trftsWidthB3\trftsWidthA3\trwWidthA900\trautofit1\trspdl14\trspdt14\trspdb14\
trspdr14\trspdfl3\trspdft3\trspdfb3\trspdfr3\trpaddl115\trpaddr115\trpaddfl3\
trpaddfr3 \clvertalt\clbrdrt
\brdrs\brdrw15\brdrcf11 \clbrdrl\brdrs\brdrw15\brdrcf11 \clbrdrb\brdrs\
brdrw15\brdrcf11 \clbrdrr\brdrs\brdrw15\brdrcf11 \clcbpat17\cltxlrtb\
clftsWidth3\clwWidth4248 \cellx4132\pard
```

```
\ql \li0\ri0\widctlpar\intbl\phmrg\posxc\posyc\dxfrtext187\dfrmtxtx187\
dfrmtxty0\aspalpha\aspnum\faauto\adjustright\rin0\lin0 {\hich\af0\dbch\af17\
loch\f0 CELL TWO\cell }\pard \ql \li0\ri0\widctlpar\intbl\aspalpha\aspnum\
faauto\adjustright\rin0\lin0 {
\trowd \trgaph115\trleft-158\trbrdrt\brdrs\brdrw15\brdrcf11 \trbrdrl\brdrs\
brdrw15\brdrcf11 \trbrdrb\brdrs\brdrw15\brdrcf11 \trbrdrr\brdrs\brdrw15\
brdrcf11 \trbrdrh\brdrs\brdrw15\brdrcf11 \trbrdrv\brdrs\brdrw15\brdrcf11
\tphmrg\tposxc\tposyc\tdfrmtxtLeft187\tdfrmtxtRight187\trftsWidth1\
trftsWidthB3\trftsWidthA3\trwWidthA900\trautofit1\trspdl14\trspdt14\trspdb14\
trspdr14\trspdfl3\trspdft3\trspdfb3\trspdfr3\trpaddl115\trpaddr115\trpaddfl3\
trpaddfr3 \clvertalt\clbrdrt
\brdrs\brdrw15\brdrcf11 \clbrdrl\brdrs\brdrw15\brdrcf11 \clbrdrb\brdrs\
brdrw15\brdrcf11 \clbrdrr\brdrs\brdrw15\brdrcf11 \clcbpat17\cltxlrtb\
clftsWidth3\clwWidth4248 \cellx4132\row }
```

The following is an analysis of the preceding RTF. It has been restructured for ease of explanation. All text in red are comments. The topmost cell is cell 1 (inside row 1). The bottom cell is cell 2 (inside row 2).

Begin table row defaults for row 1.

```
\trowd
```

```
\trgaph115
\trleft388
```

Row borders

```
\trbrdrt\brdrs\brdrw15\brdrcf11 \trbrdrl\brdrs\brdrw15\brdrcf11 \trbrdrb\
brdrs\brdrw15\brdrcf11 \trbrdrr\brdrs\brdrw15\brdrcf11
\trbrdrh\brdrs\brdrw15\brdrcf11 \trbrdrv\brdrs\brdrw15\brdrcf11
```

Absolute positioning of the table. All rows should have the same positioning.

```
\tphmrg\tposxc\tposyc\tdfrmtxtLeft187\tdfrmtxtRight187
```

Width of invisible cell before cell one (to simulate offset)

```
\trftsWidth1\trftsWidthB3\trwWidthB504\trftsWidthA3
```

Autofit is on.

```
\trautofit1
```

Default cell spacing for the row

```
\trspdl14\trspdt14\trspdb14\trspdr14\trspdfl3\trspdft3\trspdfb3\trspdfr3\
trpaddl115\trpaddr115\trpaddfl3\trpaddfr3
```

Cell 1 definition begins.

Vertical alignment of contents

```
\clvertalc
```

Cell borders

```
\clbrdrt\brdrs\brdrw15\brdrcf11 \clbrdrl\brdrs\brdrw15\brdrcf11 \clbrdrb\
brdrs\brdrw15\brdrcf11 \clbrdrr\brdrs\brdrw15\brdrcf11
```

Cell shading

```
\clcbpat17
```

Cell text flow

```
\cltxlrtb
```

Cell width, using new properties and old ones

```
\clftsWidth3\clwWidth4644 \cellx5074
```

Text for cell 1 begins here. Includes paragraph absolute positioning equivalent to the table absolute positioning above so that old readers get it right.

```
\pard\plain \qc \li0\ri0\widctlpar\intbl\phmrg\posxc\posyc\dxfrtext187\
dfrmtxtx187\dfrmtxty0\aspalpha\aspnum\faauto\adjustright\rin0\lin0 \fs24\
lang1033\langfe2052\loch\af0\hich\af0\dbch\af17\cgrid\langnp1033\langfenp2052
{\hich\af0\dbch\af17\loch\f0 CELL ONE
\par }
```

Begin definition of nested table inside cell 1.

```
\pard \qc \li0\ri0\widctlpar\intbl\phmrg\posxc\posyc\dxfrtext187\dfrmtxtx187\
dfrmtxty0\aspalpha\aspnum\faauto\adjustright\rin0\lin0
```

Notice itap is set to 2, indicating second nesting level.

```
\itap2
```

Nested cell ends with a \nestcell and is followed by a paragraph mark inside a \nonesttables destination, which is only read by readers that do not understand nested tables. This way the text in the nested table is in its own paragraph.

```
{\hich\af0\dbch\af17\loch\f0 NESTED TABLE\nestcell{\nonesttables
\par }}\pard \ql \li0\ri0\widctlpar\intbl\aspalpha\aspnum\faauto\adjustright\
rin0\lin0\itap2
```

Nested table properties occur after the text for the nested cell.

```
{{\*\nesttableprops\trowd \trgaph108\trleft8\trbrdrt\brdrs\brdrw15\brdrcf11 \
trbrdrl\brdrs\brdrw15\brdrcf11 \trbrdrb\brdrs\brdrw15\brdrcf11 \trbrdrr
\brdrs\brdrw15\brdrcf11 \trbrdrh\brdrs\brdrw15\brdrcf11 \trbrdrv\brdrs\
brdrw15\brdrcf11 \trftsWidth1\trautofit1\trpaddl108\trpaddr108\trpaddfl3\
trpaddfr3 \clvertalt\clbrdrt\brdrs\brdrw15\brdrcf11 \clbrdrl\brdrs\brdrw15\
brdrcf11 \clbrdrb
\brdrs\brdrw15\brdrcf11 \clbrdrr\brdrs\brdrw15\brdrcf11 \cltxlrtb\
clftsWidth3\clwWidth2340 \cellx2348\nestrow}{\nonesttables
\par }}
```

End of nested table properties

Set the default for the row again after nested table! Weíre still in the first row, and this repeats what was written in the beginning of the row. Defaults of the table are reset and the cell is closed with a \cell.

```
\trowd \trgaph115\trleft388\trbrdrt\brdrs\brdrw15\brdrcf11 \trbrdrl\brdrs\
brdrw15\brdrcf11 \trbrdrb\brdrs\brdrw15\brdrcf11 \trbrdrr\brdrs\brdrw15
cf11 \trbrdrh\brdrs\brdrw15\brdrcf11 \trbrdrv\brdrs\brdrw15\brdrcf11
\tphmrg\tposxc\tposyc\tdfrmtxtLeft187\tdfrmtxtRight187\trftsWidth1\
trftsWidthB3\trwWidthB504\trftsWidthA3\trautofit1\trspdl14\trspdt14\trspdb14\
trspdr14\trspdfl3\trspdft3\trspdfb3\trspdfr3\trpaddl115\trpaddr115\trpaddfl3\
trpaddfr3 \clvertalc\clbrdrt
\brdrs\brdrw15\brdrcf11 \clbrdrl\brdrs\brdrw15\brdrcf11 \clbrdrb\brdrs\
brdrw15\brdrcf11 \clbrdrr\brdrs\brdrw15\brdrcf11 \clcbpat17\cltxlrtb\
clftsWidth3\clwWidth4644 \cellx5074\pard
\qc \li0\ri0\widctlpar\intbl\phmrg\posxc\posyc\dxfrtext187\dfrmtxtx187\
dfrmtxty0\aspalpha\aspnum\faauto\adjustright\rin0\lin0 {\cell }\pard \ql \
li0\ri0\widctlpar\intbl\aspalpha\aspnum\faauto\adjustright\rin0\lin0
```

This is the end of the table cell.

Now the row ends, repeating the defaults of the row at the end of it!

```
{\trowd \trgaph115\trleft388\trbrdrt
\brdrs\brdrw15\brdrcf11 \trbrdrl\brdrs\brdrw15\brdrcf11 \trbrdrb\brdrs\
brdrw15\brdrcf11 \trbrdrr\brdrs\brdrw15\brdrcf11 \trbrdrh\brdrs\brdrw15\
brdrcf11 \trbrdrv\brdrs\brdrw15\brdrcf11
\tphmrg\tposxc\tposyc\tdfrmtxtLeft187\tdfrmtxtRight187\trftsWidth1\
trftsWidthB3\trwWidthB504\trftsWidthA3\trautofit1\trspdl14\trspdt14\trspdb14\
trspdr14\trspdfl3\trspdft3\trspdfb3\trspdfr3\trpaddl115\trpaddr115\trpaddfl3\
trpaddfr3 \clvertalc\clbrdrt
\brdrs\brdrw15\brdrcf11 \clbrdrl\brdrs\brdrw15\brdrcf11 \clbrdrb\brdrs\
brdrw15\brdrcf11 \clbrdrr\brdrs\brdrw15\brdrcf11 \clcbpat17\cltxlrtb\
clftsWidth3\clwWidth4644 \cellx5074\row }
```

END OF ROW 1

Row 2 begins here and is structured similarly.

Row defaults

```
\trowd \trgaph115\trleft-158\trbrdrt\brdrs\brdrw15\brdrcf11 \trbrdrl
\brdrs\brdrw15\brdrcf11 \trbrdrb\brdrs\brdrw15\brdrcf11 \trbrdrr\brdrs\
brdrw15\brdrcf11 \trbrdrh\brdrs\brdrw15\brdrcf11 \trbrdrv\brdrs\brdrw15\
brdrcf11
```

Absolute positioning for the table row, matching the previous one

```
\tphmrg\tposxc\tposyc\tdfrmtxtLeft187\tdfrmtxtRight187\trftsWidth1\
trftsWidthB3\trftsWidthA3\trwWidthA900\trautofit1\trspdl14\trspdt14\trspdb14\
trspdr14\trspdfl3\trspdft3\trspdfb3\trspdfr3\trpaddl115\trpaddr115\trpaddfl3\
trpaddfr3
```

Cell 2 properties

```
\clvertalt\clbrdrt
\brdrs\brdrw15\brdrcf11 \clbrdrl\brdrs\brdrw15\brdrcf11 \clbrdrb\brdrs\
brdrw15\brdrcf11 \clbrdrr\brdrs\brdrw15\brdrcf11 \clcbpat17\cltxlrtb\
clftsWidth3\clwWidth4248 \cellx4132
```

Cell 2 text

```
\pard
\ql \li0\ri0\widctlpar\intbl\phmrg\posxc\posyc\dxfrtext187\dfrmtxtx187\
dfrmtxty0\aspalpha\aspnum\faauto\adjustright\rin0\lin0 {\hich\af0\dbch\af17\
loch\f0 CELL TWO\cell }\pard \ql \li0\ri0\widctlpar\intbl\aspalpha\aspnum\
faauto\adjustright\rin0\lin0
```

End cell 2 text

Now the row ends, repeating the defaults of the row at the end of it!

```
{\trowd \trgaph115\trleft-158\trbrdrt\brdrs\brdrw15\brdrcf11 \trbrdrl\brdrs\
brdrw15\brdrcf11 \trbrdrb\brdrs\brdrw15\brdrcf11 \trbrdrr\brdrs\brdrw15\
brdrcf11 \trbrdrh\brdrs\brdrw15\brdrcf11 \trbrdrv\brdrs\brdrw15\brdrcf11
\tphmrg\tposxc\tposyc\tdfrmtxtLeft187\tdfrmtxtRight187\trftsWidth1\
trftsWidthB3\trftsWidthA3\trwWidthA900\trautofit1\trspdl14\trspdt14\trspdb14\
trspdr14\trspdfl3\trspdft3\trspdfb3\trspdfr3\trpaddl115\trpaddr115\trpaddfl3\
trpaddfr3 \clvertalt\clbrdrt
\brdrs\brdrw15\brdrcf11 \clbrdrl\brdrs\brdrw15\brdrcf11 \clbrdrb\brdrs\
brdrw15\brdrcf11 \clbrdrr\brdrs\brdrw15\brdrcf11 \clcbpat17\cltxlrtb\
clftsWidth3\clwWidth4248 \cellx4132\row }
END OF ROW TWO
```

Table Styles Example

Here is the stylesheet with one table style highlighted. Note that a single table style can have multiple entries. \ts11 is the default table style. This style gives the first row a fill color and font attributes. Every subsequent odd row is filled with pale yellow.

```
{\stylesheet{\ql \li0\ri0\widctlpar\aspalpha\aspnum\faauto\adjustright\rin0\
lin0\itap0 \fs24\lang1033\langfe1033\cgrid\langnp1033\langfenp1033 \snext0
Normal;}{\*\cs10 \additive \ssemihidden Default Paragraph Font;}{\*\ts11\
tsrowd\trftsWidthB3\trpaddl108\trpaddr108\trpaddfl3\trpaddft3\trpaddfb3\
trpaddfr3\tscellwidthfts0\tsvertalt\tsbrdrt\tsbrdrl\tsbrdrb\tsbrdrr\
tsbrdrdgl\tsbrdrdgr\tsbrdrh\tsbrdrv \ql \li0\ri0\widctlpar\aspalpha\aspnum\
faauto\adjustright\rin0\lin0\itap0 \fs20\lang1024\langfe1024\cgrid\
langnp1024\langfenp1024 \snext11 \ssemihidden Normal Table;}{\*\ts15\tsrowd\
trbrdrt\brdrs\brdrw10 \trbrdrl\brdrs\brdrw10 \trbrdrb\brdrs\brdrw10 \trbrdrr\
brdrs\brdrw10 \trbrdrh\brdrs\brdrw10 \trbrdrv\brdrs\brdrw10 \trftsWidthB3\
trpaddl108\trpaddr108\trpaddfl3\trpaddft3\trpaddfb3\trpaddfr3\
tscellwidthfts0\tsvertalt\tsbrdrt\tsbrdrl\tsbrdrb\tsbrdrr\tsbrdrdgl\
tsbrdrdgr\tsbrdrh\tsbrdrv \ql \li0\ri0\widctlpar\aspalpha\aspnum\faauto\
adjustright\rin0\lin0\itap0 \fs20\lang1024\langfe1024\cgrid\langnp1024\
langfenp1024 \sbasedon11 \snext15 \styrsid353782 Table Grid;}{\*\ts16\tsrowd\
trbrdrt\brdrs\brdrw15\brdrcf1 \trbrdrl\brdrs\brdrw15\brdrcf1
\trbrdrb\brdrs\brdrw15\brdrcf1 \trbrdrr\brdrs\brdrw15\brdrcf1 \trbrdrv\brdrs\
brdrw15\brdrcf1 \trftsWidthB3\trpaddl108\trpaddr108\trpaddfl3\trpaddft3\
trpaddfb3\trpaddfr3\tscbandsh1\tscellwidthfts0\tsvertalt\tsbrdrt\tsbrdrl\
tsbrdrb\tsbrdrr\tsbrdrdgl\tsbrdrdgr\tsbrdrh\tsbrdrv \ql \li0\ri0\widctlpar\
aspalpha\aspnum\faauto\adjustright\rin0\lin0\itap0
\fs20\lang1024\langfe1024\cgrid\langnp1024\langfenp1024 \sbasedon11 \snext16
\styrsid353782 Table List 8;}{\*\ts16\tsrowd\tscellcfpat7\tscellcbpat8\
tscellpct10000\tsbrdrb\brdrs\brdrw15\brdrcf1 \tsbrdrdgl\brdrnil\tsbrdrdgr\
brdrnil \b\i \tscfirstrow Table List 8;}{\*\ts16\tsrowd\tsbrdrt\brdrs\
brdrw15\brdrcf1 \tsbrdrdgl\brdrnil\tsbrdrdgr\brdrnil \b \tsclastrow Table
List 8;}{\*\ts16\tsrowd\tsbrdrdgl\brdrnil\tsbrdrdgr\brdrnil \b \tscfirstcol
Table List 8;}{\*\ts16\tsrowd\tsbrdrdgl\brdrnil\tsbrdrdgr\brdrnil \b \
tsclastcol Table List 8;}{\*\ts16\tsrowd\tscellcfpat7\tscellcbpat8\
tscellpct2500\tsbrdrdgl\brdrnil\tsbrdrdgr\brdrnil \cf0 \tscbandhorzodd Table
List 8;}{\*\ts16\tsrowd\tscellcfpat6\tscellcbpat8\tscellpct5000\tsbrdrdgl\
brdrnil\tsbrdrdgr\brdrnil \tscbandhorzeven Table List 8;}{\*\ts17\tsrowd\
trbrdrt\brdrs\brdrw10 \trbrdrl\brdrs\brdrw10 \trbrdrb\brdrs\brdrw10 \trbrdrr\
brdrs\brdrw10 \trbrdrh\brdrs\brdrw10 \trbrdrv\brdrs\brdrw10 \trftsWidthB3\
trpaddl108\trpaddr108\trpaddfl3\trpaddft3\trpaddfb3\trpaddfr3\tscbandsh1\
tscellwidthfts0\tsvertalc\tsbrdrt\tsbrdrl\tsbrdrb\tsbrdrr\tsbrdrdgl\
tsbrdrdgr\tsbrdrh\tsbrdrv \qr \li0\ri0\widctlpar\aspalpha\aspnum\faauto\
adjustright\rin0\lin0\itap0 \fs20\lang1024\langfe1024\cgrid\langnp1024\
langfenp1024 \sbasedon15 \snext17 \styrsid353782 Table Style1;}{\*\ts17\
tsrowd\tsvertalc\tscellcfpat0\tscellcbpat17\tscellpct0 \qc \f36\fs22 \
tscfirstrow Table Style1;}{\*\ts17\tsrowd\tsvertalt \qr \tsclastrow Table
Style1;}{\*\ts17\tsrowd \ql \f36\fs18 \tscfirstcol Table Style1;}{\*\ts17\
tsrowd\tscellcfpat0\tscellcbpat18\tscellpct0 \tscbandhorzodd Table Style1;}{\
*\ts17\tsrowd \b\f36\fs20 \tscsecell Table Style1;}{\*\ts18\tsrowd\trbrdrt\
brdrs\brdrw10 \trbrdrl\brdrs\brdrw10 \trbrdrb\brdrs\brdrw10 \trbrdrr\brdrs\
brdrw10 \trbrdrh\brdrs\brdrw10 \trbrdrv\brdrs\brdrw10 \trftsWidthB3\
trpaddl108\trpaddr108\trpaddfl3\trpaddft3\trpaddfb3\trpaddfr3\tscbandsh1\
tscellwidthfts0\tsvertalt\tsbrdrt\tsbrdrl\tsbrdrb\tsbrdrr\tsbrdrdgl\
tsbrdrdgr\tsbrdrh\tsbrdrv \ql \li0\ri0\widctlpar\aspalpha\aspnum\faauto\
adjustright\rin0\lin0\itap0
\fs20\lang1024\langfe1024\cgrid\langnp1024\langfenp1024 \sbasedon15 \snext18
\styrsid353782 Table Style2;}{\*\ts18\tsrowd\tscellcfpat0\tscellcbpat17\
tscellpct0 \b \tscfirstrow Table Style2;}{\*\ts18\tsrowd\tscellcfpat0\
tscellcbpat18\tscellpct0 \tscbandhorzeven Table Style2;}}
```

Table RTF Most of this has been explained in the preceding example, so only some of the changes in Word 2002 have been highlighted.

```
\trowd \irow0\irowband-1\ts18\trgaph108\trleft-108\trbrdrt\brdrs\brdrw10 \
trbrdrl\brdrs\brdrw10 \trbrdrb\brdrs\brdrw10 \trbrdrr\brdrs\brdrw10 \trbrdrh\
brdrs\brdrw10 \trbrdrv\brdrs\brdrw10 \trftsWidth1\trftsWidthB3\trftsWidthA3\
trautofit1\trpaddl108\trpaddr108\trpaddfl3\trpaddft3\trpaddfb3\trpaddfr3\
tscbandsh1\tbllkhdrrows\tbllklastrow\tbllkhdrcols\tbllklastcol \clvertalt\
clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\
brdrs\brdrw10 \clcbpat17\cltxlrtb\clftsWidth3\clwWidth3208\clcbpatraw17 \
cellx3100\clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\brdrw10 \clbrdrb\
brdrs\brdrw10 \clbrdrr\brdrs\brdrw10 \clcbpat17\cltxlrtb\clftsWidth3\
clwWidth3207\clcbpatraw17 \cellx6307\pard\plain \ql \li0\ri0\widctlpar\intbl\
aspalpha\aspnum\faauto\adjustright\rin0\lin0\tscfirstrow\yts18 \b\fs24\
lang1033\langfe1033\cgrid\langnp1033\langfenp1033 {\insrsid353782 Header 1\
cell }\pard\plain \ql \li0\ri0\widctlpar\intbl\aspalpha\aspnum\faauto\
adjustright\rin0\lin0\tscfirstrow\yts18 \b\fs24\lang1033\langfe1033\cgrid\
langnp1033\langfenp1033 {\insrsid353782 Header 2\cell }\pard\plain \ql \li0\
ri0\widctlpar\intbl\aspalpha\aspnum\faauto\adjustright\rin0\lin0 \fs24\
lang1033\langfe1033\cgrid\langnp1033\langfenp1033 {\insrsid353782 \trowd \
irow0\irowband-1 \ts18\trgaph108\trleft-108\trbrdrt\brdrs\brdrw10 \trbrdrl\
brdrs\brdrw10 \trbrdrb\brdrs\brdrw10 \trbrdrr\brdrs\brdrw10 \trbrdrh\brdrs\
brdrw10 \trbrdrv\brdrs\brdrw10 \trftsWidth1\trftsWidthB3\trftsWidthA3\
trautofit1\trpaddl108\trpaddr108\trpaddfl3\trpaddft3\trpaddfb3\trpaddfr3\
tscbandsh1\tbllkhdrrows\tbllklastrow\tbllkhdrcols\tbllklastcol \clvertalt\
clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\
brdrs\brdrw10 \clcbpat17\cltxlrtb\clftsWidth3\clwWidth3208\clcbpatraw17 \
cellx3100\clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\brdrw10 \clbrdrb\
brdrs\brdrw10 \clbrdrr\brdrs\brdrw10 \clcbpat17\cltxlrtb\clftsWidth3\
clwWidth3207\clcbpatraw17 \cellx6307\row }\trowd \irow1\irowband0\ts18\
trgaph108\trleft-108\trbrdrt\brdrs\brdrw10 \trbrdrl\brdrs\brdrw10 \trbrdrb\
brdrs\brdrw10 \trbrdrr\brdrs\brdrw10 \trbrdrh\brdrs\brdrw10 \trbrdrv\brdrs\
brdrw10 \trftsWidth1\trftsWidthB3\trftsWidthA3\trautofit1\trpaddl108\
trpaddr108\trpaddfl3\trpaddft3\trpaddfb3\trpaddfr3\tscbandsh1\tbllkhdrrows\
tbllklastrow\tbllkhdrcols\tbllklastcol \clvertalt\clbrdrt\brdrs\brdrw10 \
clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10 \
cltxlrtb\clftsWidth3\clwWidth3208\clshdrawnil \cellx3100\clvertalt\clbrdrt\
brdrs\brdrw10 \clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\
brdrw10 \cltxlrtb\clftsWidth3\clwWidth3207\clshdrawnil \cellx6307\pard\plain
```

```
\ql \li0\ri0\widctlpar\intbl\aspalpha\aspnum\faauto\adjustright\rin0\lin0\
yts18 \fs24\lang1033\langfe1033\cgrid\langnp1033\langfenp1033 {\insrsid353782
A1\cell B1\cell }\pard\plain \ql \li0\ri0\widctlpar\intbl\aspalpha\aspnum\
faauto\adjustright\rin0\lin0
\fs24\lang1033\langfe1033\cgrid\langnp1033\langfenp1033 {\insrsid353782 \
trowd \irow1\irowband0\ts18\trgaph108\trleft-108\trbrdrt\brdrs\brdrw10 \
trbrdrl\brdrs\brdrw10 \trbrdrb\brdrs\brdrw10 \trbrdrr\brdrs\brdrw10 \trbrdrh\
brdrs\brdrw10 \trbrdrv\brdrs\brdrw10 \trftsWidth1\trftsWidthB3\trftsWidthA3\
trautofit1\trpaddl108\trpaddr108\trpaddfl3\trpaddft3\trpaddfb3\trpaddfr3\
tscbandsh1\tbllkhdrrows\tbllklastrow\tbllkhdrcols\tbllklastcol \clvertalt\
clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\
brdrs\brdrw10 \cltxlrtb\clftsWidth3\clwWidth3208\clshdrawnil \cellx3100\
clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10
\clbrdrr\brdrs\brdrw10 \cltxlrtb\clftsWidth3\clwWidth3207\clshdrawnil \
cellx6307\row }\trowd \irow2\irowband1\ts18\trgaph108\trleft-108\trbrdrt\
brdrs\brdrw10 \trbrdrl\brdrs\brdrw10 \trbrdrb\brdrs\brdrw10 \trbrdrr\brdrs\
brdrw10 \trbrdrh\brdrs\brdrw10 \trbrdrv\brdrs\brdrw10 \trftsWidth1\
trftsWidthB3\trftsWidthA3\trautofit1\trpaddl108\trpaddr108\trpaddfl3\
trpaddft3\trpaddfb3\trpaddfr3\tscbandsh1\tbllkhdrrows\tbllklastrow\
tbllkhdrcols\tbllklastcol \clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\
brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10 \clcbpat18\cltxlrtb\
clftsWidth3\clwWidth3208\clcbpatraw18 \cellx3100\clvertalt\clbrdrt\brdrs\
brdrw10 \clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10
\clcbpat18\cltxlrtb\clftsWidth3\clwWidth3207\clcbpatraw18 \cellx6307\pard\
plain \ql \li0\ri0\widctlpar\intbl\aspalpha\aspnum\faauto\adjustright\rin0\
lin0\tscbandhorzeven\yts18 \fs24\lang1033\langfe1033\cgrid\langnp1033\
langfenp1033 {\insrsid353782 A2\cell }\pard\plain \ql \li0\ri0\widctlpar\
intbl\aspalpha\aspnum\faauto\adjustright\rin0\lin0\tscbandhorzeven\yts18 \
fs24\lang1033\langfe1033\cgrid\langnp1033\langfenp1033 {\insrsid353782 B2\
cell }\pard\plain \ql \li0\ri0\widctlpar\intbl\aspalpha\aspnum\faauto\
adjustright\rin0\lin0 \fs24\lang1033\langfe1033\cgrid\langnp1033\langfenp1033
{\insrsid353782 \trowd \irow2\irowband1\ts18\trgaph108\trleft-108\trbrdrt\
brdrs\brdrw10 \trbrdrl\brdrs\brdrw10 \trbrdrb\brdrs\brdrw10 \trbrdrr\brdrs\
brdrw10 \trbrdrh\brdrs\brdrw10 \trbrdrv\brdrs\brdrw10 \trftsWidth1\
trftsWidthB3\trftsWidthA3\trautofit1\trpaddl108\trpaddr108\trpaddfl3\
trpaddft3\trpaddfb3\trpaddfr3\tscbandsh1\tbllkhdrrows\tbllklastrow\
tbllkhdrcols\tbllklastcol \clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\
brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10 \clcbpat18\cltxlrtb\
clftsWidth3\clwWidth3208\clcbpatraw18 \cellx3100\clvertalt\clbrdrt\brdrs\
brdrw10 \clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10
\clcbpat18\cltxlrtb\clftsWidth3\clwWidth3207\clcbpatraw18 \cellx6307\row }\
trowd \irow3\irowband2\ts18\trgaph108\trleft-108\trbrdrt\brdrs\brdrw10 \
trbrdrl\brdrs\brdrw10 \trbrdrb\brdrs\brdrw10 \trbrdrr\brdrs\brdrw10 \trbrdrh\
brdrs\brdrw10 \trbrdrv\brdrs\brdrw10 \trftsWidth1\trftsWidthB3\trftsWidthA3\
trautofit1\trpaddl108\trpaddr108\trpaddfl3\trpaddft3\trpaddfb3\trpaddfr3\
tscbandsh1\tbllkhdrrows\tbllklastrow\tbllkhdrcols\tbllklastcol \clvertalt\
clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\
brdrs\brdrw10 \cltxlrtb\clftsWidth3\clwWidth3208\clshdrawnil \cellx3100\
clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10
\clbrdrr\brdrs\brdrw10 \cltxlrtb\clftsWidth3\clwWidth3207\clshdrawnil \
cellx6307\pard\plain \ql \li0\ri0\widctlpar\intbl\aspalpha\aspnum\faauto\
adjustright\rin0\lin0\yts18 \fs24\lang1033\langfe1033\cgrid\langnp1033\
langfenp1033 {\insrsid353782 A3\cell B3\cell }\pard\plain \ql \li0\ri0\
widctlpar\intbl\aspalpha\aspnum\faauto\adjustright\rin0\lin0
```

```
\fs24\lang1033\langfe1033\cgrid\langnp1033\langfenp1033 {\insrsid353782 \
trowd \irow3\irowband2\ts18\trgaph108\trleft-108\trbrdrt\brdrs\brdrw10 \
trbrdrl\brdrs\brdrw10 \trbrdrb\brdrs\brdrw10 \trbrdrr\brdrs\brdrw10 \trbrdrh\
brdrs\brdrw10 \trbrdrv\brdrs\brdrw10 \trftsWidth1\trftsWidthB3\trftsWidthA3\
trautofit1\trpaddl108\trpaddr108\trpaddfl3\trpaddft3\trpaddfb3\trpaddfr3\
tscbandsh1\tbllkhdrrows\tbllklastrow\tbllkhdrcols\tbllklastcol \clvertalt\
clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\
brdrs\brdrw10 \cltxlrtb\clftsWidth3\clwWidth3208\clshdrawnil \cellx3100\
clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10
\clbrdrr\brdrs\brdrw10 \cltxlrtb\clftsWidth3\clwWidth3207\clshdrawnil \
cellx6307\row }\trowd \irow4\irowband3\lastrow \ts18\trgaph108\trleft-108\
trbrdrt\brdrs\brdrw10 \trbrdrl\brdrs\brdrw10 \trbrdrb\brdrs\brdrw10 \trbrdrr\
brdrs\brdrw10 \trbrdrh\brdrs\brdrw10 \trbrdrv\brdrs\brdrw10 \trftsWidth1\
trftsWidthB3\trftsWidthA3\trautofit1\trpaddl108\trpaddr108\trpaddfl3\
trpaddft3\trpaddfb3\trpaddfr3\tscbandsh1\tbllkhdrrows\tbllklastrow\
tbllkhdrcols\tbllklastcol \clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\
brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10 \clcbpat18\cltxlrtb\
clftsWidth3\clwWidth3208\clcbpatraw18 \cellx3100\clvertalt\clbrdrt\brdrs\
brdrw10 \clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10
\clcbpat18\cltxlrtb\clftsWidth3\clwWidth3207\clcbpatraw18 \cellx6307\pard\
plain \ql \li0\ri0\widctlpar\intbl\aspalpha\aspnum\faauto\adjustright\rin0\
lin0\tscbandhorzeven\yts18 \fs24\lang1033\langfe1033\cgrid\langnp1033\
langfenp1033 {\insrsid353782 A4\cell }\pard\plain \ql \li0\ri0\widctlpar\
intbl\aspalpha\aspnum\faauto\adjustright\rin0\lin0\tscbandhorzeven\yts18 \
fs24\lang1033\langfe1033\cgrid\langnp1033\langfenp1033 {\insrsid353782 B4\
cell }\pard\plain \ql \li0\ri0\widctlpar\intbl\aspalpha\aspnum\faauto\
adjustright\rin0\lin0 \fs24\lang1033\langfe1033\cgrid\langnp1033\langfenp1033
{\insrsid353782 \trowd \irow4\irowband3\lastrow \ts18\trgaph108\trleft-108\
trbrdrt\brdrs\brdrw10 \trbrdrl\brdrs\brdrw10 \trbrdrb\brdrs\brdrw10 \trbrdrr\
brdrs\brdrw10 \trbrdrh\brdrs\brdrw10 \trbrdrv\brdrs\brdrw10 \trftsWidth1\
trftsWidthB3\trftsWidthA3\trautofit1\trpaddl108\trpaddr108\trpaddfl3\
trpaddft3\trpaddfb3\trpaddfr3\tscbandsh1\tbllkhdrrows\tbllklastrow\
tbllkhdrcols\tbllklastcol \clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\
brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10 \clcbpat18\cltxlrtb\
clftsWidth3\clwWidth3208\clcbpatraw18 \cellx3100\clvertalt\clbrdrt\brdrs\
brdrw10 \clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10
\clcbpat18\cltxlrtb\clftsWidth3\clwWidth3207\clcbpatraw18 \cellx6307\row }\
pard \ql \li0\ri0\widctlpar\aspalpha\aspnum\faauto\adjustright\rin0\lin0\
itap0 {\insrsid14034704 \par }
```

Character Text

Character text has the following syntax:

```
<char>
<ptext> | <atext> | '{' <char> '}'

<ptext>
(<chrfmt>* <data>+ )+

<data>
#PCDATA | <spec> | <pict> | <obj> | <do> | <foot> | <annot> | <field> | <idx>
| <toc> | <book>
```

Font (Character) Formatting Properties

These control words (described as <chrfmt> in the syntax description) change font (character) formatting properties. A control word preceding plain text turns on the specified attribute. Some control words (indicated in the following table by an asterisk following the description) can be turned off by appending 0 to the control word. For example, \b turns on bold, while \b0 turns off bold.

The font (character) formatting control words are listed in the following table.

Control word

Meaning

\plain

Reset font (character) formatting properties to a default value defined by the application (for example, bold, underline and italic are disabled; font size is reset to 12 point). The associated font (character) formatting properties (described in the section

HYPERLINK \l "Associated_Character_Properties"

Associated Character Properties

of this Specification) are also reset.

\animtextN

Animated text properties:

1

Las Vegas Lights

2

Blinking Background

3

Sparkle Text

4

Marching Black Ants

5

Marching Red Ants

6

Shimmer

\accnone

No accent characters (over dot/over comma).

\accdot

Over-dot accent.

\acccomma

Over-comma accent.

\b

Bold.*

\caps

All capitals.*

\cbN

Background color (the default is 0).

\cchsN

Indicates any characters not belonging to the default document character set and tells which character set they do belong to. Macintosh character sets are represented by values greater than 255. The values for N correspond to the values for the \ fcharset control word.

\cfN
Foreground color (the default is 0).

\charscalexN
Character scaling value. The N argument is a value representing a percentage (the default is 100).

\csN
Designates character style. If a character style is specified, style properties must be specified with the character run. N refers to an entry in the style table.

\cgridN
Character grid.

\g
Destination related to character grids.

\gcw
Grid column width.

\gridtbl
Destination keyword related to character grids.

\deleted
Marks the text as deletion.*

\dnN
Subscript position in half-points (the default is 6).

\embo
Emboss.

\expndN
Expansion or compression of the space between characters in quarter-points; a negative value compresses (the default is 0).

\expndtwN
Expansion or compression of the space between characters in twips; a negative value compresses. For backward compatibility, both \expndtw and \expnd should be emitted.

\fittextN
Fit the text in the current group in N twips. When N is set to -1 (\fittext-1), it indicates a continuation of the previous \fittextN run. In other words, {\fittext1000 Fit this} {\fittext-1 text} fits the string ìFit this textî in 1000 twips.

\fN
Font number. N refers to an entry in the font table.

\fsN
Font size in half-points (the default is 24).

\i
Italic.*

\impr
Engrave.

\kerningN
Point size (in half-points) above which to kern character pairs. \kerning0 turns off kerning.

\langfeN
Applies a language to a character. N is a number corresponding to a language. The \plain control word resets the language property to the language defined by \deflangfeN in the document properties.

\langfenpN
Applies a language to a character. N is a number corresponding to a language. The \plain control word resets the language property to the language defined by \deflangfeN in the document properties. Usually follows \langfeN.

\langN
Applies a language to a character. N is a number corresponding to a language. The \plain control word resets the language property to the language defined by \deflangN in the document properties.

\langnpN
Applies a language to a character. N is a number corresponding to a language. The \plain control word resets the language property to the language defined by \deflangN in the document properties. It is identical to \langN, but needed when \noproof is written together with \lang1024 in order to preserve the language of the text that is not being checked for spelling or grammar. Usually follows \langN.

\ltrch
The character data following this control word will be treated as a left-to-right run (the default).

\rtlch
The character data following this control word will be treated as a right-to-left run.

\noproof
Do not check spelling or grammar for text in the group. Serves the function of \lang1024. Usually \lang1024 is emitted with it for backwards compatibility with old readers.

\nosupersub
Turns off superscripting or subscripting.

\nosectexpand

Disables character space basement.

\outl
Outline.*

\rtlch
The character data following this control word will be treated as a right-to-left run.

\scaps
Small capitals.*

\shad
Shadow.*

\strike
Strikethrough.*

\striked1
Double strikethrough. \striked0 turns it off.

\sub
Subscripts text and shrinks point size according to font information.

\super
Superscripts text and shrinks point size according to font information.

\ul
Continuous underline. \ul0 turns off all underlining.

\ulcN
Underline color.

\uld
Dotted underline.

\uldash
Dashed underline.

\uldashd
Dash-dotted underline.

\uldashdd
Dash-dot-dotted underline.

\uldb
Double underline.

\ulhwave
Heavy wave underline.

\ulldash
Long dashed underline.

\ulnone
Stops all underlining.

\ulth
Thick underline.

\ulthd
Thick dotted underline.

\ulthdash
Thick dashed underline.

\ulthdashd
Thick dash-dotted underline.

\ulthdashdd
Thick dash-dot-dotted underline.

\ulthldash
Thick long dashed underline.

\ululdbwave
Double wave underline.

\ulw
Word underline.

\ulwave
Wave underline.

\upN
Superscript position in half-points (the default is 6).

\v
Hidden text.*

\webhidden
Indicates that the text in the group is hidden in the Word 2002 Web View and will not be emitted upon saving as Web page.

The following table defines the standard languages used by Microsoft. This table was generated by the Unicode group for use with TrueType and Unicode.

Language	ID (hexadecimal)	ID (decimal)
Afrikaans	0x0436	1078
Albanian	0x041c	

1052

Arabic
0x0401
1025

Arabic Algeria
0x1401
5121

Arabic Bahrain
0x3c01
15361

Arabic Egypt
0x0c01
3073

Arabic General
0x0001
1

Arabic Iraq
0x0801
2049

Arabic Jordan
0x2c01
11265

Arabic Kuwait
0x3401
13313

Arabic Lebanon
0x3001
12289

Arabic Libya
0x1001
4097

Arabic Morocco
0x1801
6145

Arabic Oman
0x2001
8193

Arabic Qatar
0x4001
16385

Arabic Syria
0x2801
10241

Arabic Tunisia
0x1c01
7169

Arabic U.A.E.
0x3801
14337

Arabic Yemen
0x2401
9217

Armenian
0x042b
1067

Assamese
0x044d
1101

Azeri Cyrillic
0x082c
2092

Azeri Latin
0x042c
1068

Basque
0x042d
1069

Bengali
0x0445
1093

Bosnia Herzegovina
0x101a
4122

Bulgarian
0x0402
1026

Burmese
0x0455
1109

Byelorussian
0x0423

1059

Catalan
0x0403
1027

Chinese China
0x0804
2052

Chinese General
0x0004
4

Chinese Hong Kong
0x0c04
3076

Chinese Macao
0x0c04
3076

Chinese Singapore
0x1004
4100

Chinese Taiwan
0x0404
1028

Croatian
0x041a
1050

Czech
0x0405
1029

Danish
0x0406
1030

Dutch Belgium
0x0813
2067

Dutch Standard
0x0413
1043

English Australia
0x0c09
3081

English Belize
0x2809
10249

English British
0x0809
2057

English Canada
0x1009
4105

English Caribbean
0x2409
9225

English General
0x0009
9

English Ireland
0x1809
6153

English Jamaica
0x2009
8201

English New Zealand
0x1409
5129

English Philippines
0x3409
13321

English South Africa
0x1c09
7177

English Trinidad
0x2c09
11273

English United States
0x0409
1033

English Zimbabwe
0x0409
1033

Estonian
0x0425

1061

Faeroese
0x0438
1080

Farsi
0x0429
1065

Finnish
0x040b
1035

French
0x040c
1036

French Belgium
0x080c
2060

French Cameroon
0x2c0c
11276

French Canada
0x0c0c
3084

French Cote díIvoire
0x300c
12300

French Luxemburg
0x140c
5132

French Mali
0x340c
13324

French Monaco
0x180c
6156

French Reunion
0x200c
8204

French Senegal
0x280c
10252

French Swiss
0x100c
4108

French West Indies
0x1c0c
7180

French Zaire
0x240c
9228

Frisian
0x0462
1122

Gaelic
0x043c
1084

Gaelic Ireland
0x083c
2108

Galician
0x0456
1110

Georgian
0x0437
1079

German
0x0407
1031

German Austrian
0x0c07
3079

German Liechtenstein
0x1407
5127

German Luxemburg
0x1007
4103

German Switzerland
0x0807
2055

Greek
0x0408

1032

Gujarati
0x0447
1095

Hebrew
0x040d
1037

Hindi
0x0439
1081

Hungarian
0x040e
1038

Icelandic
0x040f
1039

Indonesian
0x0421
1057

Italian
0x0410
1040

Italian Switzerland
0x0810
2064

Japanese
0x0411
1041

Kannada
0x044b
1099

Kashmiri
0x0460
1120

Kashmiri India
0x0860
2144

Kazakh
0x043f
1087

Khmer
0x0453
1107

Kirghiz
0x0440
1088

Konkani
0x0457
1111

Korean
0x0412
1042

Korean Johab
0x0812
2066

Lao
0x0454
1108

Latvian
0x0426
1062

Lithuanian
0x0427
1063

Lithuanian Classic
0x0827
2087

Macedonian
0x043e
1086

Malay
0x043e
1086

Malay Brunei Darussalam
0x083e
2110

Malayalam
0x044c
1100

Maltese
0x043a

1082

Manipuri
0x0458
1112

Marathi
0x044e
1102

Mongolian
0x0450
1104

Nepali
0x0461
1121

Nepali India
0x0861
2145

Norwegian Bokmal
0x0414
1044

Norwegian Nynorsk
0x0814
2068

Oriya
0x0448
1096

Polish
0x0415
1045

Portuguese Brazil
0x0416
1046

Portuguese Iberian
0x0816
2070

Punjabi
0x0446
1094

Rhaeto-Romanic
0x0417
1047

Romanian
0x0418
1048

Romanian Moldova
0x0818
2072

Russian
0x0419
1049

Russian Moldova
0x0819
2073

Sami Lappish
0x043b
1083

Sanskrit
0x044f
1103

Serbian Cyrillic
0x0c1a
3098

Serbian Latin
0x081a
2074

Sindhi
0x0459
1113

Slovak
0x041b
1051

Slovenian
0x0424
1060

Sorbian
0x042e
1070

Spanish Argentina
0x2c0a
11274

Spanish Bolivia
0x400a

16394

Spanish Chile
0x340a
13322

Spanish Colombia
0x240a
9226

Spanish Costa Rica
0x140a
5130

Spanish Dominican Republic
0x1c0a
7178

Spanish Ecuador
0x300a
12298

Spanish El Salvador
0x440a
17418

Spanish Guatemala
0x100a
4106

Spanish Honduras
0x480a
18442

Spanish Mexico
0x080a
2058

Spanish Modern
0x0c0a
3082

Spanish Nicaragua
0x4c0a
19466

Spanish Panama
0x180a
6154

Spanish Paraguay
0x3c0a
15370

Spanish Peru
0x280a
10250

Spanish Puerto Rico
0x500a
20490

Spanish Traditional
0x040a
1034

Spanish Uruguay
0x380a
14346

Spanish Venezuela
0x200a
8202

Sutu
0x0430
1072

Swahili
0x0441
1089

Swedish
0x041d
1053

Swedish Finland
0x081d
2077

Tajik
0x0428
1064

Tamil
0x0449
1097

Tatar
0x0444
1092

Telugu
0x044a
1098

Thai
0x041e

1054

Tibetan
0x0451
1105

Tsonga
0x0431
1073

Tswana
0x0432
1074

Turkish
0x041f
1055

Turkmen
0x0442
1090

Ukrainian
0x0422
1058

Urdu
0x0420
1056

Urdu India
0x0820
2080

Uzbek Cyrillic
0x0843
2115

Uzbek Latin
0x0443
1091

Venda
0x0433
1075

Vietnamese
0x042a
1066

Welsh
0x0452
1106

Xhosa	0x0434	1076
Yiddish	0x043d	1085
Zulu	0x0435	1077

To read negative \expnd values from Word for the Macintosh, an RTF reader should use only the low-order 6 bits of the value read. Word for the Macintosh does not emit negative values for \expnd. Instead, it treats values from 57 through 63 as ñ7 through ñ1, respectively (the low-order 6 bits of 57 through 63 are the same as ñ7 through ñ1).
Character Borders and Shading
Character shading has the following syntax:
<shading>
(\chshdng | <pat>) \chcfpat? \chcbpat?

<pat>
\chbghoriz | \chbgvert | \chbgfdiag | \chbgbdiag | \chbgcross | \chbgdcross | \chbgdkhoriz | \chbgdkvert | \chbgdkfdiag | \chbgdkbdiag | \chbgdkcross | \chbgdkdcross

Control word
Meaning

\chbrdr
Character border (border always appears on all sides).

\chshdngN
Character shading. The N argument is a value representing the shading of the text in hundredths of a percent.

\chcfpatN
N is the color of the background pattern, specified as an index into the documentís color table.

\chcbpatN
N is the fill color, specified as an index into the document's color table.

\chbghoriz
Specifies a horizontal background pattern for the text.

\chbgvert
Specifies a vertical background pattern for the text.

\chbgfdiag
Specifies a forward diagonal background pattern for the text (\\\\).

\chbgbdiag
Specifies a backward diagonal background pattern for the text (////).

\chbgcross
Specifies a cross background pattern for the text.

\chbgdcross
Specifies a diagonal cross background pattern for the text.

\chbgdkhoriz
Specifies a dark horizontal background pattern for the text.

\chbgdkvert
Specifies a dark vertical background pattern for the text.

\chbgdkfdiag
Specifies a dark forward diagonal background pattern for the text (\\\\).

\chbgdkbdiag
Specifies a dark backward diagonal background pattern for the text (////).

\chbgdkcross
Specifies a dark cross background pattern for the text.

\chbgdkdcross
Specifies a dark diagonal cross background pattern for the text.

The color, width, and border style keywords for character borders are the same as the keywords for paragraph borders.

Control word
Meaning

Track Changes (Revision Mark) Properties

\revised
Text has been added since revision marking was turned on.

\revauthN
Index into the revision table. The content of the Nth group in the revision table is considered to be the author of that revision.

\revdttmN
Time of the revision. The 32-bit DTTM structure is emitted as a long integer.

\crauthN
Index into the revision table. The content of the Nth group in the revision table is considered to be the author of that revision.
Note This keyword is used to indicate formatting revisions, such as bold, italic, and so on.

\crdateN
Time of the revision. The 32-bit DTTM structure is emitted as a long integer.

\revauthdelN
Index into the revision table. The content of the Nth group in the revision table is considered to be the author of that deletion.

\revdttmdelN
Time of the deletion. The 32-bit DTTM structure is emitted as a long integer.

Associated Character Properties

Bidirectional-aware text processors often need to associate a Latin (or other left-to-right) font with an Arabic or Hebrew (or other right-to-left) font. The association is needed to match commonly used pairs of fonts in name, size, and other attributes. Although RTF defines a broad variety of associated character properties, any implementation may choose not to implement a particular associated character property and share the property between the Latin and Arabic fonts.

Property association uses the following syntax:

```
<atext>
<ltrrun> | <rtlrun>

<ltrrun>
\rtlch \af & <aprops>* \ltrch <ptext>

<rtlrun>
\ltrch \af & <aprops>* \rtlch <ptext>

<atext>
<losbrun> | <hisbrun> | <dbrun>

<losbrun>
\hich \af & <aprops> \dbch \af & <aprops> \loch <ptext>

<hisbrun>
\loch \af & <aprops> \dbch \af & <aprops> \hich <ptext>

<dbrun>
\loch \af & <aprops> \hich \af & <aprops> \dbch <ptext>
```

The following are some examples of property association. The first example is a right-to-left run. Text will use the default bidirectional font, and will be underlined. The left-to-right font associated with this run is font 2 (in the font table) with bold and underlining.

```
\ltrch\af2\ab\au\rtlch\u Sample Text
```

The next example is a left-to-right run. The right-to-left font and the left-to-right font use the default font (specified by \deff).

```
\plain\rtlch\ltrch Sample Text
```

The following example is a left-to-right run. The right-to-left font is font 5, bold and italicized. The left-to-right font is the default font, underlined. If the reader does not support underlining in the associated font, both fonts will be underlined.

```
\rtlch\af5\ab\ai\ltrch\u Sample Text
```

The property association control words (described as <aprops> in the syntax description) are listed in the following table. Some control words (indicated in the table by an asterisk following the description) can be turned off by

appending 0 to the control word.
Control word
Meaning

\ab
Associated font is bold.*

\acaps
Associated font is all capitals.*

\acfN
Associated foreground color (the default is 0).

\adnN
Associated font is subscript position in half-points (the default is 6).

\aexpndN
Expansion or compression of the space between characters in quarter-points; a negative value compresses (the default is 0).

\afN
Associated font number (the default is 0).

\afsN
Associated font size in half-points (the default is 24).

\ai
Associated font is italic.*

\alangN
Language ID for the associated font. (This uses the same language ID codes described in the
HYPERLINK \l "Standard_Language_Table"

standard language table
in the
HYPERLINK \l "Character_Text"

Character Text
section of this Specification.)

\aoutl
Associated font is outline.*

\ascaps
Associated font is small capitals.*

\ashad
Associated font is shadow.*

\astrike
Associated font is strikethrough.*

\aul

Associated font is continuous underline. \aul0 turns off all underlining for the alternate font.

\auld
Associated font is dotted underline.

\auldb
Associated font is double underline.

\aulnone
Associated font is no longer underlined.

\aulw
Associated font is word underline.

\aupN
Superscript position in half-points (the default is 6).

\loch
The text consists of single-byte low-ANSI (0x00ñ0x7F) characters.

\hich
The text consists of single-byte high-ANSI (0x80ñ0xFF) characters.

\dbch
The text consists of double-byte characters.

Highlighting
This property applies highlighting to text. The formatting is not a character format, so it cannot be part of a style definition.
Control word
Meaning

\highlightN
Highlights the specified text. N specifies the color as an index of the color table.

Special Characters
The RTF Specification includes control words for special characters (described as <spec> in the character-text syntax description). If a special-character control word is not recognized by the RTF reader, it is ignored and the text following it is considered plain text. The RTF Specification is flexible enough to allow new special characters to be added for interchange with other software.
The special RTF characters are listed in the following table.
Control word
Meaning

\chdate
Current date (as in headers).

\chdpl
Current date in long format (for example, Thursday, October 28, 1997).

\chdpa
Current date in abbreviated format (for example, Thu, Oct 28, 1997).

\chtime
Current time (as in headers).

\chpgn
Current page number (as in headers).

\sectnum
Current section number (as in headers).

\chftn
Automatic footnote reference (footnotes follow in a group).

\chatn
Annotation reference (annotation text follows in a group).

\chftnsep
Anchoring character for footnote separator.

\chftnsepc
Anchoring character for footnote continuation.

\cell
End of table cell.

\nestcell
End of nested table cell.

\row
End of table row.

\nestrow
End of nested table row.

\par
End of paragraph.

\sect
End of section and paragraph.

\page
Required page break.

\column
Required column break.

\line
Required line break (no paragraph break).

\lbrN
Text wrapping break of type:
0

Default line break (just like \line)
1
Clear left
2
Clear right
3
Clear all
Whenever an \lbr is emitted, a \line will be emitted for the benefit of old readers.

\softpage
Nonrequired page break. Emitted as it appears in galley view.

\softcol
Nonrequired column break. Emitted as it appears in galley view.

\softline
Nonrequired line break. Emitted as it appears in galley view.

\softlheightN
Nonrequired line height. This is emitted as a prefix to each line.

\tab
Tab character.

\emdash
Em dash (ó).

\endash
En dash (ñ).

\emspace
Nonbreaking space equal to width of character "m" in current font. Some old RTF writers use the construct ë{\emspace }í (with two spaces before the closing brace) to trick readers unaware of \emspace into parsing a regular space. A reader should interpret this as an \emspace and a regular space.

\enspace
Nonbreaking space equal to width of character "n" in current font. Some old RTF writers use the construct ë{\enspace }í (with two spaces before the closing brace) to trick readers unaware of \enspace into parsing a regular space. A reader should interpret this as an \enspace and a regular space.

\qmspace
One-quarter em space.

\bullet
Bullet character.

\lquote
Left single quotation mark.

\rquote
Right single quotation mark.

\ldblquote
Left double quotation mark.

\rdblquote
Right double quotation mark.

\|
Formula character. (Used by Word 5.1 for the Macintosh as the beginning delimiter for a string of formula typesetting commands.)

\~
Nonbreaking space.

\-
Optional hyphen.

_
Nonbreaking hyphen.

\:
Specifies a subentry in an index entry.

*
Marks a destination whose text should be ignored if not understood by the RTF reader.

\'hh
A hexadecimal value, based on the specified character set (may be used to identify 8-bit values).

\ltrmark
The following characters should be displayed from left to right; usually found at the start of \ltrch runs.

\rtlmark
The following characters should be displayed from right to left; usually found at the start of \rtlch runs.

\zwbo
Zero-width break opportunity. Used to insert break opportunity between two characters.

\zwnbo
Zero-width nonbreak opportunity. Used to remove break opportunity between two characters.

\zwj
Zero-width joiner. This is used for ligating (joining) characters.

\zwnj
Zero-width nonjoiner. This is used for unligating a character.

A carriage return (character value 13) or linefeed (character value 10) will be treated as a \par control if the character is preceded by a backslash. You must include the backslash; otherwise, RTF ignores the control word. (You may also want to insert a carriage-return/linefeed pair without backslashes at least every 255 characters for better text transmission over communication lines.)

A tab (character value 9) should be treated as a \tab control word. Not all RTF readers understand this; therefore, an RTF writer should always emit the control word for tabs.

The following are the code values for the special characters listed.

Control word
Word for Windows and OS/2
Apple Macintosh

\bullet
149
0xA5

\endash
150
0xD1

\emdash
151
0xD0

\lquote
145
0xD4

\rquote
146
0xD5

\ldblquote
147
0xD2

\rdblquote
148
0xD3

Document Variables

Document variables are definable and accessed through macros. Document variables have the following syntax:

<variables>
ë{*í <docvar>ë{í <varname> ë}í ë{í <vartext> ë}í ë}í*

<docvar>
\docvar

<varname>
#PCDATA

<vartype>
#PCDATA

The control word is described in the following table.

Control word	Meaning
\ docvar	A group that defines a document variable name and its value.

Bookmarks

This destination may specify one of two control words: *\bkmkstart, which indicates the start of the specified bookmark, and *\bkmkend, which indicates the end of the specified bookmark.

Bookmarks have the following syntax:

```
<book>
<bookstart> | <bookend>

<bookstart>
'{\*' \bkmkstart (\bkmkcolf? & \bkmkcoll?) #PCDATA '}'

<bookend>
'{\*' \bkmkend #PCDATA '}'
```

A bookmark is shown in the following example:

```
\pard\plain \fs20 Kuhn believes that science, rather than
discovering in experience certain structured
relationships, actually creates (or already participates in)
a presupposed structure to which it fits the data.
{\bkmkstart paradigm} Kuhn calls such a presupposed
structure a paradigm.{\bkmkend paradigm}
```

The bookmark start and end are matched with the bookmark tag. In this example, the bookmark tag is "paradigm." Each bookmark start should have a matching bookmark end; however, the bookmark start and the bookmark end may be in any order.

\bkmkcolfN is used to denote the first column of a table covered by a bookmark. If it is not included, the first column is assumed. \bkmkcollN is used to denote the last column. If it is not used, the last column is assumed. These controls are used within the *\bkmkstart destination following the \bkmkstart control. For example, {*\bkmkstart\bkmkcolf2\bkmkcoll5 Table1} places the bookmark "Table1" in columns 2 through 5 of a table.

Pictures

An RTF file can include pictures created with other applications. These pictures can be in hexadecimal (the default) or binary format. Pictures are destinations and begin with the \pict control word. The \pict keyword is preceded by the *\shppict destination control keyword as described in the following example. A picture destination has the following syntax:

```
<pict>
'{' \pict (<brdr>? & <shading>? & <picttype> & <pictsize> & <metafileinfo>?)
<data> '}'
```

```
<picttype>
| \emfblip | \pngblip | \jpegblip | \macpict | \pmmetafile | \wmetafile | \
dibitmap <bitmapinfo> | \wbitmap <bitmapinfo>

<bitmapinfo>
\wbmbitspixel & \wbmplanes & \wbmwidthbytes

<pictsize>
(\picw & \pich) \picwgoal? & \pichgoal? \picscalex? & \picscaley? & \
picscaled? & \piccropt? & \piccropb? & \piccropr? & \piccropl?

<metafileinfo>
\picbmp & \picbpp

<data>
(\bin #BDATA) | #SDATA
```

These control words are described in the following table. Some measurements in this table are in twips. A twip is one-twentieth of a point.

Control word

Meaning

\emfblip

Source of the picture is an EMF (enhanced metafile).

\pngblip

Source of the picture is a PNG.

\jpegblip

Source of the picture is a JPEG.

\shppict

Specifies a Word 97 through Word 2002 picture. This is a destination control word.

\nonshppict

Specifies that Word 97 through Word 2002 has written a {\pict destination that it will not read on input. This keyword is for compatibility with other readers.

\macpict

Source of the picture is QuickDraw.

\pmmetafileN

Source of the picture is an OS/2 metafile. The N argument identifies the metafile type. The N values are described in the \pmmetafile

HYPERLINK \l "Pmmetafile_Table"

table

further on in this section.

\wmetafileN

Source of the picture is a Windows metafile. The N argument identifies the metafile type (the default type is 1).

\dibitmapN
Source of the picture is a Windows device-independent bitmap. The N argument identifies the bitmap type, which must equal 0.
The information to be included in RTF from a Windows device-independent bitmap is the concatenation of the BITMAPINFO structure followed by the actual pixel data.

\wbitmapN
Source of the picture is a Windows device-dependent bitmap. The N argument identifies the bitmap type (must equal 0).
The information to be included in RTF from a Windows device-dependent bitmap is the result of the GetBitmapBits function.

The following is an example of the \shppict group:
{*\shppict {\pict \emfblip Ö.. }}{\nonshppict {\pict Ö.}}
For best device-independence and interoperability with Microsoft products, use of the \wbitmap and \dibitmap control words is discouraged. Rather, bitmaps should be embedded within Windows metafiles and the \wmetafile control word should be used. For more information on the GetDIBits and GetBitmapBits functions and the structure of Windows device-independent and device-dependent bitmaps, as well as information on embedding bitmaps within metafiles, see Volume 1 and Volume 2 of the Programmer's Reference in the Microsoft Windows 3.1 Software Development Kit. The following table outlines picture control keywords:
Control word
Meaning

Bitmap Information

\wbmbitspixelN
Number of adjacent color bits on each plane needed to define a pixel. Possible values are 1 (monochrome), 4 (16 colors), 8 (256 colors) and 24 (RGB). The default value is 1.

\wbmplanesN
Number of bitmap color planes (must equal 1).

\wbmwidthbytesN
Specifies the number of bytes in each raster line. This value must be an even number because the Windows Graphics Device Interface (GDI) assumes that the bit values of a bitmap form an array of integer (two-byte) values. In other words, \wbmwidthbytes multiplied by 8 must be the next multiple of 16 greater than or equal to the \picw (bitmap width in pixels) value.

Picture Size, Scaling, and Cropping

\picwN
xExt field if the picture is a Windows metafile; picture width in pixels if the picture is a bitmap or from QuickDraw. The N argument is a long integer.

\pichN
yExt field if the picture is a Windows metafile; picture height in pixels if

the picture is a bitmap or from QuickDraw. The N argument is a long integer.

\picwgoalN
Desired width of the picture in twips. The N argument is a long integer.

\pichgoalN
Desired height of the picture in twips. The N argument is a long integer.

\picscalexN
Horizontal scaling value. The N argument is a value representing a percentage (the default is 100 percent).

\picscaleyN
Vertical scaling value. The N argument is a value representing a percentage (the default is 100 percent).

\picscaled
Scales the picture to fit within the specified frame. Used only with \macpict pictures.

\picprop
Indicates there are shape properties applied to an inline picture. This is a destination control word.

\defshp
Indicates that the inline picture is a WordArt shape.

\piccroptN
Top cropping value in twips. A positive value crops toward the center of the picture; a negative value crops away from the center, adding a space border around the picture (the default value is 0).

\piccropbN
Bottom cropping value in twips. A positive value crops toward the center of the picture; a negative value crops away from the center, adding a space border around the picture (the default value is 0).

\piccroplN
Left cropping value in twips. A positive value crops toward the center of the picture; a negative value crops away from the center, adding a space border around the picture (the default value is 0).

\piccroprN
Right cropping value in twips. A positive value crops toward the center of the picture; a negative value crops away from the center, adding a space border around the picture (the default value is 0).

Metafile Information

\picbmp
Specifies whether a metafile contains a bitmap.

\picbppN
Specifies the bits per pixel in a metafile bitmap. The valid range is 1

through 32, with 1, 4, 8, and 24 being recognized.

Picture Data

\binN
The picture is in binary format. The numeric parameter N is the number of bytes that follow. Unlike all other controls, this control word takes a 32-bit parameter.

\blipupiN
N represents units per inch on a picture (only certain image types need or output this)

\blipuid XXXXX
Used as {*\blipuid XXXXX} where XXXX is a 16-byte identification number for the image.

\bliptagN
A unique identifier for a picture, where N is a long integer value.

The \wbitmap control word is optional. If no other picture type is specified, the picture is assumed to be a Windows bitmap. If \wmetafile is specified, the N argument can be one of the following types.

Type	N argument
MM_TEXT	1
MM_LOMETRIC	2
MM_HIMETRIC	3
MM_LOENGLISH	4
MM_HIENGLISH	5
MM_TWIPS	6
MM_ISOTROPIC	7
MM_ANISOTROPIC	8

For more information about these types, see volume 1 of the Programmerís Reference in the Microsoft Windows 3.1 Software Development Kit.

If \pmmetafile is specified, the N argument can be one of the following types.

Type	N argument
PU_ARBITRARY	0x0004
PU_PELS	0x0008
PU_LOMETRIC	0x000C
PU_HIMETRIC	0x0010
PU_LOENGLISH	0x0014
PU_HIENGLISH	0x0018
PU_TWIPS	0x001C

For more information about these types, see volume 2 of the OS/2 Programmerís Reference.

Be careful with spaces following control words when dealing with pictures in binary format. When reading files, RTF considers the first space after a control word the delimiter and subsequent spaces part of the document text. Therefore, any extra spaces are attached to the picture, with unpredictable results.

RTF writers should not use the carriage return/line feed (CR/LF) combination to break up pictures in binary format. If they do, the CR/LF combination is treated as literal text and considered part of the picture data.

The picture in hexadecimal or binary format follows the picture-destination control words. The following example illustrates the destination format:

```
{\pict\wbitmap0\picw170\pich77\wbmbitspixel1\wbmplanes1\wbmwidthbytes22
\picwgoal505
\pichgoal221
\picscalex172
\picscaley172
49f2000000000273023d1101a030
3901000a000000000273023d98
0048000200000275
02040000200010275023e000000000
273023d000002b90002b90002
b90002b90002b9
0002b90002b90002b90002b90002b90002
b92222b90002b90002b90
002b90002b9
0002b90002b90002b90002b9000
```

Objects

Microsoft OLE links, Microsoft OLE embedded objects, and Macintosh Edition Manager subscriber objects are represented in RTF as objects. Objects are destinations that contain data and a result. The data is generally hidden to the application that produced the document. A separate application uses the data and supplies the appearance of the data. This appearance is the result of the object.

The representation of objects in RTF is designed to allow RTF readers that don't understand objects, or don't use a particular type of object, to use the current result in place of the object. This allows the appearance of the object to be maintained through the conversion even though the object functionality is lost. Each object comes with optional information about itself, a required destination that contains the object data, and an optional result that contains the current appearance of the object. This result contains standard RTF. The RTF writer is responsible for providing the result so that existing RTF readers that either do not support objects, or that do not support a particular type of object, will be able to display the object.

When the object is an OLE embedded or linked object, the data part of the object is the structure produced by the OLESaveToStream function. Some OLE clients rely on the OLE system to render the object when a copy of the result is not available to the RTF writer for that application. In these cases, the object result can be extracted from the structure produced by the OLESaveToStream function. For information about the OLESaveToStream function, see the Microsoft Object Linking and Embedding Software Development Kit.

This destination has the following syntax:

```
<obj>
( '{' \object (<objtype> & <objmod>? & <objclass>? & <objname>? & <objtime>?
& <objsize>? & <rsltmod>?) <objdata> <result> '}' ) | <pubobject>

<objtype>
\objemb | \objlink | \objautlink | \objsub | \objpub | \objicemb | objhtml |
objocx

<objmod>
\linkself? & \objlock? | \objupdate?

<objclass>
'{\*' \objclass #PCDATA '}'

<objname>
'{\*' \objname #PCDATA '}'

<objtime>
'{\*' \objtime <time> '}'

<rsltmod>
\rsltmerge? & <rslttype>?

<rslttype>
\rsltrtf | \rslttxt | \rsltpict | \rsltbmp | \rslthtml

<objsize>
\objsetsize? & \objalign? & \objtransy? & <objhw>? & \objcropt? & \objcropb?
& \objcropl? & \objcropr? & \objscalex? & \objscaley?
```

```
<objhw>
\objh & \objw

<objdata>
'{\*' \objdata (<objalias>? & <objsect>?) <data> '}'

<objalias>
'{\*' \objalias <data> '}'

<objsect>
'{\*' \objsect <data> '}'

<result>
'{' \result <para>+ '}'
```

These control words are described in the following table.
Control word
Meaning

Object Type

\objemb
An object type of OLE embedded object. If no type is given for the object, the object is assumed to be of type \objemb.

\objlink
An object type of OLE link.

\objautlink
An object type of OLE autolink.

\objsub
An object type of Macintosh Edition Manager subscriber.

\objpub
An object type of Macintosh Edition Manager publisher.

\objicemb
An object type of MS Word for the Macintosh Installable Command (IC) Embedder.

\objhtml
An object type of Hypertext Markup Language (HTML) control.

\objocx
An object type of OLE control.

Object Information

\linkself
The object is a link to another part of the same document.

\objlock
Locks the object from any updates.

\objupdate
Forces an update to the object before displaying it. Note that this will override any values in the <objsize> control words, but values should always be provided for these to maintain backwards compatibility.

\objclass
The text argument is the object class to use for this object; ignore the class specified in the object data. This is a destination control word.

\objname
The text argument is the name of this object. This is a destination control word.

\objtime
Lists the time that the object was last updated.

Object Size, Position, Cropping, and Scaling

\objhN
N is the original object height in twips, assuming the object has a graphical representation.

\objwN
N is the original object width in twips, assuming the object has a graphical representation.

\objsetsize
Forces the object server to set the object's dimensions to the size specified by the client.

\objalignN
N is the distance in twips from the left edge of the objects that should be aligned on a tab stop. This is needed to place Equation Editor equations correctly.

\objtransyN
N is the distance in twips the objects should be moved vertically with respect to the baseline. This is needed to place Math Type equations correctly.

\objcroptN
N is the top cropping value in twips.

\objcropbN
N is the bottom cropping value in twips.

\objcroplN
N is the left cropping value in twips.

\objcroprN
N is the right cropping value in twips.

\objscalexN
N is the horizontal scaling percentage.

\objscaleyN
N is the vertical scaling percentage.

Object Data

\objdata
This subdestination contains the data for the object in the appropriate format; OLE objects are in OLESaveToStream format. This is a destination control word.

\objalias
This subdestination contains the alias record of the publisher object for the Macintosh Edition Manager. This is a destination control word.

\objsect
This subdestination contains the section record of the publisher object for the Macintosh Edition Manager. This is a destination control word.

Object Result

\rsltrtf
Forces the result to be RTF, if possible.

\rsltpict
Forces the result to be a Windows metafile or MacPict image format, if possible.

\rsltbmp
Forces the result to be a bitmap, if possible.

\rslttxt
Forces the result to be plain text, if possible.

\rslthtml
Forces the result to be HTML, if possible.

\rsltmerge
Uses the formatting of the current result whenever a new result is obtained.

\result
The result destination is optional in the \object destination. The result destination contains the last update of the result of the object. The data of the result destination should be standard RTF. This allows RTF readers that don't understand objects or the type of object represented to use the current result, in place of the object, to maintain appearance. This is a destination control word.

When Word is used as an editor for Mail, the following control word can be emitted. Otherwise, it is not seen.

Control word

Meaning

\objattph

Object attachment placeholder. Used in the RTF stream when Word is started as an e-mail editor and the message contains attachments. The control word lists where in the text stream the attachment should be placed. It does not define the actual attachment.

Macintosh Edition Manager Publisher Objects

Word for the Macintosh writes publisher objects for the Macintosh Edition Manager in terms of bookmarks (see the
 HYPERLINK \l "Bookmarks"

Bookmark
 section of this specification). The range of publisher objects are marked as bookmarks, so these controls are all used within the \bkmkstart destination.

The RTF syntax for a publisher object is:

<pubobject>

'{*' \bkmkstart \bkmkpub \pubauto? (<objalias>? & <objsect>) #PCDATA '}'

These control words are descibed in the following table.

Control word

Meaning

\bkmkpub

The bookmark identifies a Macintosh Edition Manager publisher object.

\pubauto

The publisher object updates all Macintosh Edition Manager subscribers of this object automatically, whenever it is edited.

Drawing Objects

Drawing Objects in Word 6.0/95 RTF

Drawing objects and the drawing primitives enumerated within drawing object groups use the following syntax:

<do>

'{*' \do <dohead> <dpinfo>'}'

<dohead>

<dobx> <doby> <dodhgt> <dolock>?

<dobx>

\dobxpage | \dobxcolumn | \dobxmargin

<doby>

\dobypage | \dobypara | \dobymargin

<dodhgt>

\dodhgt

<dolock>

\dolock

```
<dpinfo>
 <dpgroup> | <dpcallout> | <dpsimple>

<dpgroup>
\dpgroup \dpcount <dphead> <dpinfo>+ \dpendgroup <dphead>

<dpcallout>
\dpcallout <cotype> <coangle>? <coaccent>? <cosmartattach>? <cobestfit>? <
cominusx>? <cominusy>? <coborder>? <codescent>? \dpcooffset \dpcolength <
dphead> <dppolyline> <dphead> <dpprops> <dptextbox> <dphead> <dpprops>

<dpsimple>
<dpsimpledpk> <dphead> <dpprops>

<dpsimpledpk>
<dpline> | <dprect> | <dptextbox> | <dpellipse> | <dppolyline> | <dparc>

<dpline>
\dpline <dppt> <dppt>

<dprect>
\dprect (\dproundr)?

<dptextbox>
\dptxbx (\dptxlrtb | \dptxtbrl | \dptxbtlr | \dptxlrtbv | \dptxtbrlv)? \
dptxbxmar '{' \dptxbxtext <para>+'}'

<dpellipse>
\dpellipse

<dparc>
\dparc \dparcflipx? \dparcflipy?

<dppolyline>
\dppolyline (\dppolygon)? \dppolycount <dppt>+

<dppt>
\dpptx \dppty

<dphead>
\dpx \dpy \dpxsize \dpysize
```

Note that in <dpgroup> the number of <dpinfo> occurrences is equal to the argument of \dpcount. This means that in <dppolyline> the number of <dppt> occurrence is equal to the argument of \dppolycount.

The following elements of the drawing-object syntax pertain specifically to callout objects:

```
<cotype>
\dpcotright | \dpcotsingle | \dpcotdouble | \dpcottriple

<coangle>
\dpcoa
```

```
<coaccent>
\dpcoaccent

<cosmartattach>
\dpcosmarta

<cobestfit>
\dpcobestfit

<cominusx>
\dpcominusx

<cominusy>
\dpcominusy

<coborder>
\dpcoborder

<codescent>
\dpcodtop | \dpcodcenter | \dpcodbottom | \dpcodabs
```

The remaining elements of the drawing object syntax are properties applied to individual drawn primitives. These remaining objects use the following syntax:

```
<dpprops>
<lineprops>? <fillprops>? <endstylestart>? <endstyleend>? <shadow>?

<lineprops>
<linestyle> <linecolor> \dplinew

<linestyle>
\dplinesolid | \dplinehollow | \dplinedash | \dplinedot | \dplinedado | \
dplinedadodo

<linecolor>
<linegray> | <linergb>

<linegray>
\dplinegray

<linergb>
\dplinecor \dplinecog \dplinecob<linepal>?

<linepal>
\dplinepal

<fillprops>
<fillcolorfg> <fillcolorbg> \dpfillpat

<fillcolorfg>
<fillfggray> | <fillfgrgb>
```

<fillfggray>
\dpfillfggray

<fillfgrgb>
\dpfillfgcr \dpfillfgcg \dpfillfgcb<fillfgpal>?

<fillfgpal>
\dpfillfgpal

<fillcolorbg>
<fillbggray> | <fillbgrgb>

<fillbggray>
\dpfillbggray

<fillbgrgb>
\dpfillbgcr \dpfillbgcg \dpfillbgcb<fillbgpal>?

<fillbgpal>
\dpfillbgpal

<endstylestart>
<arrowstartfill> \dpastartl \dpastartw

<arrowstartfill>
\dpastartsol | \dpastarthol

<endstyleend>
<arrowendfill> \dpaendl \dpaendw

<arrowendfill>
\dpaendsol | \dpaendhol

<shadow>
\dpshadow \dpshadx \dpshady

The following table describes the control words for the drawing object group. All color values are RGB values from 0 through 255. All distances are in twips. All other values are as indicated.
Control word
Meaning

\do
Indicates a drawing object is to be inserted at this point in the character stream. This is a destination control word.

\dolock
The drawing object's anchor is locked and cannot be moved.

\dobxpage
The drawing object is page relative in the x-direction.

\dobxcolumn

The drawing object is column relative in the x-direction.

\dobxmargin
The drawing object is margin relative in the x-direction.

\dobypage
The drawing object is page relative in the y-direction.

\dobypara
The drawing object is paragraph relative in the y-direction.

\dobymargin
The drawing object is margin relative in the y-direction.

\dodhgtN
The drawing object is positioned at the following numeric address in the z-ordering.

Drawing Primitives

\dpgroup
Begin group of drawing primitives.

\dpcountN
Number of drawing primitives in the current group.

\dpendgroup
End group of drawing primitives.

\dparc
Arc drawing primitive.

\dpcallout
Callout drawing primitive, which consists of both a polyline and a text box.

\dpellipse
Ellipse drawing primitive.

\dpline
Line drawing primitive.

\dppolygon
Polygon drawing primitive (closed polyline).

\dppolyline
Polyline drawing primitive.

\dprect
Rectangle drawing primitive.

\dptxbx
Text box drawing primitive.

Position and Size

\dpxN
X-offset of the drawing primitive from its anchor.

\dpxsizeN
X-size of the drawing primitive.

\dpyN
Y-offset of the drawing primitive from its anchor.

\dpysizeN
Y-size of the drawing primitive.

Callouts

\dpcoaN
Angle of callout's diagonal line is restricted to one of the following: 0, 30, 45, 60, or 90. If this control word is absent, the callout has an arbitrary angle, indicated by the coordinates of its primitives.

\dpcoaccent
Accent bar on callout (vertical bar between polyline and text box).

\dpcobestfit
Best fit callout (x-length of each line in callout is similar).

\dpcoborder
Visible border on callout text box.

\dpcodabs
Absolute distance-attached polyline.

\dpcodbottom
Bottom-attached polyline.

\dpcodcenter
Center-attached polyline.

\dpcodtop
Top-attached callout.

\dpcodescentN
Descent of the callout

\dpcolengthN
Length of callout.

\dpcominusx
Text box falls in quadrants II or III relative to polyline origin.

\dpcominusy
Text box falls in quadrants III or IV relative to polyline origin.

\dpcooffsetN

Offset of callout. This is the distance between the end of the polyline and the edge of the text box.

\dpcosmarta
Auto-attached callout. Polyline will attach to either the top or bottom of the text box depending on the relative quadrant.

\dpcotdouble
Double line callout.

\dpcotright
Right angle callout.

\dpcotsingle
Single line callout.

\dpcottriple
Triple line callout.

Text Boxes and Rectangles

\dptxbxmarN
Internal margin of the text box.

\dptxbxtext
Group that contains the text of the text box.

\dptxlrtb
Text box flows from left to right and top to bottom (default).

\dptxtbrl
Text box flows from right to left and top to bottom.

\dptxbtlr
Text box flows from left to right and bottom to top.

\dptxlrtbv
Text box flows from left to right and top to bottom, vertically.

\dptxtbrlv
Text box flows from right to left and top to bottom, vertically.

\dproundr
Rectangle is a round rectangle.

Lines and Polylines

\dpptxN
X-coordinate of the current vertex (only for lines and polylines). The coordinate order for a point must be x, y.

\dpptyN
Y-coordinate of the current vertex (only for lines and polylines). The coordinate order for a point must be x, y.

\dppolycountN
Number of vertices in a polyline drawing primitive.

Arcs

\dparcflipx
This indicates that the end point of the arc is to the right of the start point. Arcs are
drawn counter-clockwise.

\dparcflipy
This indicates that the end point of the arc is below the start point. Arcs are drawn counter-clockwise.

Line Style

\dplinecobN
Blue value for line color.

\dplinecogN
Green value for line color.

\dplinecorN
Red value for line color.

\dplinepal
Render line color using the PALETTERGB macro instead of the RGB macro in Windows.

\dplinedado
Dash-dotted line style.

\dplinedadodo
Dash-dot-dotted line style.

\dplinedash
Dashed line style.

\dplinedot
Dotted line style.

\dplinegrayN
Grayscale value for line color (in half-percentages).

\dplinehollow
Hollow line style (no line color).

\dplinesolid
Solid line style.

\dplinewN
Thickness of line (in twips).

Arrow Style

\dpaendhol
Hollow end arrow (lines only).

\dpaendlN
Length of end arrow, relative to pen width:
1
Small
2
Medium
3
Large

\dpaendsol
Solid end arrow (lines only).

\dpaendwN
Width of end arrow, relative to pen width:
1
Small
2
Medium
3
Large

\dpastarthol
Hollow start arrow (lines only).

\dpastartlN
Length of start arrow, relative to pen width:
1
Small
2
Medium
3
Large

\dpastartsol
Solid start arrow (lines only).

\dpastartwN
Width of start arrow, relative to pen width:
1
Small
2
Medium
3
Large

Fill Pattern

\dpfillbgcbN
Blue value for background fill color.

\dpfillbgcgN
Green value for background fill color.

\dpfillbgcrN
Red value for background fill color.

\dpfillbgpal
Render fill background color using the PALETTERGB macro instead of the RGB macro in Windows.

\dpfillbggrayN
Grayscale value for background fill (in half-percentages).

\dpfillfgcbN
Blue value for foreground fill color.

\dpfillfgcgN
Green value for foreground fill color.

\dpfillfgcrN
Red value for foreground fill color.

\dpfillfgpal
Render fill foreground color using the PALETTERGB macro instead of the RGB macro in Windows.

\dpfillfggrayN
Grayscale value for foreground fill (in half-percentages).

\dpfillpatN
Index into a list of fill patterns. See the fill pattern table that follows for list.

Shadow

\dpshadow
Current drawing primitive has a shadow.

\dpshadxN
X-offset of the shadow.

\dpshadyN
Y-offset of the shadow.

The following values are available for specifying fill patterns in drawing objects with the \dpfillpat control word.

Value	Fill pattern
0	Clear (no pattern)

1
Solid (100%)

2
5%

3
10%

4
20%

5
25%

6
30%

7
40%

8
50%

9
60%

10
70%

11
75%

12
80%

13
90%

14
Dark horizontal lines

15
Dark vertical lines

16
Dark left-diagonal lines (\\\)

17
Dark right-diagonal lines (///)

18
Dark grid lines

19
Dark trellis lines

20
Light horizontal lines

21
Light vertical lines

22
Light left-diagonal lines (\\\)

23
Light right-diagonal lines (///)

24
Light grid lines

25
Light trellis lines

Word 97 through Word 2002 RTF for Drawing Objects (Shapes)

Basic Format

The basic format for drawing objects in RTF is as follows:

```
{ \shp   ........  { \*\shpinst  { \spp  { \sn .......... }  { \sp
.............. }  }  }
            { \shprslt   .............. }   }
```

The first destination (\shp) is always present. This control word groups everything related to a shape together. Following the destination change is basic information regarding the shape. The following keywords with values can appear in any order after the ì{ \shpî control word.

Control word
Meaning

Shape Keywords

\shpleftN
Specifies position of shape from the left of the anchor. The value N is a measurement in twips.

\shptopN
Specifies position of shape from the top of the anchor. The value N is a measurement in twips.

\shpbottomN
Specifies position of shape from the bottom of the anchor. The value N is a measurement in twips.

\shprightN
Specifies position of shape from the right of the anchor. The value N is a measurement in twips.

\shplidN
A number that is unique to each shape. This keyword is primarily used for linked text boxes. The value N is a long integer.

\shpzN
Describes the z-order of the shape. It starts at 0 for the shape that is furthest from the top, and proceeds to the top most shape (N). The shapes that appear inside the header document will have a separate z-order, compared to the z-order of the shapes in the main document. For instance, both the back-most shape in the header and the back-most main-document shape will have a z-order of 0.

\shpfhdrN
Set to 0 if the shape is in the main document. Set to 1 if the shape is in the header document.

\shpbxpage
The shape is positioned relative to the page in the x (horizontal) direction.

\shpbxmargin
The shape is positioned relative to the margin in the x (horizontal) direction.

\shpbxcolumn
The shape is positioned relative to the column in the x (horizontal) direction.

\shpbxignore
Ignore \shpbxpage, \shpbxmargin, and \shpbxcolumn, in favor of \posrelh. The ignored properties will be written for backwards compatibility with older readers that do not understand \posrelh.

\shpbypage
The shape is positioned relative to the page in the y (vertical) direction.

\shpbymargin
The shape is positioned relative to the margin in the y (vertical) direction.

\shpbypara
The shape is positioned relative to the paragraph in the y (vertical) direction.

\shpbyignore
Ignore \shpbypage, \shpbymargin, and \shpbxpara, in favor of \posrelh. The ignored properties will be written for backwards compatibility with older readers that do not understand \posrelh.

\shpwrN
Describes the type of wrap for the shape:
1
Wrap around top and bottom of shape (no text allowed beside shape)
2
Wrap around shape

3
None (wrap as if shape isńt present)
4
Wrap tightly around shape
5
Wrap text through shape

\shpwrkN
Wrap on side (for types 2 and 4 for \shpwrN):
0
Wrap both sides of shape
1
Wrap left side only
2
Wrap right side only
3
Wrap only on largest side

\shpfblwtxtN
Describes relative z-ordering:
0
Text is below shape
1
Shape is below text

\shplockanchor
Lock anchor for a shape.

\shptxt
Text for a shape. The text must follow all of the other properties for the shape (inside the \shpinst destination) and must appear in the following format:

```
{ \shptxt  Any valid RTF for the current text box }
```

Note For linked text boxes, the first text box of the linked set has the entire story, so all following text boxes will not have a \shptxt field.

\shprslt
This is where the Word 6.0 and Word 95 drawn object RTF can be placed.

\shpgrp
Specifies a group shape. The parameters following this keyword are the same as those following \shp. The order of the shapes inside a group is from bottom to top in z-order.
Inside of a \shpgrp, no { \shprslt .... } fields would be generated (that is, only the root-level shape can have a \shprslt field (this field describes the entire group). For example:

```
{ \shpgrp  ....... { \shp ..... (and all sub-items as usual) }

           { \shp ......(and all sub-items as usual) }
```

Note { \shpgrp ...... } can be substituted for { \shp ..... } in order to create groups inside of groups.

With the exception of \shplid, the control words listed in the preceding

table do not apply for shapes that are within a group. For more information about groups, see the
 HYPERLINK \l "_Introduction"

Introduction
 section of this specification.

Control word
Meaning

\background
Specifies the document background. This is a destination control word. It contains the { \shp keyword and all the shape properties.

Drawing Object Properties
The bulk of a drawing object is defined as a series of properties. The { \shp .... control word is followed by { *\shpinst Following the { *\shpinst   is a list of all the properties of a shape. Each of the properties is in the following format:

{ \sp { \sn PropertyName } { \sv PropertyValueInformation } }

The control word for the drawing object property is \sp. Each property has a pair of name (\sn) and value (\sv) control words placed in the shape property group. For example, the vertical flip property is represented as:
{\sp{\sn fFlipV}{\sv 1}}

Here, the name of the property is fFlipV and the value is 1, which indicates True. All shape properties follow this basic format. Only properties that have been explicitly set for a shape are written out in RTF. Other properties assume the default values (a property may be set to the default value explicitly).
The following table describes all the names of properties for drawing objects along with their corresponding value type.
Property
Meaning
Type of value
Default

Position

posh
Horizontal alignment:
1
Left
2
Center
3
Right
4

Inside
5
Outside
This overrides the absolute position specified in \shpleftN and \shprightN.
Not applicable
Absolute position as specified in \shpleftN and \shprightN.

posrelh
Position horizontally relative to:
0
Margin
1
Page
2
Column
3
Character
Not applicable
2, if posh is present

posv
Vertical alignment:
1
Center
2
Column
3
Bottom
4
Inside
5
Outside
This overrides the absolute position specified in \shptopN and \shpbottomN..
Not applicable
Absolute position as specified in \shptopN and \shpbottomN.

posrelv
Position horizontally relative to:
0
Margin
1
Page
2
Paragraph
3
Line
2 is the assumed value if the property is not explicitly written.
Not applicable
2, if posv is present

fLayoutInCell
Allows shape to anchor and position inside table cells.
Boolean

FALSE

fAllowOverlap
Allows shape to overlap other shapes unless it is a shape with None wrapping (\shpwr3), in which case it can always overlap an object with other types of wrapping and vice-versa.
Boolean
TRUE

fChangePage
Anchor may change page.
Boolean
FALSE

Object Type

fIsBullet
Boolean
Indicates whether a picture was inserted as a picture bullet.
FALSE

Rotation
Angle
Rotation of the shape.
0

fFlipV
Boolean
Vertical flip, applied after the rotation.
FALSE

fFlipH
Boolean
Horizontal flip, applied after the rotation.
FALSE

ShapeType
Not applicable
See below for values. 0 indicates user-drawn freeforms and polygons.
Not applicable

wzName
String
Shape name (only set through Visual Basic for Applications).
NULL

pWrapPolygonVertices
Array
Points of the text wrap polygon.
NULL

dxWrapDistLeft
EMU
Left wrapping distance from text.
114,305

dyWrapDistTop
EMU
Top wrapping distance from text.
0

dxWrapDistRight
EMU
Right wrapping distance from text.
114,305

dyWrapDistBottom
EMU
Bottom wrapping distance from text.
0

fBehindDocument
Boolean
Place the shape behind text.
FALSE

fIsButton
Boolean
A button shape (That is, clicking performs an action). Set for shapes with attached hyperlinks or macros.
FALSE

fHidden
Boolean
Do not display or print (only set through Visual Basic for Applications).
FALSE

pihlShape
Hyperlink
The hyperlink in the shape.
NULL

fArrowheadsOK
Boolean
Allow arrowheads.
FALSE

fBackground
Boolean
This is the background shape.
FALSE

fDeleteAttachedObject
Boolean

Delete object attached to shape.
FALSE

fEditedWrap
Boolean
The shapeís wrap polygon has been edited.
FALSE

fHidden
Boolean
Do not display.
FALSE

fHitTestFill
Boolean
Hit test fill.
TRUE

fHitTestLine
Boolean
Hit test lines.
TRUE

fInitiator
Boolean
Set by the solver.
NULL

fNoFillHitTest
Boolean
Hit test a shape as though filled.
FALSE

fNoHitTestPicture
Boolean
Do not hit test the picture.
FALSE

fNoLineDrawDash
Boolean
Draw a dashed line if no line exists.
FALSE

fOleIcon
Boolean
For OLE objects, indicates whether the object is in icon form or not.
FALSE

fOnDblClickNotify
Boolean
Notify client on a double click.
FALSE

fOneD

Boolean
1D adjustment.
FALSE

fPreferRelativeResize
Boolean
For UI only. Prefer relative resizing.
FALSE

fPrint
Boolean
Print this shape.
TRUE

hspMaster
Shape ID
Master shape.
NULL

hspNext
Shape ID
ID of the next shape (used by Word for linked text boxes).
NULL

xLimo
Long integer
Defines the limo stretch point.
Not applicable

yLimo
Long integer
Defines the limo stretch point.
Not applicable

Lock

fLockRotation
Boolean
Lock rotation.
FALSE

fLockAspectRatio
Boolean
Lock aspect ratio.
FALSE

fLockAgainstSelect
Boolean
Lock against selection.
FALSE

fLockCropping
Boolean
Lock against cropping.
FALSE

fLockVerticies
Boolean
Lock against edit mode.
FALSE

fLockText
Boolean
Lock text against editing.
FALSE

fLockAdjustHandles
Boolean
Lock adjust handles.
FALSE

fLockAgainstGrouping
Boolean
Lock against grouping.
FALSE

fLockShapeType
Boolean
Lock the shape type (donít allow Change Shape).
FALSE

Text Box

dxTextLeft
EMU
Left internal margin of the text box.
91,440

dyTextTop
EMU
Top internal margin of the text box.
45,720

dxTextRight
EMU
Right internal margin of the text box.
91,440

dyTextBottom
EMU

Bottom internal margin of the text box.
45,720

WrapText
Not applicable
Wrap text at shape margins:
0
Square
1
Tight
2
None
3
Top bottom
4
Through
0

anchorText
Not applicable
Text anchor point:
0
Top
1
Middle
2
Bottom
3
Top centered
4
Middle centered
5
Bottom centered
6
Bottom centered baseline
0

txflTextFlow
Not applicable
Text flow:
0
Horizontal non-ASCII font
1
Top to bottom ASCII font
2
Bottom to top non-ASCII font
3
Top to bottom non-ASCII font
4
Horizontal ASCII font
0

cdirFont
Direction

Font rotation:
0
Right
1
Down
2
Left
3
Up
0

fAutoTextMargin
Boolean
Use hostís margin calculations.
FALSE

scaleText
Long integer
Text zoom and scale.
0

lTxid
Long integer
ID for the text. The value is determined by the host.
0

fRotateText
Boolean
Rotate text with shape.
FALSE

fSelectText
Boolean
TRUE if single click selects text, FALSE if two clicks select text.
TRUE

fFitShapeToText
Boolean
Adjust shape to fit text size.
FALSE

fFitTextToShape
Boolean
Adjust text to fit shape size.
FALSE

WordArt Effect

gtextUNICODE
String

Unicode text string.
NULL

gtextAlign
Not applicable
Alignment on curve:
0
Stretch each line of text to fit width
1
Center text on width
2
Left justify
3
Right justify
4
Spread letters out to fit width
5
Spread words out to fit width
1

gtextSize
Fixed
Default point size.
2,359,296

gtextSpacing
Fixed
Adjust the spacing between characters (1.0 is normal).
65,536

gtextFont
String
Font name.
NULL

fGtext
Boolean
True if the text effect properties (gtext*) are used. False if these properties are ignored.
FALSE

gtextFVertical
Boolean
If available, an @ font should be used. Otherwise, rotate individual characters 90 degrees counter-clockwise.
FALSE

gtextFKern
Boolean
Use character pair kerning if it is supported by the font.
FALSE

gtextFTight
Boolean

Adjust the spacing between characters rather than the character advance by the gtextSpacingratio.
FALSE

gtextFStretch
Boolean
Stretch the text to fit the shape.
FALSE

gtextFShrinkFit
Boolean
When laying out the characters, consider the glyph bounding box rather than the nominal font character bounds.
FALSE

gtextFBestFit
Boolean
Scale text laid out on a path to fit the path.
FALSE

gtextFNormalize
Boolean
Stretch individual character heights independently to fit.
FALSE

gtextFDxMeasure
Boolean
When laying out characters, measure the distances along the x-axis rather than along the path.
FALSE

gtextFBold
Boolean
Bold font (if available).
FALSE

gtextFItalic
Boolean
Italic font (if available).
FALSE

gtextFUnderline
Boolean
Underline font (if available).
FALSE

gtextFShadow
Boolean
Shadow font (if available).
FALSE

gtextFSmallcaps
Boolean
Small caps font (if available).

FALSE

gtextFStrikethrough
Boolean
Strikethrough font (if available).
FALSE

fGtextOK
Boolean
Text effect (WordArt) supported.
FALSE

gtextFReverseRows
Boolean
Reverse row order.
FALSE

gtextRTF
String
RTF text string.
NULL

Picture

cropFromTop
Fixed
Top cropping percentage.
0

cropFromBottom
Fixed
Bottom cropping percentage.
0

cropFromLeft
Fixed
Left cropping percentage.
0

cropFromRight
Fixed
Right cropping percentage.
0

pib
Picture
Binary picture data.
NULL

pibName

String
Picture file name that is used to link to file pictures.
NULL

pibFlags
Not applicable
Flags for linked pictures:
0
No links (default)
10
Link to file; save with document
14
Link to file; do not save picture with document
0

pictureTransparent
Color
Transparent color.
0

pictureContrast
Fixed
Contrast setting.
65,536

PictureBrightness
Fixed
Brightness setting.
0

pictureGamma
Fixed
Gamma correction setting.
0

pictureGray
Boolean
Display grayscale.
0

pictureBiLevel
Boolean
Display bi-level.
0

pibPrint
Picture
Blip to display when printing.
NULL

pibPrintFlags
Not applicable
Flags:
0

No links (default)
10
Link to file; save with document
14
Link to file; do not save picture with document
0

pibPrintName
String
Blip file name.
NULL

pictureActive
Boolean
Server is active (OLE objects only).
FALSE

pictureDblCrMod
Color
Modification used if shape has double shadow.
No change

pictureFillCrMod
Color
Modification for BW views.
Undefined

pictureId
Long integer
Host-defined ID for OLE objects (usually a pointer).
0

pictureLineCrMod
Color
Modification for BW views.
Undefined

Geometry

geoLeft
Long integer
Left edge of the bounds of a user-drawn shape.
0

geoTop
Long integer
Top edge of the bounds of a user-drawn shape.
0

geoRight

Long integer
Right edge of the bounds of a user-drawn shape.
21,600

geoBottom
Long integer
Bottom edge of the bounds of a user-drawn shape.
21,600

pVerticies
Array
The points of the shape.
NULL

pSegmentInfo
Array
The segment information.
NULL

pFragments
Array
Fragments are optional, additional parts to the shape. They allow the shape to contain multiple paths and parts. This property lists the fragments of the shape.
NULL

pGuides
Array
Guide formulasóan array of elements that correspond to the VML <formulas> element, where each array entry is a single <f> entry.
NULL

pInscribe
Array
The inscribed rectangle definition.
NULL

pAdjustHandles
Array
The adjust handle definitions - an array of values corresponding to the VML < handles> element.
NULL

adjustValue
Integer
First adjust value from an adjust handle. The interpretation varies with the shape type. Adjust values alter the geometry of the shape in smart ways.
0

adjust2Value
Long integer
Second adjust value.
0

adjust3Value
Long integer
Third adjust value.
0

adjust4Value
Long integer
Fourth adjust value.
0

adjust5Value
Long integer
Fifth adjust value.
0

adjust6Value
Long integer
Sixth adjust value.
0

adjust7Value
Long integer
Seventh adjust value.
0

adjust8Value
Long integer
Eighth adjust value.
0

adjust9Value
Long integer
Ninth adjust value.
0

adjust10Value
Long integer
Tenth adjust value.
0

Grouped Shapes

fRelChangePage
Boolean
Anchor may change page.
FALSE

fRelFlipH
Boolean
Vertical flip of an object inside a group, relative to its container and

applied after the rotation.
FALSE

fRelFlipV
Boolean
Horizontal flip of an object inside a group, relative to its container and applied after the rotation.
FALSE

groupBottom
Twips
Defines the height of the group rectangle, but does not necessarily indicate position on the page. The difference between groupBottom and groupTop should match the dimensions specified by \shptop and \shpbottom.
20,000

groupLeft
Twips
Defines the width of the group rectangle, but does not necessarily indicate position on the page. The difference between groupLeft and groupRight should match the dimensions specified by \shpleft and \shpright.
0

groupRight
Twips
See meaning for groupLeft.
20,000

groupTop
Twips
See meaning for groupBottom.
0

relBottom
Twips
Defines the bottom of a shape within its parent shape (used for shapes in a group). The measurement is relative to the position of the parent group or drawing.
1

relLeft
Twips
Defines the left of a shape within its parent shape (used for shapes in a group). The measurement is relative to the position of the parent group or drawing.
0

relRight
Twips
Defines the right of a shape within its parent shape (used for shapes in a group). The measurement is relative to the position of the parent group or drawing.
1

relRotation
Fixed
Represents the information stored in the site of a shape, which defines the size and location of the shape in the parent group or drawing. The coordinates are relative to the position of the parent group or drawing. The units are relative to the m_rcg of the parent.
0

relTop
Twips
Defines the top of a shape within its parent shape (used for shapes in a group). The measurement is relative to the position of the parent group or drawing.
0

lidRegroup
Long integer
Regroup ID.
0

Fill

fillType
Fill type
Type of fill:
0
Solid color
1
Pattern (bitmap)
2
Texture (pattern with its own color map)
3
Picture centered in the shape
4
Shade from start to end points
5
Shade from bounding rectangle to end point
6
Shade from shape outline to end point
7
Shade using the fillAngle
0

fillColor
Color
Foreground color.
White

fillOpacity
Fixed

Opacity.
65,536

fillBackColor
Color
Background color.
White

fillBackOpacity
Fixed
Opacity for shades only.
65,536

fillBlip
Picture
Pattern or texture picture for the fill.
NULL

fillBlipName
String
Picture file name for custom fills.
NULL

fillblipflags
Not applicable
Flags for fills:
0
No links (default)
10
Link to file; save picture with document
14

Link to file; do not save picture with document
0

fillWidth
EMU
Exand the pattern or tile to approximately this size.
0

fillHeight
EMU
Expand the pattern or tile to approximately this size.
0

fillAngle
Fixed
Fade angle specified number of degrees.
0

fillFocus
Not applicable
Linear shaded fill focus percent.
0

fillToLeft
Fixed
The fillToLeft, fillToTop, fillToRight, and fillToBottom values define the "focus" rectangle for concentric shapes; they are specified as a fraction of the outer rectangle of the shade.
0

fillToTop
Fixed
See meaning for fillToLeft.
0

fillToRight
Fixed
See meaning for fillToLeft.
0

fillToBottom
Fixed
See meaning for fillToLeft.
0

fillShadeColors
Array
Custom or preset color ramps for graduated fills on shapes.
NULL

fillOriginX
Fixed
When a textured fill is used, the texture may be aligned with the shape (fFillShape)óif this is done, the default alignment is to the top left. The values FillOriginY, FillShapeOriginX, and fillShapeOriginY allow an arbitrary position in the texture (relative to the top left proportion of the texture's height and width) to be aligned with an arbitrary position on the shape (relative to the top-left proportion of the width and height of the bounding box).
Note that all these values are fixed point fractions of the relevant width or height.
0

fillOriginY
Fixed
See meaning for fillOriginX.
0

fillShapeOriginX
Fixed
See meaning for fillOriginX.
0

fillShapeOriginY
Fixed
See meaning for fillOriginX.

0

fFilled
Boolean
The shape is filled.
TRUE

fillCrMod
Color
Modification for BW views
Undefined

fillDztype
Measurement type
Measurement type:
0
Default size, ignore the values
1
Values are in EMUs
2
Values are in pixels
3
Values are fixed fractions of the shape size
4
Aspect ratio is fixed
5
EMUs, fixed aspect ratio
6
Pixels, fixed aspect ratio
7
Proportion of shape, fixed aspect ratio
8
Aspect ratio is fixed, favor larger size
9
EMUs, fixed aspect ratio
10
Pixels, fixed aspect ratio
11
Proportion of shape, fixed aspect ratio
0

fillRectBottom
EMU
For shaded fills, use the specified rectangle instead of the shapeís bounding rectangle to define how large the fade will be.
0

fillRectLeft
EMU
For shaded fills, use the specified rectangle instead of the shapeís bounding rectangle to define how large the fade will be.
0

fillRectRight

EMU
For shaded fills, use the specified rectangle instead of the shapeís bounding rectangle to define how large the fade will be.
0

fillRectTop
EMU
For shaded fills, use the specified rectangle instead of the shapeís bounding rectangle to define how large the fade will be.
0

fillShadeColors
Array
Preset array of colors.
NULL

fillShadePreset
Long integer
Special shades.
0

fillShadeType

HYPERLINK \l "MSOSHADETYPE"

Shade
type
Type of shading, if using a shaded (gradient) fill.
Default

fillShape
Boolean
Register pattern on shape.
TRUE

fillUseRect
Boolean
Use the large rectangle.
FALSE

fillWidth
EMU
Size of a metafile texture.
0

fFillOK
Boolean
Define whether the shape can be filled through the user interface (UI) or Microsoft Visual Basic for Applications."
TRUE

fFillShadeShapeOK
Boolean
If TRUE, a concentric shade (repeatedly drawing the shape at a decreasing

size) is permitted for this path. If FALSE, a concentric shade is not permitted (generally because the repeated drawing will overwrite the shape boundary).
FALSE

Line

lineColor
Color
Color of the line.
Black

lineBackColor
Color
Background color of the pattern.
White

lineType
Line type
Type of line:
0
Solid fill with the line color
1
Patterned fill with the lineFillBlip
2
Textured fill with the lineFillBlip
3
Picture fill with the lineFillBlip
0

lineFillBlip
Picture
Pattern for the line.
NULL

lineFillBlipFlags
Not applicable
Flags for patterned lines:
0
No links (default)
10
Link to file; save picture with document
14
Link to file; do not save picture with document
0

lineFillWidth
EMU
Width of the pattern.
0

lineFillHeight
EMU
Height of the pattern.
0

lineWidth
EMU
Width of the line.
9,525 (0.75pt)

lineStyle
Line style
Line style:
0
Single line (of width lineWidth)
1
Double lines of equal width
2
Double lines, one thick, one thin
3
Double lines, reverse order
4
Three lines, thin, thick, thin
0

lineDashing
Dash style
Dashing:
0
Solid line
1
Dashed line (Windows)
2
Dotted line (Windows)
3
Dash-dotted line (Windows)
4
Dash-dot-dotted line (Windows)
6
Dotted line
7
Dashed line
8
Long dashed line
9
Dash-dotted line
10
Long dash-dotted line
11
Long dash-dot-dotted line
0

lineStartArrowhead

Arrow type
Start arrow type:
0
Nothing
1
Arrow
2
Stealth arrow
3
Diamond
4
Oval
6
Open arrow
7
Chevron arrow
8
Double chevron arrow
0

lineEndArrowhead
Arrow type
End arrow type (for acceptable values see meaning for lineStartArrowhead).
0

lineStartArrowWidth
Arrow width
Start arrow width:
0
Narrow
1
Medium
2
Wide
1

lineStartArrowLength
Arrow length
Start arrow length:
0
Short
1
Medium
2
Long
1

lineEndArrowWidth
Arrow width
End arrow width (for acceptable values see meaning for lineStartArrowWidth).
1

lineEndArrowLength
Arrow length

End arrow length (for acceptable values see meaning for lineStartArrowLength).
1

fLine
Boolean
Has a line.
TRUE

lineBackColor
Color
Background color.
white

lineCrMod
Color
Modification for Black and White views.
undefined

lineDashStyle
Array
Line dash style.
NULL

lineEndCapStyle
Line cap style
Line cap style for shape:
0
Round
1
Square
2
Flat
2

lineFillBlipName
String
Blip file name.
NULL

lineFillDztype
Measurement type
fillWidth/Height numbers:
0
Default size, ignore the values
1
Values are in EMUs
2
Values are in pixels
3
Values are fixed fractions of shape size
4
Aspect ratio is fixed
5

EMUs, fixed aspect ratio
6
Pixels, fixed aspect ratio
7
Proportion of shape, fixed aspect ratio
8
Aspect ratio is fixed, favor larger size
9
EMUs, fixed aspect ratio
10
Pixels, fixed aspect ratio
11
Proportion of shape, fixed aspect ratio
0

lineFillHeight
EMU
Size of a metafile texture.
0

lineJoinStyle
Line join style
Line join style for shape:
0
Join edges by a straight line
1
Extend edges until they join
2
Draw an arc between the two edges
2

lineMiterLimit
Fixed
Ratio of width.
524,288

fLineOK
Boolean
Line style may be set.
TRUE

Shadow

shadowType
Not applicable
Type of shadow:
0
Offset shadow
1
Double offset shadow

2
Rich perspective shadow (cast relative to shape)
3
Rich perspective shadow (cast in shape space)
4
Perspective shadow (cast in drawing space)
6
Emboss or engrave
0

shadowColor
Color
Foreground color.
RGB (128,128,128)

shadowHighlight
Color
Embossed color.
RGB (203,203,203)

shadowOpacity
Fixed
Opacity of the shadow.
65,536

shadowOffsetX
EMU
Shadow offset toward the right.
0

shadowOffsetY
EMU
Shadow offset toward the bottom.
0

shadowSecondOffsetX
EMU
Double shadow offset toward the right.
25,400

shadowSecondOffsetY
EMU
Double shadow offset toward the bottom.
25,400

shadowScaleXToX
Fixed
The shadowScaleXToX to shadowWeight define a 3x2 transform matrix that is applied to the shape to generate the shadow.
65,536

shadowScaleYToX
Fixed
See meaning for shadowScaleXToX.

0

shadowScaleXToY
Fixed
See meaning for shadowScaleXToX.
0

shadowScaleYToY
Fixed
See meaning for shadowScaleXToX.
65,536

shadowPerspectiveX
Fixed
See meaning for shadowScaleXToX.
0

shadowPerspectiveY
Fixed
See meaning for shadowScaleXToX.
0

shadowWeight
Fixed
See meaning for shadowScaleXToX.
32,768

shadowOriginX
Fixed
Defines the position of the origin relative to the center of the shapeó this position is determined based on a proportion of the rotated shape width and height. The shape will be rotated and then positioned such that the point is at (0,0) before the transformation is applied.
0

ShadowOriginY
Fixed
See meaning for shadowOriginX.
0

fShadow
Boolean
Turns the shadow on or off.
FALSE

shadowCrMod
Color
Modification for BW views.
Undefined

fshadowObscured
Boolean
Microsoft Excel 5 style shadow.
FALSE

fShadowOK
Boolean
Shadow may be set.
TRUE

3-D Effects

c3DSpecularAmt
Fixed
Specular amount for the material.
0

c3DDiffuseAmt
Fixed
Diffusion amount for the material.
65,536

c3DShininess
Long integer
Shininess of the material.
5

c3DEdgeThickness
EMU
Specular edge thickness.
12,700

c3DExtrudeForward
EMU
Extrusion amount forward.
0

c3DExtrudeBackward
EMU
Extrusion amount backward.
457,200

c3DExtrusionColor
Color
Color of the extrusion.

f3D
Boolean
True if shape has a three-dimensional (3D) effect, False if it does not.
FALSE

fc3DMetallic
Boolean

True if shape uses metallic specularity, False if it does not.
FALSE

fc3DUseExtrusionColor
Boolean
Extrusion color is set explicitly.
FALSE

fc3DLightFace
Boolean
Light the face of the shape.
TRUE

c3DYRotationAngle
Angle
Degrees about y-axis.
If fc3DconstrainRotation (a Boolean property which defaults to True) is True, then the rotation is restricted to x-y rotation. In addition, the final rotation results from first rotating by c3DYRotationAngle degrees about the y-axis and then by c3DXRotationAngle degrees about the z-axis.
If fc3DconstrainRotation is False, then the final rotation results from a single rotation of c3DrotationAngle about

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and Apple Macintosh Applications
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Version:
RTF Version 1.7
Microsoft Technical Support

Subject:
Rich Text Format (RTF) Specification
Specification

Contents:

NUMPAGES   * MERGEFORMAT
223
Pages
8/2001ñ Word 2002 RTF Specification

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TOC \o "1-3"

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¶Introduction¶The Rich Text Format (RTF) Specification is a method of encoding formatted text and graphics for easy transfer between applications. Currently, users depend on special translation software to move word-processing documents between different MS-DOSÆ, MicrosoftÆ WindowsÆ, OS/2, Macintosh, and Power Macintosh applications.¶The RTF Specification provides a format for text and graphics interchange that can be used with different output devices, operating environments, and operating systems. RTF uses the ANSI, PC-8, Macintosh, or IBM PC character set to control the representation and formatting of a document, both on the screen and in print. With the RTF Specification, documents created under different operating systems and with different software applications can be transferred between those operating systems and applications. RTF files created in Microsoft Word 6.0 (and later) for the Macintosh and Power Macintosh have a file type of ìRTF.î¶Software that takes a formatted file and turns it into an RTF file is called an RTF writer. An RTF writer separates the application's control information from the actual text and writes a new file containing the text and the RTF groups associated with that text. Software that translates an RTF file into a formatted file is called an RTF reader.¶A sample RTF reader application is available (see
HYPERLINK \l "APPENDIX_A_SAMPLE_RTF_READER"

Appendix A: Sample RTF Reader Application
). It is designed for use with the specification to assist those interested in developing their own RTF readers. This application and its use are described in
HYPERLINK \l "APPENDIX_A_SAMPLE_RTF_READER"

Appendix A

. The sample RTF reader is not a for-sale product, and Microsoft does not provide technical or any other type of support for the sample RTF reader code or the RTF specification.¶RTF version 1.7 includes all new control words introduced by Microsoft Word for Windows 95 version 7.0, Word 97 for Windows, Word 98 for the Macintosh, Word 2000 for Windows, and Word 2002 for Windows, as well as other Microsoft products.¶RTF Syntax¶An RTF file consists of unformatted text, control words, control symbols, and groups. For ease of transport, a standard RTF file can consist of only 7-bit ASCII characters. (Converters that communicate with Microsoft Word for Windows or Microsoft Word for the Macintosh should expect 8-bit characters.) There is no set maximum line length for an RTF file.¶A control word is a specially formatted command that RTF uses to mark printer control codes and information that applications use to manage documents. A control word cannot be longer than 32 characters. A control word takes the following form:¶\LetterSequence<Delimiter>¶Note that a backslash begins each control word.¶The LetterSequence is made up of lowercase alphabetic characters (a through z). RTF is case sensitive. Control words (also known as Keywords) may not contain any uppercase alphabetic characters.¶The following keywords found in Word 97 through Word 2002 do not currently follow the requirement that keywords may not contain any uppercase alphabetic characters. All writers should still follow this rule, and Word will also emit completely lowercase versions of all these keywords in the next version. In the meantime, those implementing readers are advised to treat them as exceptions.¶\clFitText¶\clftsWidthN¶\clNoWrap¶\clwWidthN¶\tdfrmtxtBottomN¶\tdfrmtxtLeftN¶\tdfrmtxtRightN¶\tdfrmtxtTopN¶\trftsWidthAN¶\trftsWidthBN¶\trftsWidthN¶\trwWidthAN¶\trwWidthBN¶\trwWidthN¶\sectspecifygenN¶\ApplyBrkRules¶The delimiter marks the end of an RTF control word, and can be one of the following:¶¬¬∑

¬A¬ ¬s¬p¬a¬c¬e¬.¬ ¬I¬n¬ ¬t¬h¬i¬s¬ ¬c¬a¬s¬e¬,¬ ¬t¬h¬e¬ ¬s¬p¬a¬c¬e¬ ¬i¬s¬ ¬p¬a¬r¬t¬ ¬o¬f¬ ¬t¬h¬e¬ ¬c¬o¬n¬t¬r¬o¬l¬ ¬w¬o¬r¬d¬.¬¶¬∑

¬A¬ ¬d¬i¬g¬i¬t¬ ¬o¬r¬ ¬a¬ ¬h¬y¬p¬h¬e¬n¬ ¬(¬-¬)¬,¬ ¬w¬h¬i¬c¬h¬ ¬i¬n¬d¬i¬c¬a¬t¬e¬s¬ ¬t¬h¬a¬t¬ ¬a¬ ¬n¬u¬m¬e¬r¬i¬c¬ ¬p¬a¬r¬a¬m¬e¬t¬e¬r¬ ¬f¬o¬l¬l¬o¬w¬s¬.¬ ¬T¬h¬e¬ ¬s¬u¬b¬s¬e¬q¬u¬e¬n¬t¬ ¬d¬i¬g¬i¬t¬a¬l¬ ¬s¬e¬q¬u¬e¬n¬c¬e¬ ¬i¬s¬ ¬t¬h¬e¬n¬ ¬d¬e¬l¬i¬m¬i¬t¬e¬d¬ ¬b¬y¬ ¬a¬ ¬s¬p¬a¬c¬e¬ ¬o¬r¬ ¬a¬n¬y¬ ¬c¬h¬a¬r¬a¬c¬t¬e¬r¬ ¬o¬t¬h¬e¬r¬ ¬t¬h¬a¬n¬ ¬a¬ ¬l¬e¬t¬t¬e¬r¬ ¬o¬r¬ ¬a¬ ¬d¬i¬g¬i¬t¬.¬ ¬T¬h¬e¬ ¬p¬arameter can be a positive or negative number. The range of the values for the number is generally ñ32767 through 32767. However, Word tends to restrict the range to ñ31680 through 31680. Word allows values in the range ñ2,147,483,648 to 2,147,483,648 for a small number of keywords (specifically \bin, \revdttm, and some picture properties). An RTF parser must handle an arbitrary string of digits as a legal value for a keyword. If a numeric parameter immediately follows the control word, this parameter become¬s¬ ¬p¬a¬r¬t¬ ¬o¬f¬ ¬t¬h¬e¬ ¬c¬o¬n¬t¬r¬o¬l¬ ¬w¬o¬r¬d¬.¬ ¬T¬h¬e¬ ¬c¬o¬n¬t¬r¬o¬l¬ ¬w¬o¬r¬d¬ ¬i¬s¬ ¬t¬h¬e¬n¬ ¬d¬e¬l¬i¬m¬i¬t¬e¬d¬ ¬b¬y¬ ¬a¬ ¬s¬p¬a¬c¬e¬ ¬o¬r¬ ¬a¬ ¬n¬o¬n¬a¬l¬p¬h¬a¬b¬e¬t¬i¬c¬ ¬o¬r¬ ¬n¬o¬n¬n¬u¬m¬e¬r¬i¬c¬ ¬c¬h¬a¬r¬a¬c¬t¬e¬r¬ ¬i¬n¬ ¬t¬h¬e¬ ¬s¬a¬m¬e¬ ¬m¬a¬n¬n¬e¬r¬ ¬a¬s¬ ¬a¬n¬y¬ ¬o¬t¬h¬e¬r¬ ¬c¬o¬n¬t¬r¬o¬l¬ ¬w¬o¬r¬d¬.¬¶¬∑

¬A¬n¬y¬ ¬c¬h¬a¬r¬a¬c¬t¬e¬r¬ ¬o¬t¬h¬e¬r¬ ¬t¬h¬a¬n¬ ¬a¬ ¬l¬e¬t¬t¬e¬r¬ ¬o¬r¬ ¬a¬ ¬d¬i¬g¬i¬t¬.¬ ¬I¬n¬ ¬t¬h¬i¬s¬ ¬c¬a¬s¬e¬,¬ ¬t¬h¬e¬ ¬d¬e¬l¬i¬m¬i¬t¬i¬n¬g¬ ¬c¬h¬a¬r¬a¬c¬t¬e¬r¬ ¬t¬e¬r¬m¬i¬nates the control word but is not actually part of the control word.¶If a space delimits the control word, the space does not appear in the document. Any characters following the delimiter, including spaces, will appear in the document. For this reason, you should use spaces only where necessary; do not use spaces merely to break up RTF code.¶A control symbol consists of a backslash followed by a single, nonalphabetic character. For example, \~ represents a nonbreaking space. Control symbols take no delimiters.¶A group consists of text and control words or control symbols enclosed in braces ({ }). The opening brace ({) indicates the start of the group and the closing brace (}) indicates the end of the group. Each group specifies the text affected by the group and the different attributes of that text. The RTF file can also include groups for fonts, styles, screen color, pictures, footnotes, comments (annotations), headers and footers, summary information, fields, and bookmarks, as well as document-, section-, paragraph-, and character-formatting properties. If the font, file, style, screen color, revision mark, and summary-information groups and document-formatting properties are included, they must precede the first plain-text character in the document. These groups form the RTF file header. If the group for fonts is included, it should precede the group for styles. If any group is not used, it can be omitted. The groups are discussed in the following sections.¶The control properties of certain control words (such as bold, italic, keep together, and so on) have only two states. When such a control word has no parameter or has a nonzero parameter, it is assumed that the control word turns on the property. When such a control word has a parameter of 0, it is assumed that the control word turns off the property. For example, \b turns on bold, whereas \b0 turns off bold.¶Certain control words, referred to as destinations, mark the beginning of a collection of related text that could appear at another position, or destination, within the document. Destinations may also be text that is used but should not appear within the document at all. An example of a destination is the \footnote group, where the footnote text follows the control word. Page breaks cannot occur in destination text. Destination control words and their following text must be enclosed in braces. No other control words or text may appear within the destination group. Destinations added after the RTF Specification published in the March 1987 Microsoft Systems Journal may be preceded by the control symbol *. This control symbol identifies destinations whose related text should be ignored if the RTF reader does not recognize the destination. (RTF writers should follow the convention of using this control symbol when adding new destinations or groups.) Destinations whose related text should be inserted into the document even if the RTF reader does not recognize the destination should not use *. All destinations that were not included in the March 1987 revision of the RTF Specification are shown with * as part of the control word.¶Formatting specified within a group affects only the text within that group. Generally, text within a group inherits the formatting of the text in the preceding group. However, Microsoft implementations of RTF assume that the footnote, annotation, header, and footer groups (described later in this specification) do not inherit the formatting of the preceding text. Therefore, to ensure that these groups are always formatted correctly, you should set the formatting within these groups to the default with the \sectd, \pard, and \plain control words, and then add any desired formatting.¶The control words, control symbols, and braces constitute control information. All other characters in the file are plain text. Here is an example of plain text that does not exist within a group:¶{\rtf\ansi\deff0{\fonttbl{\f0\froman Tms Rmn;}{\f1\fdecor ¶Symbol;}{\f2\fswiss Helv;}}{\colortbl;\red0\green0\blue0;¶\red0\green0\blue255;\red0\

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green255\blue255;\red0\green255\¶blue0;\red255\green0\blue255;\red255\green0\
blue0;\red255\¶green255\blue0;\red255\green255\blue255;}{\stylesheet{\fs20 \
snext0Normal;}}{\info{\author John Doe}¶{\creatim\yr1990\mo7\dy30\hr10\
min48}{\version1}{\edmins0}¶{\nofpages1}{\nofwords0}{\nofchars0}{\vern8351}}\
widoctrl\ftnbj \sectd\linex0\endnhere \pard\plain \fs20 This is plain text.\
par}¶¶The phrase ìThis is plain text.î is not part of a group and is treated
as document text.¶As previously mentioned, the backslash (\) and braces ({
¬}¬)¬ ¬h¬a¬v¬e¬ ¬s¬p¬e¬c¬i¬a¬l¬ ¬m¬e¬a¬n¬i¬n¬g¬ ¬i¬n¬ ¬R¬T¬F¬.¬ ¬T¬o¬ ¬u¬s¬e¬
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special characters to the plain text stream. Other information serves to
change the program state, which includes properties of the document as a
whole, or to change any of a collection of group states, which apply to parts
of the document.¶As previously mentioned, a group state can specify the
following:¶¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬
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¬i¬f¬ ¬a¬n¬y¬,¬ ¬a¬n¬d¬ ¬looks up the control word or control symbol in a
```

table that maps control words to actions. It then carries out the action prescribed in the lookup table. (The possible actions are discussed in the following table.) The read pointer is left before or after a control-word delimiter, as
appropriate.¶¬¬¬
¬¬
¬¬∑
¬I¬f¬ ¬t¬h¬e¬ ¬c¬h¬a¬r¬a¬c¬t¬e¬r¬ ¬i¬s¬ ¬a¬n¬y¬t¬h¬i¬n¬g¬ ¬o¬t¬h¬e¬r¬ ¬t¬h¬a¬n¬ ¬a¬n¬ ¬o¬p¬e¬n¬i¬n¬g¬ ¬b¬r¬a¬c¬e¬ ¬(¬{¬)¬,¬ ¬c¬l¬o¬s¬i¬n¬g¬ ¬b¬r¬a¬c¬e¬ ¬(¬}¬)¬,¬ ¬o¬r¬ ¬b¬a¬c¬k¬s¬l¬a¬s¬h¬ ¬(¬\¬)¬,¬ ¬t¬h¬e¬ ¬r¬e¬a¬d¬e¬r¬ ¬a¬s¬s¬u¬m¬e¬s¬ ¬t¬h¬a¬t¬ ¬t¬h¬e¬ ¬c¬h¬a¬r¬a¬c¬t¬e¬r¬ ¬i¬s¬ ¬p¬l¬a¬i¬n¬ ¬t¬e¬x¬t¬ ¬a¬n¬d¬ ¬w¬r¬i¬t¬e¬s¬ ¬t¬h¬e¬ ¬c¬h¬a¬r¬a¬c¬t¬e¬r¬ ¬t¬o¬ ¬t¬h¬e¬ ¬c¬u¬r¬r¬e¬n¬t¬ ¬d¬e¬s¬t¬i¬n¬a¬t¬i¬o¬n¬ ¬u¬s¬i¬n¬g¬ ¬t¬h¬e¬ ¬c¬u¬r¬r¬e¬n¬t¬ ¬f¬o¬r¬m¬a¬t¬t¬i¬n¬g¬ ¬p¬r¬o¬p¬e¬r¬t¬i¬e¬s¬.¬¶¬I¬f¬ ¬t¬h¬e¬ ¬R¬T¬F¬ reader cannot find a particular control word or control symbol in the lookup table described in the preceding list, the control word or control symbol should be ignored. If a control word or control symbol is preceded by an opening brace ({), it is part of a group. The current state should be saved on the stack, but no state change should occur. When a closing brace (}) is encountered, the current state should be retrieved from the stack, thereby resetting the current state. If the * control symbol precedes a control word, then it defines a destination group and was itself preceded by an opening brace ({). The RTF reader should discard all text up to and including the closing brace (}) that closes this group. All RTF readers must recognize all destinations defined in the March 1987 RTF Specification. The reader may skip past the group, but it is not allowed to simply discard the control word. Destinations defined since March 1987 are marked with the * control symbol.¶Note All RTF readers must implement the * control symbol so that they can read RTF files written by newer RTF writers.¶For control words or control symbols that the RTF reader can find in the lookup table, the possible actions are as follows.¶Action
Description

Change Destination
The RTF reader changes the destination to the destination described in the table entry. Destination changes are legal only immediately after an opening brace ({). (Other restrictions may also apply; for example, footnotes cannot be nested.) Many destination changes imply that the current property settings will be reset to their default settings. Examples of control words that change destination are \footnote, \header, \footer, \pict, \info, \fonttbl, \stylesheet, and \colortbl. This specification identifies all destination control words where they appear in control-word tables.

Change Formatting Property
The RTF reader changes the property as described in the table entry. The entry will specify whether a parameter is required.
HYPERLINK \l "APPENDIX_B_INDEX_OF_RTF_CONTROL_WORDS"

Appendix B: Index of RTF Control Words
at the end of this Specification also specifies which control words require parameters. If a parameter is needed and not specified, then a default value will be used. The default value used depends on the control word. If the control word does not specify a default, then all RTF readers should assume a default of 0.

Insert Special Character
The reader inserts into the document the character code or codes described in the table entry.

Insert Special Character and Perform Action
The reader inserts into the document the character code or codes described in the table entry and performs whatever other action the entry specifies. For example, when Microsoft Word interprets \par, a paragraph mark is inserted in the document and special code is run to record the paragraph properties belonging to that paragraph mark.

Formal Syntax¶RTF uses the following syntax, based on Backus-Naur Form.¶Syntax
Meaning

#PCDATA
Text (without control words).

#SDATA
Hexadecimal data.

#BDATA
Binary data.

'c'
A literal.

<text>
A nonterminal.

A
The (terminal) control word a, without a parameter.

a or aN
The (terminal) control word a, with a parameter.

A?
Item a is optional.

A+
One or more repetitions of item a.

A*
Zero or more repetitions of item a.

A b
Item a followed by item b.

A | b
Item a or item b.

a & b
Item a and/or item b, in any order.

Contents of an RTF File¶An RTF file has the following syntax:¶<File>
'{' <header> <document> '}'

¶This syntax is the standard RTF syntax; any RTF reader must be able to correctly interpret RTF written to this syntax. It is worth mentioning again that RTF readers do not have to use all control words, but they must be able to harmlessly ignore unknown (or unused) control words, and they must correctly skip over destinations marked with the * control symbol. There may, however, be RTF writers that generate RTF that does not conform to this syntax, and as such, RTF readers should be robust enough to handle some minor variations. Nonetheless, if an RTF writer generates RTF conforming to this specification, then any correct RTF reader should be able to interpret it.¶Header¶The header has the following syntax:¶<header>
\rtf <charset> <deffont> \deff? <fonttbl> <filetbl>? <colortbl>? <stylesheet>? <listtables>? <revtbl>? <rsidtable>? <generator>?

¶Each of the various header tables should appear, if they exist, in this order. Document properties can occur before and between the header tables. A property must be defined before being referenced. Specifically,¶The style sheet must occur before any style usage.¶The font table must precede any reference to a font.¶The \deff keyword must precede any text without an explicit reference to a font, because it specifies the font to use in such cases.¶RTF Version¶An entire RTF file is considered a group and must be enclosed in braces. The \rtfN control word must follow the opening brace. The numeric parameter N identifies the major version of the RTF Specification used. The RTF standard described in this specification, although titled as version 1.7, continues to correspond syntactically to RTF Specification version 1. Therefore, the numeric parameter N for the \rtf control word should still be emitted as 1.¶Character Set¶After specifying the RTF version, you must declare the character set used in this document. The control word for the character set must precede any plain text or any table control words. The RTF Specification currently supports the following character sets.¶¶Control word
Character set

\ansi
ANSI (the default)

\mac
Apple Macintosh

\pc
IBM PC code page 437

\pca
IBM PC code page 850, used by IBM Personal System/2 (not implemented in version 1 of Microsoft Word for OS/2)

Unicode RTF¶Word 2002 is a Unicode-enabled application. Text is handled using the 16-bit Unicode character encoding scheme. Expressing this text in RTF requires a new mechanism, because until this release (version 1.6), RTF has only handled 7-bit characters directly and 8-bit characters encoded as hexadecimal. The Unicode mechanism described here can be applied to any RTF

destination or body text.¶¶Control word
Meaning

\ansicpgN
This keyword represents the ANSI code page used to perform the Unicode to ANSI conversion when writing RTF text. N represents the code page in decimal. This is typically set to the default ANSI code page of the run-time environment (for example, \ansicpg1252 for U.S. Windows). The reader can use the same ANSI code page to convert ANSI text back to Unicode. Possible values include the following:¶437
United States IBM¶708
Arabic (ASMO 708)¶709
Arabic (ASMO 449+, BCON V4)¶710
Arabic (transparent Arabic)¶711
Arabic (Nafitha Enhanced)¶720
Arabic (transparent ASMO)¶819
Windows 3.1 (United States and Western Europe)¶850
IBM multilingual¶852
Eastern European¶860
Portuguese¶862
Hebrew¶863
French Canadian¶864
Arabic¶865
Norwegian¶866
Soviet Union¶874
Thai¶932
Japanese¶936
Simplified Chinese¶949
Korean¶950
Traditional Chinese¶1250
Windows 3.1 (Eastern European)¶1251
Windows 3.1 (Cyrillic)¶1252
Western European¶1253
Greek¶1254
Turkish¶1255
Hebrew¶1256
Arabic¶1257
Baltic¶1258
Vietnamese¶1361
Johab¶This keyword should be emitted in the RTF header section right after the \ansi, \mac, \pc or \pca keyword.

\upr
This keyword represents a destination with two embedded destinations, one represented using Unicode and the other using ANSI. This keyword operates in conjunction with the \ud keyword to provide backward compatibility. The general syntax is as follows:¶{\upr{keyword ansi_text}{*\ud{keyword Unicode_text}}}¶Notice that this keyword destination does not use the * keyword; this forces the old RTF readers to pick up the ANSI representation and discard the Unicode one.

\ud
This is a destination that is represented in Unicode. The text is represented using a mixture of ANSI translation and use of \uN keywords to represent

characters that do not have the exact ANSI equivalent.

\uN
This keyword represents a single Unicode character that has no equivalent ANSI representation based on the current ANSI code page. N represents the Unicode character value expressed as a decimal number.¶This keyword is followed immediately by equivalent character(s) in ANSI representation. In this way, old readers will ignore the \uN keyword and pick up the ANSI representation properly. When this keyword is encountered, the reader should ignore the next N characters, where N corresponds to the last \ucN value encountered.¶As with all RTF keywords, a keyword-terminating space may be present (before the ANSI characters) that is not counted in the characters to skip. While this is not likely to occur (or recommended), a \bin keyword, its argument, and the binary data that follows are considered one character for skipping purposes. If an RTF scope delimiter character (that is, an opening or closing brace) is encountered while scanning skippable data, the skippable data is considered to be ended before the delimiter. This makes it possible for a reader to perform some rudimentary error recovery. To include an RTF delimiter in skippable data, it must be represented using the appropriate control symbol (that is, escaped with a backslash,) as in plain text. Any RTF control word or symbol is considered a single character for the purposes of counting skippable characters.¶An RTF writer, when it encounters a Unicode character with no corresponding ANSI character, should output \uN followed by the best ANSI representation it can manage. Also, if the Unicode character translates into an ANSI character stream with count of bytes differing from the current Unicode Character Byte Count, it should emit the \ucN keyword prior to the \uN keyword to notify the reader of the change.¶RTF control words generally accept signed 16-bit numbers as arguments. For this reason, Unicode values greater than 32767 must be expressed as negative numbers.

\ucN
This keyword represents the number of bytes corresponding to a given \uN Unicode character. This keyword may be used at any time, and values are scoped like character properties. That is, a \ucN keyword applies only to text following the keyword, and within the same (or deeper) nested braces. On exiting the group, the previous \uc value is restored. The reader must keep a stack of counts seen and use the most recent one to skip the appropriate number of characters when it encounters a \uN keyword. When leaving an RTF group that specified a \uc value, the reader must revert to the previous value. A default of 1 should be assumed if no \uc keyword has been seen in the current or outer scopes.¶A common practice is to emit no ANSI representation for Unicode characters within a Unicode destination context (that is, inside a \ud destination). Typically, the destination will contain a \uc0 control sequence. There is no need to reset the count on leaving the \ud destination, because the scoping rules will ensure the previous value is restored.

Document Text¶Document text should be emitted as ANSI characters. If there are Unicode characters that do not have corresponding ANSI characters, they should be output using the \ucN and \uN keywords.¶For example, the text Lab
symbol 71 \f "Symbol" \s 10
G
Value (Unicode characters 0x004c, 0x0061, 0x0062, 0x0393, 0x0056, 0x0061, 0x006c, 0x0075, 0x0065) should be represented as follows (assuming a previous

\ucl):¶Lab\u915GValue¶Destination Text¶Destination text is defined as any text represented in an RTF destination. A good example is the bookmark name in the \bkmkstart destination.¶Any destination containing Unicode characters should be emitted as two destinations within a \upr destination to ensure that old readers can read it properly and that no Unicode character encoding is lost when read with a new reader.¶For example, a bookmark name Lab
symbol 71 \f "Symbol" \s 10
G
Value (Unicode characters 0x004c, 0x0061, 0x0062, 0x0393, 0x0056, 0x0061, 0x006c, 0x0075, 0x0065) should be represented as follows:¶{\upr{*\bkmkstart LabGValue}{*\ud{*\bkmkstart Lab\u915Value}}}¶The first subdestination contains only ANSI characters and is the representation that old readers will see. The second subdestination is a *\ud destination that contains a second copy of the \bkmkstart destination. This copy can contain Unicode characters and is the representation that Unicode-aware readers must pay attention to, ignoring the ANSI-only version.¶Default Fonts¶Default font settings can be used to tell the program what regional settings are appropriate as defaults. For example, having a Japanese font set in \stshfdbchN would tell Word to enable Japanese formatting options. N refers to an entry in the font table.¶¶<deffont>
\stshfdbchN \stshflochN \stshfhichN \stshfbi

\stshfdbchN
Defines what font should be used by default in the style sheet for Far East characters.

\stshflochN
Defines what font should be used by default in the style sheet for ACSII characters.

\stshfhichN
Defines what font should be used by default in the style sheet for High-ANSI characters.

\stshfbi
Defines what font should be used by default in the style sheet for Complex Scripts (BiDi) characters.

¶Default font settings can be used to tell the program what regional settings are appropriate as defaults. For example, having a Japanese font set in \stshfdbchN would tell Word to enable Japanese formatting options. N refers to an entry in the font table.¶Font Table¶The \fonttbl control word introduces the font table group. Unique \fN control words define each font available in the document, and are used to reference that font throughout the document. The font table group has the following syntax.¶<fonttbl>
'{' \fonttbl (<fontinfo> | ('{' <fontinfo> '}'))+ '}'

<fontinfo>
<fontnum> <fontfamily> <fcharset>? <fprq>? <panose>? <nontaggedname>? <fontemb>? <codepage>? <fontname> <fontaltname>? ';'

<fontnum>
\f

<fontfamily>
\fnil | \froman | \fswiss | \fmodern | \fscript | \fdecor | \ftech | \fbidi

<fcharset>
\fcharset

<fprq>
\fprq

<panose>
<data>

<nontaggedname>
*\fname

<fontname>
#PCDATA

<fontaltname>
'{*' \falt #PCDATA '}'

<fontemb>
'{*' \fontemb <fonttype> <fontfname>? <data>? '}'

<fonttype>
\ftnil | \fttruetype

<fontfname>
'{*' \fontfile <codepage>? #PCDATA '}'

<codepage>
\cpg

¶Note for <fontemb> that either <fontfname> or <data> must be present, although both may be present.¶All fonts available to the RTF writer can be included in the font table, even if the document doesn't use all the fonts.¶RTF also supports font families so that applications can attempt to intelligently choose fonts if the exact font is not present on the reading system. RTF uses the following control words to describe the various font families.¶Control word
Font family
Examples

\fnil
Unknown or default fonts (the default)
Not applicable

\froman
Roman, proportionally spaced serif fonts
Times New Roman, Palatino

\fswiss
Swiss, proportionally spaced sans serif fonts
Arial

\fmodern
Fixed-pitch serif and sans serif fonts
Courier New, Pica

\fscript
Script fonts
Cursive

\fdecor
Decorative fonts
Old English, ITC Zapf Chancery

\ftech
Technical, symbol, and mathematical fonts
Symbol

\fbidi
Arabic, Hebrew, or other bidirectional font
Miriam

¶If an RTF file uses a default font, the default font number is specified with the \deffN control word, which must precede the font-table group. The RTF writer supplies the default font number used in the creation of the document as the numeric argument N. The RTF reader then translates this number through the font table into the most similar font available on the reader's system.¶The following control words specify the character set, alternative font name, pitch of a font in the font table, and nontagged font name.¶Control word
Meaning

\fcharsetN
Specifies the character set of a font in the font table. Values for N are defined by Windows header files:¶0
ANSI¶1
Default¶2
Symbol¶3
Invalid¶77
Mac¶128
Shift Jis¶129
Hangul¶130
Johab¶134
GB2312¶136
Big5¶161
Greek¶162
Turkish¶163
Vietnamese¶177
Hebrew¶178
Arabic¶179
Arabic Traditional¶180
Arabic user¶181
Hebrew user¶186
Baltic¶204
Russian¶222

Thai¶238
Eastern European¶254
PC 437¶255
OEM

\falt
Indicates alternate font name to use if the specified font in the font table is not available. '{*' \falt <Alternate Font Name>'}'

\fprqN
Specifies the pitch of a font in the font table.

*\panose
Destination keyword. This destination contains a 10-byte Panose 1 number. Each byte represents a single font property as described by the Panose 1 standard specification.

*\fname
This is an optional control word in the font table to define the nontagged font name. This is the actual name of the font without the tag, used to show which character set is being used. For example, Arial is a nontagged font name, and Arial (Cyrillic) is a tagged font name. This control word is used by WordPad. Word ignores this control word (and never creates it).

\fbiasN
Used to arbitrate between two fonts when a particular character can exist in either non-Far East or Far East font. Word 97 through Word 2002 emit the \fbiasN keyword only in the context of bullets or list information (that is, a \listlevel destination). The default value of 0 for N indicates a non-Far East font. A value of 1 indicates a Far East font. Additional values may be defined in future releases.

¶If \fprq is specified, the N argument can be one of the following values.¶

Pitch	Value
Default pitch	0
Fixed pitch	1
Variable pitch	2

Font Embedding¶RTF supports embedded fonts with the \fontemb group located inside a font definition. An embedded font can be specified by a file name, or the actual font data may be located inside the group. If a file name is specified, it is contained in the \fontfile group. The \cpg control word can be used to specify the character set for the file name.¶RTF supports TrueType symbol 210 \f "Symbol" \s 6
”
and other embedded fonts. The type of the embedded font is described by the following control words.¶Control word

Embedded font type

\ftnil
Unknown or default font type (the default)

\fttruetype
TrueType font

Code Page Support¶A font may have a different character set from the character set of the document. For example, the Symbol font has the same characters in the same positions both on the Macintosh and in Windows. RTF describes this with the \cpg control word, which names the character set used by the font. In addition, file names (used in field instructions and in embedded fonts) may not necessarily be the same as the character set of the document; the \cpg control word can change the character set for these file names as well. However, all RTF documents must still declare a character set (that is, \ansi, \mac, \pc, or \pca) to maintain backward compatibility with earlier RTF readers.¶The following table describes valid values for \cpg.¶Value
Description

437
United States IBM

708
Arabic (ASMO 708)

709
Arabic (ASMO 449+, BCON V4)

710
Arabic (transparent Arabic)

711
Arabic (Nafitha Enhanced)

720
Arabic (transparent ASMO)

819
Windows 3.1 (United States and Western Europe)

850
IBM multilingual

852
Eastern European

860
Portuguese

862
Hebrew

863
French Canadian

864
Arabic

865
Norwegian

866
Soviet Union

874
Thai

932
Japanese

936
Simplified Chinese

949
Korean

950
Traditional Chinese

1250
Windows 3.1 (Eastern European)

1251
Windows 3.1 (Cyrillic)

1252
Western European

1253
Greek

1254
Turkish

1255
Hebrew

1256
Arabic

1257
Baltic

1258
Vietnamese

1361
Johab

File Table¶The \filetbl control word introduces the file table destination. The only time a file table is created in RTF is when the document contains subdocuments. The file table group defines the files referenced in the document and has the following syntax:¶<filetbl>
'{*' \filetbl ('{' <fileinfo> '}')+ '}'

<fileinfo>
\file <filenum><relpath>?<osnum>? <filesource>+ <file name>

<filenum>
\fid

<relpath>
\frelative

<osnum>
\fosnum

<filesource>
\fvalidmac | \fvaliddos | \fvalidntfs | \fvalidhpfs | \fnetwork | \fnonfilesys

<file name>
#PCDATA

¶Note that the file name can be any valid alphanumeric string for the named file system, indicating the complete path and file name.¶Control word
Meaning

\filetbl
A list of documents referenced by the current document. The file table has a structure analogous to the style or font table. This is a destination control word output as part of the document header.

\file
Marks the beginning of a file group, which lists relevant information about the referenced file. This is a destination control word.

\fidN
File ID number. Files are referenced later in the document using this number.

\frelativeN
The character position within the path (starting at 0) where the referenced file's path starts to be relative to the path of the owning document. For example, if a document is saved to the path C:\Private\Resume\File1.doc and its file table contains the path C:\Private\Resume\Edu\File2.doc, then that entry in the file table will be \frelative18, to point at the character "e" in "edu". This allows preservation of relative paths.

\fosnumN
Currently only filled in for paths from the Macintosh file system. It is an

operating systemñspecific number for identifying the file, which may be used to speed up access to the file or find the file if it has been moved to another folder or disk. The Macintosh operating system name for this number is the "file id." Additional meanings of the \fosnumN control word may be defined for other file systems in the future.

\fvalidmac
Macintosh file system.

\fvaliddos
MS-DOS file system.

\fvalidntfs
NTFS file system.

\fvalidhpfs
HPFS file system.

\fnetwork
Network file system. This control word may be used in conjunction with any of the previous file source control words.

\fnonfilesys
Indicates http/odma.

Color Table¶The \colortbl control word introduces the color table group, which defines screen colors, character colors, and other color information. The color table group has the following syntax:¶<colortbl>
'{' \colortbl <colordef>+ '}'

<colordef>
\red ? & \green ? & \blue ? ';'

¶The following are valid control words for this group.¶Control word
Meaning

\redN
Red index

\greenN
Green index

\blueN
Blue index

¶Each definition must be delimited by a semicolon, even if the definition is omitted. If a color definition is omitted, the RTF reader uses its default color. The following example defines the default color table used by Word. The first color is omitted, as shown by the semicolon following the \colortbl control word. The missing definition indicates that color 0 is the ëíautoíí color.¶{\colortbl;\red0\green0\blue0;\red0\green0\blue255;\red0\green255\blue255;\red0\green255\blue0;\red255\green0\blue255;\red255\green0\blue0;\red255\green255\blue0;\red255\green255\blue255;\red0\green0\blue128;\red0\green128\blue128;\red0\green128\blue0;\red128\green0\blue128;\red128\green0\

blue0;\red128\green128\blue0;\red128\green128\blue128;\red192\green192\blue192;}¶The foreground and background colors use indexes into the color table to define a color. For more information on color setup, see your Windows documentation.¶The following example defines a block of text in color (where supported). Note that the cf/cb index is the index of an entry in the color table, which represents a red/green/blue color combination.¶{\f1\cb1\cf2 This is colored text. The background is color
1 and the foreground is color 2.}¶If the file is translated for software that does not display color, the reader ignores the color table group.¶Style Sheet¶The \stylesheet control word introduces the style sheet group, which contains definitions and descriptions of the various styles used in the document. All styles in the document's style sheet can be included, even if not all the styles are used. In RTF, a style is a form of shorthand used to specify a set of character, paragraph, or section formatting.¶The style sheet group has the following syntax:¶<stylesheet>

```
'{' \stylesheet <style>+ '}'

<style>
'{' <styledef>?<keycode>? <formatting> <additive>? <based>? <next>? <autoupd>
? <hidden>? <personal>? <compose>? <reply>? <styleid>? <semihidden>? <
stylename>? ';' '}'

<styledef>
\s  |\*\cs  | \ds | \ts\tsrowd

<keycode>
'{' \keycode <keys> '}'

<keys>
( \shift? & \ctrl? & \alt?) <key>

<key>
\fn | #PCDATA

<additive>
\additive

<based>
\sbasedon

<next>
\snext

<autoupd>
\sautoupd

<hidden>
\shidden

<personal>
\spersonal

<compose>
\scompose
```

<reply>
\sreply

<formatting>
(<brdrdef> | <parfmt> | <apoctl> | <tabdef> | <shading> | <chrfmt>)+

<styleid>
\styrsidN

<semihidden>
\ssemihidden

<stylename>
#PCDATA

¶For <style>, both <styledef> and <stylename> are optional; the default is paragraph style 0. Note for <stylename> that Microsoft Word for the Macintosh interprets commas in #PCDATA as separating style synonyms. Also, for <key>, the data must be exactly one character.¶Control word
Meaning

*\csN
Designates character style. Like \s, \cs is not a destination control word. However, it is important to treat it like one inside the style sheet; that is, \cs must be prefixed with * and must appear as the first item inside a group. Doing so ensures that readers that do not understand character styles will skip the character style information correctly. When used in body text to indicate that a character style has been applied, do not include the * prefix.

\sN
Designates paragraph style.

\dsN
Designates section style.

\tsN
Designates table style,¬ ¬i¬n¬ ¬t¬h¬e¬ ¬s¬a¬m¬e¬ ¬s¬t¬y¬l¬e¬ ¬a¬s¬ ¬\¬c¬s¬ ¬f¬o¬r¬ ¬p¬l¬a¬c¬e¬m¬e¬n¬t¬ ¬a¬n¬d¬ ¬p¬r¬e¬f¬i¬x¬e¬s¬.¬ ¬ ¬ ¬ ¬
¬
¬\¬t¬s¬r¬o¬w¬d¬
¬L¬i¬k¬e¬ ¬\¬t¬r¬o¬w¬d¬ ¬b¬u¬t¬ ¬f¬o¬r¬ ¬t¬a¬b¬l¬e¬ ¬s¬t¬y¬l¬e¬ ¬d¬e¬f¬i¬n¬i¬t¬i¬o¬n¬s¬.¬
¬
¬\¬a¬d¬d¬i¬t¬i¬v¬e¬
¬U¬s¬e¬d¬ ¬i¬n¬ ¬a¬ ¬c¬h¬a¬r¬a¬c¬t¬e¬r¬ ¬s¬t¬y¬l¬e¬ ¬d¬e¬f¬i¬n¬i¬t¬i¬o¬n¬ ¬(¬'¬{¬\¬*¬'¬\¬c¬s¬º'¬}¬'¬)¬.¬ ¬I¬n¬d¬i¬c¬a¬t¬e¬s¬ ¬t¬h¬a¬t¬ ¬c¬h¬a¬r¬a¬c¬t¬e¬r¬ ¬s¬t¬y¬l¬e¬ ¬a¬t¬t¬r¬i¬b¬u¬t¬e¬s¬ ¬a¬r¬e¬ ¬t¬o¬ ¬b¬e¬ ¬a¬d¬d¬e¬d¬ ¬t¬o¬ ¬t¬h¬e¬ ¬c¬u¬r¬r¬e¬n¬t¬ ¬p¬a¬r¬a¬g¬r¬aph style attributes, rather than setting the paragraph attributes to only those defined in the character style definition.

\sbasedonN

Defines the number of the style on which the current style is based (the default is 222óno style).

\snextN
Defines the next style associated with the current style; if omitted, the next style is the current style.

\sautoupd
Automatically update styles.

\shidden
Style does not appear in the Styles drop-down list in the Style dialog box (on the Format menu, click Styles).

\spersonal
Style is a personal e-mail style.

\scompose
Style is the e-mail compose style.

\sreply
Style is the e-mail reply style.

\styrsidN
Tied to the rsid table, N is the rsid of the author who implemented the style.

\ssemihidden
Style does not appear in drop-down menus.

\keycode
This group is specified within the description of a style in the style sheet in the RTF header. The syntax for this group is '{*í\keycode <keys>'}' where <keys> are the characters used in the key code. For example, a style, Normal, may be defined {\s0 {*\keycode \shift\ctrl n}Normal;} within the RTF style sheet. See the
HYPERLINK \l "_Special_Characters_and_AñB"

Special Character
control words for the characters outside the alphanumeric range that may be used.

\alt
The alt modifier key. Used to describe shortcut key codes for styles.

\shift
The shift modifier key. Used to describe shortcut key codes for styles.

\ctrl
The ctrl modifier key. Used to describe shortcut key codes for styles.

\fnN
Specifies a function key where N is the function key number. Used to describe shortcut-key codes for styles.

¶Table Styles¶Word 2002 introduced table styles. Table styles are like other styles in that they contain properties to be shared by many tables. Unlike other styles, table styles allow for conditional formatting, such as specifically coloring the first row. ¶To address the issue of older readers opening newer RTF files, raw properties were implemented. Older readers can still see the regular properties and edit them, but newer readers should be able to read the RTF back in and not lose any style functionality. This leaves two types of properties, those applied by older emitters that are readable by older readers, and those the user applied directly to override aspects of the style. The user-applied changes are referred to as ìrawî and have a higher priority than their non-raw counterparts. ¶The following table describes keywords available for style definitions. Any older table formatting properties may be used as well.¶Control word
Meaning

\tscellwidthN
Currently emitted but has no effect.

\tscellwidthftsN
Currently emitted but has no effect.

\tscellpaddtN
Top padding value.

\tscellpaddlN
Left padding value.

\tscellpaddrN
Right padding value

\tscellpaddbN
Bottom padding value

\tscellpaddftN
Units for \tscellpaddtN ¶0
Auto¶3
Twips

\tscellpaddflN
Units for \tscellpaddlN¶0
Auto¶3
Twips

\tscellpaddfrN
Units for \tscellpaddrN¶0
Auto¶3
Twips

\tscellpaddfbN
Units for \tscellpaddbN¶0
Auto¶3
Twips

\tsvertalt
Top vertical alignment of cell

\tsvertalc
Center vertical alignment of cell

\tsvertalb
Bottom vertical alignment of cell

\tsnowrap
No cell wrapping

\tscellcfpat
Foreground cell shading color

\tscellcbpatN
Background cell shading color

\tscellpctN
Cell shading percentage ñ N is the shading of a table cell in hundredths of a percent

\tsbgbdiag
Cell shading pattern ñ backward diagonal (////)

\tsbgfdiag
Cell shading pattern ñ forward diagonal (\\\\)

\tsbgdkbdiag
Cell shading pattern ñ dark backward diagonal (////)

\tsbgdkfdiag
Cell shading pattern ñ dark forward diagonal (\\\\)

\tsbgcross
Cell shading pattern ñ cross

\tsbgdcross
Cell shading pattern ñ diagonal cross

\tsbgdkcross
Cell shading pattern ñ dark cross

\tsbgdkdcross
Cell shading pattern ñ dark diagonal cross

\tsbghoriz
Cell shading pattern ñ horizontal

\tsbgvert
Cell shading pattern ñ vertical

\tsbgdkhor
Cell shading pattern ñ dark horizontal

\tsbgdkvert
Cell shading pattern ñ dark vertical

\tsbrdrt
Top border for cell

\tsbrdrb
Bottom border for cell

\tsbrdrl
Left border for cell

\tsbrdrr
Right border for cell

\tsbrdrh
Horizontal (inside) border for cell

\tsbrdrv
Vertical (inside) border for cell

\tsbrdrdgl
Diagonal (top left to bottom right) border for cell

\tsbrdrdgr
Diagonal (bottom left to top right) border for cell

\tscbandshN
Count of rows in a row band

\tscbandsvN
Count of cells in a cell band

```
¶The following is an example of an RTF style sheet:¶{\stylesheet{\ql \li0\
ri0\widctlpar\aspalpha\aspnum\faauto\adjustright\rin0\lin0\itap0 \fs24\
lang1033\langfe1033\cgrid\langnp1033\langfenp1033 \snext0 Normal;}{\*\cs10 \
additive Default Paragraph Font;}{\*\cs15 \additive \b\ul\cf6 \sbasedon10
UNDERLINE;} {\*\ts11\tsrowd\trftsWidthB3\trpaddl108\trpaddr108\trpaddfl3 \
trpaddft3\trpaddfb3\trpaddfr3\tscellwidthfts0\tsvertalt\tsbrdrt\tsbrdrl\
tsbrdrb\tsbrdrr\tsbrdrdgl\tsbrdrdgr\tsbrdrh\tsbrdrv \ql \li0\ri0\widctlpar\
aspalpha\aspnum\faauto\adjustright\rin0 \lin0\itap0 \fs20\lang1024\
langfe1024\cgrid\langnp1024 \langfenp1024 \snext11 \ssemihidden Normal Table;
}{\s16\qc \li0\ri0\widctlpar\aspalpha\aspnum\faauto\adjustright\rin0\lin0\
itap0 \b\fs24\cf2\lang1033\langfe1033\cgrid\langnp1033\langfenp1033 \
sbasedon0 \snext16 \sautoupd CENTER;}}¶and RTF paragraphs to which the styles
are applied:¶\pard\plain \ql \li0\ri0\widctlpar\aspalpha\aspnum\faauto\
outlinelevel0\adjustright\rin0\lin0\itap0 \fs24\lang1033\langfe1033\cgrid\
langnp1033\langfenp1033 {This is the Normal Style
\par }\pard \ql \li0\ri0\widctlpar\aspalpha\aspnum\faauto\adjustright\rin0\
lin0\itap0 {\par }\pard\plain \s16\qc \li0\ri0\widctlpar\aspalpha\aspnum\
faauto\outlinelevel0\adjustright
\rin0\lin0\itap0 \b\fs24\cf2\lang1033\langfe1033\cgrid\langnp1033\
langfenp1033
```

```
{This is a centered paragraph with blue, bold font. I call the style CENTER.\
par }
\pard\plain \ql \li0\ri0\widctlpar\aspalpha\aspnum\faauto\adjustright\rin0\
lin0\itap0 \fs24\lang1033\langfe1033\cgrid\langnp1033\langfenp1033
{\par The word \'93}{\cs15\b\ul\cf6 style}{\'94 is red and underlined. I used
a style I called UNDERLINE.\par }¶Some of the control words in this example
are discussed in later sections. In the example, note that the properties of
the style were emitted following the application of the style. This was done
for two reasons: (1) to allow RTF readers that donít support styles to still
retain all formatting; and (2) to allow the additive model for styles, where
additional property changes are ìaddedî on top of the defined style. Some RTF
readers may not ìapplyî a style upon only encountering the style number
without the accompanying formatting information because of this.¶List
Tables¶Word 97, Word 2000, and Word 2002 store bullets and numbering
information very differently from earlier versions of Word. In Word 6.0, for
example, number formatting data is stored individually with each paragraph.
In Word 97 and later versions, however, all of the formatting information is
stored in a pair of document-wide list tables that act as a style sheet, and
each individual paragraph stores only an index to one of the tables, like a
style index.¶There are two list tables in Word: the List table (destination \
listtable), and the List Override table (destination \
listoverridetable).¶List Table¶The first table Word stores is the List table.
A List table is a list of lists (destination \list). Each list contains a
number of list properties that pertain to the entire list, and a list of
levels (destination \listlevel), each of which contains properties that
pertain only to that level. The \listpicture destination contains all of the
picture bullets used in the document, with a \shppict headed list of \pict
entries. These are referenced within the list by the \levelpictureN keyword,
with N referring to an element in the list, starting at 0.¶The syntax for the
List table is as follows:¶<listtable>
ë{ë \*\listtable <listpicture>? <list>+ ë}í

<listpicture>
ë{ë \*\listpicture <shppictlist> ë}í

<list>
\list \listemplateid & (\listsimple | listhybrid)? & <listlevel>+ & \
listrestarthdn & \listid & (\listname #PCDATA ë;í) \liststyleid? \
liststylename?

<listlevel>
<number> <justification> & \leveljcnN? & \levelstartatN & (\leveloldN & \
levelprevN? & \levelprevspaceN? & \levelspaceN? & \levelindentN?)? & <
leveltext> & <levelnumbers> & \levelfollowN & \levellegalN? & \
levelnorestartN? & <chrfmt>? & \levelpictureN & \li? & \fi? & (\jclisttab \
tx)?

<number>
\levelnfcN | \levelnfcnN | (\levelnfcN & \levelnfcnN)

<justification>
\leveljcN | \leveljcnN | (\leveljcN & \leveljcnN)

<leveltext>
```

ë{ë \leveltext \leveltemplateid? #SDATA ';' '}'

<levelnumbers>
ë{ë \levelnumbers #SDATA ';' '}'¶

Top-Level List Properties¶Control word
Meaning

\listidN
Each list must have a unique list ID that should be randomly generated. The value N is a long integer. The list ID cannot be between ñ1 and ñ5.

\listtemplateidN
Each list should have a unique template ID as well, which also should be randomly generated. The template ID cannot be ñ1. The value N is a long integer.

\listsimpleN
1 if the list has one level; 0 (default) if the list has nine levels.

\listhybrid
Present if the list has 9 levels, each of which is the equivalent of a simple list. Only one of \listsimple and \listhybrid should be present. Word 2000 will write lists with the \listhybrid property.

\listrestarthdnN
1 if the list restarts at each section; 0 if not. Used for Word 7.0 compatibility only.

\listname
The argument for \listname is a string that is the name of this list. Names allow ListNum fields to specify the list they belong to. This is a destination control word.

\liststyleidN
This identifies the style of this list from the list style definition that has this ID as its \listid. There can be more than one list style reference to a list style definition. This keyword follows the same numbering convention as \listid.¶\liststyleidN and \liststylename are exclusive; either zero or one of each can exist per \list definition, but never both.

\liststylename
Identifies this list as a list style definition. This creates a new list style with the given name and the properties of the current list.¶\liststyleidN and \liststylename are exclusive; either zero or one of each can exist per \list definition, but never both.

While Word 97 emitted simple or multilevel (not simple) lists, Word 2000 and Word 2002 emit hybrid lists, which are essentially collections of simple lists. The main difference between Word 2000 and Word 2002 hybrid lists and Word 97 multilevel lists is that each level of a hybrid list has a unique identifier.¶¶List Levels¶Each list consists of either one or nine list levels depending upon whether the \listsimple flag is set. Each list level contains a number of properties that specify the formatting for that level, such as

the start-at value, the text string surrounding the number, its justification and indents, and so on.¶¶Control word
Meaning

\levelstartatN
N specifies the start-at value for the level.

\levelnfcN
Specifies the number type for the level:¶0
Arabic (1, 2, 3)¶1
Uppercase Roman numeral (I, II, III)¶2
Lowercase Roman numeral (i, ii, iii)¶3
Uppercase letter (A, B, C)¶4
Lowercase letter (a, b, c)¶5
Ordinal number (1st, 2nd, 3rd)¶6
Cardinal text number (One, Two Three)¶7
Ordinal text number (First, Second, Third)¶10
Kanji numbering without the digit character (*dbnum1)¶11
Kanji numbering with the digit character (*dbnum2)¶12
46 phonetic katakana characters in "aiueo" order (*aiueo)¶13
46 phonetic katakana characters in "iroha" order (*iroha)¶14
Double-byte character¶15
Single-byte character¶16
Kanji numbering 3 (*dbnum3)¶17
Kanji numbering 4 (*dbnum4)¶18
Circle numbering (*circlenum)¶19
Double-byte Arabic numbering
¶20
46 phonetic double-byte katakana characters (*aiueo*dbchar)¶21
46 phonetic double-byte katakana characters (*iroha*dbchar)¶22
Arabic with leading zero (01, 02, 03, ..., 10, 11)¶23
Bullet (no number at all)¶24
Korean numbering 2 (*ganada)¶25
Korean numbering 1 (*chosung)¶26
Chinese numbering 1 (*gb1)¶27
Chinese numbering 2 (*gb2)¶28
Chinese numbering 3 (*gb3)¶29
Chinese numbering 4 (*gb4)¶30
Chinese Zodiac numbering 1 (* zodiac1)¶31
Chinese Zodiac numbering 2 (* zodiac2) ¶32
Chinese Zodiac numbering 3 (* zodiac3)¶33
Taiwanese double-byte numbering 1
¶34
Taiwanese double-byte numbering 2
¶35
Taiwanese double-byte numbering 3
¶36
Taiwanese double-byte numbering 4¶37
Chinese double-byte numbering 1
¶38
Chinese double-byte numbering 2
¶39
Chinese double-byte numbering 3
¶40

Chinese double-byte numbering 4
¶41
Korean double-byte numbering 1
¶42
Korean double-byte numbering 2
¶43
Korean double-byte numbering 3
¶44
Korean double-byte numbering 4
¶45
Hebrew non-standard decimal ¶46
Arabic Alif Ba Tah¶47
Hebrew Biblical standard¶48
Arabic Abjad style¶255
No number

\leveljcN
0
Left justified¶1
Center justified¶2
Right justified

\levelnfcnN
Same arguments as \levelnfc. Takes priority over \levelnfc if both are present. In Word 97 \levelnfc was interpreted differently by the Hebrew/ Arabic versions. \levelnfcnN in Word 2000 and Word 2002 eliminates dual interpretation, while \levelnfc is still needed for backward compatibility.

\leveljcnN
0
Left justified for left-to-right paragraphs and right justified for right-to-left paragraphs¶1
Center justified¶2
Right justified for left-to-right paragraphs and left justified for right-to-left paragraphs¶Word 2000 and Word 2002 prefer \leveljcnN over \leveljc if both are present, but it will be written for backward compatibility with older readers.

\leveloldN
1 if this level was converted from Word 6.0 or Word 7.0; 0 if it is a native Word 97 through Word 2002 level.

\levelprevN
1 if this level includes the text from the previous level (used for Word 7.0 compatibility only); otherwise, the value is 0. This keyword will only be valid if the \leveloldN keyword is emitted.

\levelprevspaceN
1 if this level includes the indentation from the previous level (used for Word 7.0 compatibility only); otherwise, the value is 0. This keyword will only be valid if the \leveloldN keyword is emitted.

\levelindentN
Minimum distance from the left indent to the start of the paragraph text

(used for Word 7.0 compatibility only). This keyword will only be valid if the \leveloldN keyword is emitted.

\levelspaceN
Minimum distance from the right edge of the number to the start of the paragraph text (used for Word 7.0 compatibility only). This keyword will only be valid if the \leveloldN keyword is emitted.

\leveltext
If the list is hybrid, as indicated by \listhybrid, the \leveltemplateidN keyword will be included, whose argument is a unique level ID that should be randomly generated. The value N is a long integer. The level ID cannot be between ñ1 and ñ5.¶The second argument for this destination should be the number format string for this level. The first character is the length of the string, and any numbers within the level should be replaced by the index of the level they represent. For example, a level three number such as ì1.1.1.î would generate the following RTF: ì{\leveltext \leveltemplateidN \'06\'00.\'01.\'02.}î where the í06 is the string length, the \í00, \í01, and \í02 are the level placeholders, and the periods are the surrounding text. This is a destination control word.

\levelnumbers
The argument for this destination should be a string that gives the offsets into the \leveltext of the level placeholders. In the preceding example, ì1.1.1.î, the \levelnumbers RTF should be¶{\levelnumbers \í01\í03\í05}¶because the level placeholders have indices 1, 3, and 5. This is a destination control word.

\levelfollowN
Specifies which character follows the level text: ¶0
Tab¶1
Space¶2
Nothing

\levellegalN
1 if any list numbers from previous levels should be converted to Arabic numbers; 0 if they should be left with the format specified by their own levelís definition.

\levelnorestartN
1 if this level does not restart its count each time a number of a higher level is reached; 0 if this level does restart its count each time a number of a higher level is reached.

\levelpictureN
Determines which picture bullet from the \listpicture destination should be applied.

¶In addition to all of these properties, each list level can contain any character properties (all of which affect all text for that level) and any combination of three paragraph properties: left indents, first line left indents, and tabsóeach of which must be of a special type: jclisttab. These paragraph properties will be automatically applied to any paragraph in the list.¶List Override Table¶The List Override table is a list of list overrides

(destination \listoverride). Each list override contains the listid of one of the lists in the List table, as well as a list of any properties it chooses to override. Each paragraph will contain a list override index (keyword ls), which is a 1-based index into this table. Most list overrides donít override any propertiesóinstead, they provide a level of indirection to a list. There are generally two types of list overrides: (1) formatting overrides, which allow a paragraph to be part of a list and are numbered along with the other members of the list, but have different formatting properties; and (2) start-at overrides, which allow a paragraph to share the formatting properties of a list, but have different start-at values. The first element in the document with each list override index takes the start-at value that the list override specifies as its value, while each subsequent element is assigned the number succeeding the previous element of the list.¶¶List overrides have a few top-level keywords, including a \listoverridecount, which contains a count of the number of levels whose format is overridden. This \listoverridecount should always be either 1 or 9, depending upon whether the list to be overridden is simple or hybrid/multilevel. All of the actual override information is stored within a list of list override levels (destination \lfolevel).¶Control word
Meaning

\listidN
Should exactly match the \listid of one of the lists in the List table. The value N is a long integer.

\listoverridecountN
Number of list override levels within this list override (1 or 9).

\ls
The (1-based) index of this \listoverride in the \listoverride table. This value should never be zero inside a \listoverride and must be unique for all \listoverrides within a document. The valid values are from 1 to 2000.

¶List Override Level¶Each list override level contains flags to specify whether the formatting or start-at values are being overridden for each level. If the format flag (listoverrideformat) is given, the lfolevel should also contain a list level (listlevel). If the start-at flag (listoverridestartat) is given, a start-at value must be provided. If the start-at is overridden but the format is not, then a levelstartat should be provided in the lfolevel itself. If both start-at and format are overridden, put the levelstartat inside the listlevel contained in the lfolevel.¶¶Control word
Meaning

\listoverridestartat
Indicates an override of the start-at value.

\listoverrideformatN
Number of list override levels within this list override (should be either 1 or 9).

Paragraph Group Properties¶Word 2002 introduced paragraph group properties, similar to style sheets. A document making use of these places a \pgptbl entry in the header. Elements in the Paragraph Group Properties (PGP) table are entered as they are created in the document. In the program, the \ipgpN

values are assigned random numbers, but for storage the numbers are converted to numbers in the integer range. Internally, this numbering system is left up to the developer. The formatting options are taken from the regular paragraph formatting options. PGP table entries may exist with different \ipgpN values but with the same properties. Any paragraph that references an entry in the PGP table does so by emitting \ipgpN, which sets paragraph formatting options according to the entry in the PGP table. Additional formatting options may also be employed.¶The PGP syntax is as follows:¶<pgptbl>
ë{ë *\pgptbl <entry>+ ë}í

<entry>
ë{ë \pgp<value> ë}í

<value>
\ipgpN<parfmt>+

¶The following is a sample PGP table with two entries:¶{*\pgptbl {\pgp\ipgp13\itap0\li0\ri0\sb0\sa0}{\pgp\ipgp80\itap0\li720\ri0\sb100\sa100}}¶Track Changes (Revision Marks)¶This table allows tracking of multiple authors and reviewers of a document, and is used in conjunction with the character properties for tracking changes (using revision marks).¶¶Control word
Meaning

*\revtbl
This group consists of subgroups that each identify the author of a revision in the document, as in {Author1;}. This is a destination control word.¶Revision conflicts, such as those that result when one author deletes another's additions, are stored as one group, in the following form:¶CurrentAuthor\'00\'<length of previous author's name>PreviousAuthor\'00 PreviousRevisionTime¶The 4 bytes of the Date/Time (DTTM) structure are emitted as ASCII characters, so values greater than 127 should be emitted as hexadecimal values enclosed in quotation marks.

¶All time references for revision marks use the following bit field structure, DTTM.¶Bit numbers
Information
Range

0ñ5
Minute
0ñ59

6ñ10
Hour
0ñ23

11ñ15
Day of month
1ñ31

16ñ19
Month
1ñ12

20ñ28
Year
= Year - 1900

29ñ31
Day of week
0 (Sun)ñ6 (Sat)

¶RSID¶In Word 2002, a new style of revision tracking was established. RSIDs (Revision Save IDs) indicate when text or a property was changed. Whenever text is added or deleted or properties are changed, that text or property is tagged with the current "Save ID," which is a random number that changes each time the document is saved. They are primarily used when merging or comparing two documents with a common history but no revision marks. By looking at the RSID we can tell which of the two authors made the change. Without the RSID we can only tell that there is a difference, but we don't know if (for example) it was an addition by author A or a deletion by author B. An RSID table is placed after all other style definitions and before the <generator> and <info> groups.¶The syntax for an RSID table is as follows:¶<rsidtable>
ë{ë *\rsidtbl <rsidlist>+ ë;í ë}í

<rsidlist>
\rsidN

¶Control word
Meaning

\rsidN
Each time a document is saved a new entry is added to this table, with N being the random number assigned to represent the unique session.

\insrsidN
An RSID is inserted to denote the session in which particular text was inserted. Example: ¶{\insrsid8282541 This is text.} ¶For use in lists: ¶{\insrsid8282541 Item in List \par{\listtext\pard\plain\f3\insrsid8282541 \loch\af3\dbch\af0 \hich\f3 \íb7\tab}}

\rsidrootN
Designates the start of the documentís history (first save).

\delrsidN
RSID value identifying when text was marked as deleted.

\charrsidN
RSID value identifying when character formatting was changed.

\sectrsidN
RSID identifying when section formatting was changed.

\pararsidN
RSID identifying when paragraph formatting was changed.

\tblrsidN
RSID identifying when table formatting was changed.

Old Properties¶With tracking enabled, changes to formatting can be documented. To keep track of the property before the changes were made, Old Properties were created. This tracking uses the following syntax:¶<oldprop>
ë{ë *\<oldproptype> <oldproperties>+ <trackinginfo> ë;í ë}í

<oldproptype>
\oldcprops | \oldpprops | \oldtprops | \oldsprops

<oldproperties>
This section includes any of the relevant format tags that would have to be put in place to revert the document to its pre-edit form. For example, this would be ì\b0î if the user had chosen to make the selection bold.

<trackinginfo>
This can be any tag used to track the author, revision ID, and date.

¶Control word
Meaning

\oldcprops
Old character formatting properties.

\oldpprops
Old paragraph formatting properties.

\oldtprops
Old table formatting properties.

\oldsprops
Old section formatting properties.

¶¶The following is an example of the correct use of the Old Properties when bold and italics are applied to a section of existing text. If the original text ìThis is a test.î is changed to ìThis is a test.î the following code snippet will be formed, which would tell an RTF reader that to undo the change to the character property bold and italic would have to be disabled:¶{\rtlch\fcs1 \af0 \ltrch\fcs0 \insrsid2778197 \hich\af0\dbch\af13\loch\f0 This }{\rtlch\fcs1 \ab\af0 \ltrch\fcs0 \b\i\crauth1\crdate1717000906\insrsid2778197\charrsid2778197 {*\oldcprops \b0\i0\crauth1\crdate1717000906\insrsid2778197\charrsid2778197 }\hich\af0\dbch\af13\loch\f0 is a}{\rtlch\fcs1 \af0 \ltrch\fcs0 \insrsid2778197 \hich\af0\dbch\af13\loch\f0 test.}{\rtlch\fcs1 \af0 \ltrch\fcs0 \insrsid15803535¶Generator¶Word 2002 allows the RTF emitter application to stamp the document with its name, version, and build number. The generator area has the following syntax:¶<generator>
ë{ë *\generator <name> ë;í ë}í

<name>
#PCDATA, the name of the program, the version, the build, and any other information about the emitting program can be listed here. Word 2002 lists {*\generator Microsoft Word 10.0.XXXX} in which XXXX is replaced by the build number. Only ASCII text is allowed in this field.

Document Area¶Once the RTF header is defined, the RTF reader has enough information to correctly read the actual document text. The document area has the following syntax:¶<document>

```
<info>? <docfmt>* <section>+
```

Information Group¶The \info control word introduces the information group, which contains information about the document. This can include the title, author, keywords, comments, and other information specific to the file. This information is for use by a document-management utility, if available.¶The information group has the following syntax:¶<info>

```
'{' <title>? & <subject>? & <author>? & <manager>? & <company>? <operator>? &
<category>? & <keywords>? & <comment>? & \version? & <doccomm>? & \vern? & <
creatim>? & <revtim>? & <printim>? & <buptim>? & \edmins? & \nofpages? & \
nofwords? \nofchars? & \id? '}'

<title>
'{' \title #PCDATA '}'

<subject>
'{' \subject #PCDATA '}'

<author>
'{' \author #PCDATA '}'

<manager>
{' \manager #PCDATA '}'

<company>
{' \company #PCDATA '}'

<operator>
'{' \operator #PCDATA '}'

<category>
{' \category #PCDATA '}'

<keywords>
'{' \keywords #PCDATA '}'

<comment>
'{' \comment #PCDATA '}'

<doccomm>
'{' \doccomm #PCDATA '}'

<hlinkbase>
'{' \hlinkbase #PCDATA '}'

<creatim>
'{' \creatim <time> '}'

<revtim>
'{' \revtim <time> '}'
```

```
<printim>
'{' \printim <time> '}'

<buptim>
'{' \buptim <time> '}'

<time>
\yr? \mo? \dy? \hr? \min? \sec?
```

¶Some applications, such as Word, ask the user to type this information when saving the document in its native format. If the document is then saved as an RTF file or translated into RTF, the RTF writer specifies this information using control words in the following table. These control words are destinations, and both the control words and the text should be enclosed in braces ({ }).¶Control word
Meaning

\title
Title of the document. This is a destination control word.

\subject
Subject of the document. This is a destination control word.

\author
Author of the document. This is a destination control word.

\manager
Manager of the author. This is a destination control word.

\company
Company of the author. This is a destination control word.

\operator
Person who last made changes to the document. This is a destination control word.

\category
Category of the document. This is a destination control word.

\keywords
Selected keywords for the document. This is a destination control word.

\comment
Comments; text is ignored. This is a destination control word.

\versionN
Version number of the document.

\doccomm
Comments displayed in the Summary Info or Properties dialog box in Word. This is a destination control word.

\hlinkbase
The base address that is used for the path of all relative hyperlinks

inserted in the document. This can be a path or an Internet address (URL).

¶The \userprops control word introduces the user-defined document properties. Unique \propname control words define each user-defined property in the document. This group has the following syntax:¶<userprops>
ë{*í \userprops (ë{í <propinfo> ë}í*) ë}í

<propinfo>
<propname> <proptype> <staticval> <linkval>?

<propname>
ë{í \propname #PCDATA ë}í

<proptype>
\proptype

<staticval>
\staticval

<linkval>
\linkval

¶Control word
Meaning

\propname
The name of the user-defined property.

\staticval
The value of the property.

\linkval
The name of a bookmark that contains the text to display as the value of the property.

\proptypeN
Specifies the type of the property:¶3
Integer¶5
Real number¶7
Date¶11
Boolean¶30
Text

¶The RTF writer may automatically enter other control words, including those in the following table.¶Control word
Meaning

\vernN
Internal version number

\creatim
Creation time

\revtim

Revision time

\printim
Last print time

\buptim
Backup time

\edminsN
Total editing time (in minutes)

\yrN
Year

\moN
Month

\dyN
Day

\hrN
Hour

\minN
Minute

\secN
Seconds

\nofpagesN
Number of pages

\nofwordsN
Number of words

\nofcharsN
Number of characters including spaces

\nofcharswsN
Number of characters not including spaces

\idN
Internal ID number

¶Any control word described in the previous table that does not have a numeric parameter specifies a date; all dates are specified with the \yr \mo \dy \hr \min \sec controls. An example of an information group follows:¶{\info{\title Template}{\author John Doe}{\operator JOHN DOE}{\creatim\yr1999\mo4\dy27\min1}{\revtim\yr1999\mo4\dy27\min1}{\printim\yr1999\mo3\dy17\hr23\min5}{\version2}{\edmins2}{\nofpages183}{\nofwords53170}{\nofchars303071}{*\company Microsoft}{\nofcharsws372192}{\vern8247}}¶Document Formatting Properties¶After the information group (if there is one), there may be some document formatting control words (described as <docfmt> in the document area syntax description). These control words specify the attributes of the document, such as margins and footnote placement. These attributes must precede the first plain-text character in the document.¶The control words that specify document formatting are listed in the following table (measurements are in twips; a twip is one-twentieth of a point). For omitted control words, RTF uses the default values.¶Note that the three document-protection control words (\formprot, \revprot, and \annotprot) are mutually exclusive; only one of the three can apply to any given document. Also, there is currently no method for storing passwords in RTF, so any document that associates a password with a protection level will lose the password protection in RTF.¶For more information about bidirectional controls, see HYPERLINK \l "Bidirectional_Language_Support"

Bidirectional Language Support
in this specification.¶¶Control word
Meaning

\deftabN
Default tab width in twips (the default is 720).

\hyphhotzN
Hyphenation hot zone in twips (the amount of space at the right margin in which words are hyphenated).

\hyphconsecN
N is the maximum number of consecutive lines that will be allowed to end in a hyphen. 0 means no limit.

\hyphcaps
Toggles hyphenation of capitalized words (the default is on). Append 1 or leave control word by itself to toggle property on; append 0 to turn it off.

\hyphauto
Toggles automatic hyphenation (the default is off). Append 1 or leave control word by itself to toggle property on; append 0 to turn it off.

\linestartN
Beginning line number (the default is 1).

\fracwidth
Uses fractional character widths when printing (QuickDraw only).

*\nextfile
The argument is the name of the file to print or index next; it must be enclosed in braces. This is a destination control word.

*\template
The argument is the name of a related template file; it must be enclosed in braces. This is a destination control word.

\makebackup
Backup copy is made automatically when the document is saved.

\defformat
Tells the RTF reader that the document should be saved in RTF format.

\psover
Prints PostScript over the text.

\doctemp
Document is a boilerplate document. For Word for Windows, this is a template; for Word for the Macintosh, this is a stationery file.

\deflangN
Defines the default language used in the document used with a \plain control word. See the section on
 HYPERLINK \l "Font_character_Formatting_Properties"

Font/Character Formatting Properties
 in this Specification for a list of possible values for N.

\deflangfeN
Default language ID for Asian/Middle Eastern text in Word.

\windowcaption
Sets the caption text for the document window. This is a string value.

\doctypeN
An integer (0ñ2) that describes the document type for AutoFormat.¶0
General document (for formatting most documents, the default)¶1
Letter (for formatting letters, and used by Letter Wizard)¶2
E-mail (for formatting e-mail, and used by WordMail)

\fromtext
Indicates document was originally plain text.

\fromhtml
Indicates the document was originally HTML and may contain encapsulated HTML tags. This keyword may be followed by a version number (currently 1).

\horzdoc
Horizontal rendering.

\vertdoc
Vertical rendering.

\jcompress
Compressing justification (default).

\jexpand
Expanding justification.

\lnongrid
Define line based on the grid.

Document Views and Zoom Level

\viewkindN
An integer (0 through 5) that represents the view mode of the document.¶0

None¶1
Page Layout view¶2
Outline view¶3
Master Document view¶4
Normal view¶5
Online Layout view

\viewscaleN
Zoom level of the document; the N argument is a value representing a percentage (the default is 100).

\viewzkN
An integer (0 through 2) that represents the zoom kind of the document.¶0
None¶1
Full page¶2
Best fit

\private
Obsolete destination. It has no leading *. It should be skipped.

Footnotes and Endnotes

\fetN
Footnote/endnote type. This indicates what type of notes are present in the document.¶0
Footnotes only or nothing at all (the default)¶1
Endnotes only¶2
Both footnotes and endnotes¶For backward compatibility, if \fet1 is emitted, \endnotes or \enddoc will be emitted along with \aendnotes or \aenddoc. RTF readers that understand \fet will need to ignore the footnote-positioning control words and use the endnote control words instead.

\ftnsep
Text argument separates footnotes from the document. This is a destination control word.

\ftnsepc
Text argument separates continued footnotes from the document. This is a destination control word.

\ftncn
Text argument is a notice for continued footnotes. This is a destination control word.

\aftnsep
Text argument separates endnotes from the document. This is a destination control word.

\aftnsepc
Text argument separates continued endnotes from the document. This is a destination control word.

\aftncn
Text argument is a notice for continued endnotes. This is a destination

control word.

\endnotes
Footnotes at the end of the section (the default).

\enddoc
Footnotes at the end of the document.

\ftntj
Footnotes beneath text (top justified).

\ftnbj
Footnotes at the bottom of the page (bottom justified).

\aendnotes
Endnotes at end of section (the default).

\aenddoc
Endnotes at end of document.

\aftnbj
Endnotes at bottom of page (bottom justified).

\aftntj
Endnotes beneath text (top justified).

\ftnstartN
Beginning footnote number (the default is 1).

\aftnstartN
Beginning endnote number (the default is 1).

\ftnrstpg
Restart footnote numbering each page.

\ftnrestart
Footnote numbers restart at each section. Microsoft Word for the Macintosh uses this control to restart footnote ¬n¬u¬m¬b¬e¬r¬i¬n¬g¬ ¬a¬t¬ ¬e¬a¬c¬h¬
¬p¬a¬g¬e¬.¬
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R¬o¬m¬a¬n¬ ¬u¬p¬p¬e¬r¬c¬a¬s¬e¬ ¬(¬I¬,¬ ¬I¬I¬,¬ ¬I¬I¬I¬,¬ ¬º)¬.¬
¬
¬\¬f¬t¬n¬n¬chi
Footnote numberingóChicago Manual of Style (*, Ü, á, ß).

\ftnnchosung
Footnote Korean numbering 1 (*chosung).

\ftnncnum
Footnote Circle numbering (*circlenum).

\ftnndbnum
Footnote kanji numbering without the digit character (*dbnum1).

\ftnndbnumd
Footnote kanji numbering with the digit character (*dbnum2).

\ftnndbnumt
Footnote kanji numbering 3 (*dbnum3).

\ftnndbnumk
Footnote kanji numbering 4 (*dbnum4).

\ftnndbar
Footnote double-byte numbering (*dbchar).

\ftnnganada
Footnote Korean numbering 2 (*ganada).

\ftnngbnum
Footnote Chinese numbering 1 (*gb1).

\ftnngbnumd
Footnote Chinese numbering 2 (*gb2).

\ftnngbnuml
Footnote Chinese numbering 3 (*gb3).

\ftnngbnumk
Footnote Chinese numbering 4 (*gb4).

\ftnnzodiac
Footnote numberingóChinese Zodiac numbering 1 (* zodiac1).

\ftnnzodiacd
Footnote numberingóChinese Zodiac numbering 2 (* zodiac2).

\ftnnzodiacl
Footnote numberingóChinese Zodiac numbering 3 (* zodiac3).

\aftnnar
Endnote numberingóArabic numbering (1, 2, 3, ¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬º)¬.¬
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¬E¬n¬d¬n¬o¬t¬e¬ ¬n¬u¬m¬b¬e¬r¬i¬n¬g¬
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 R¬o¬m¬a¬n¬ ¬u¬p¬p¬e¬r¬c¬a¬s¬e¬ ¬(¬I¬,¬ ¬I¬I¬,¬ ¬I¬I¬I¬,¬ ¬º)¬.¬
¬
\aftnnchi
Endnote numberingóChicago Manual of Style (*, Ü, á, ß).

\aftnnchosung
Endnote Korean numbering 1 (*chosung).

\aftnncnum
Endnote Circle numbering (*circlenum).

\aftnndbnum
Endnote kanji numbering without the digit character (*dbnum1).

\aftnndbnumd
Endnote kanji numbering with the digit character (*dbnum2).

\aftnndbnumt
Endnote kanji numbering 3 (*dbnum3).

\aftnndbnumk

Endnote kanji numbering 4 (*dbnum4).

\aftnndbar
Endnote double-byte numbering (*dbchar).

\aftnnganada
Endnote Korean numbering 2 (*ganada).

\aftnngbnum
Endnote Chinese numbering 1 (*gb1).

\aftnngbnumd
Endnote Chinese numbering 2 (*gb2).

\aftnngbnuml
Endnote Chinese numbering 3 (*gb3).

\aftnngbnumk
Endnote Chinese numbering 4 (*gb4).

\aftnnzodiac
Endnote numberingóChinese Zodiac numbering 1 (* zodiac1).

\aftnnzodiacd
Endnote numberingóChinese Zodiac numbering 2 (* zodiac2).

\aftnnzodiacl
Endnote numberingóChinese Zodiac numbering 3 (* zodiac3).

Page Information

\paperwN
Paper width in twips (the default is 12,240).

\paperhN
Paper height in twips (the default is 15,840).

\pszN
Used to differentiate between paper sizes with identical dimensions in Microsoft Windows NTÆ. Values 1 through 41 correspond to paper sizes defined in DRIVINI.H in the Windows 3.1 SDK (DMPAPER_ values). Values greater than or equal to 42 correspond to user-defined forms in Windows NT.

\marglN
Left margin in twips (the default is 1800).

\margrN
Right margin in twips (the default is 1800).

\margtN
Top margin in twips (the default is 1440).

\margbN
Bottom margin in twips (the default is 1440).

\facingp
Facing pages (activates odd/even headers and gutters).

\gutterN
Gutter width in twips (the default is 0).

\rtlgutter
Gutter is positioned on the right.

\gutterprl
Parallel gutter.

\margmirror
Switches margin definitions on left and right pages. Used in conjunction with \facingp.

\landscape
Landscape format.

\pgnstartN
Beginning page number (the default is 1).

\widowctrl
Enable widow and orphan control.

\twoonone
Print two logical pages on one physical page.

\bookfold
Book fold printing. Allows for printing documents that can easily be made into pamphlets. This will print two pages side by side in landscape mode, and will print to the back of the sheet if the printer supports duplex printing.

\bookfoldrev
Reverse book fold printing for bidirectional languages.

\bookfoldsheetsN
Sheets per booklet; this should be a multiple of four.

Linked Styles

\linkstyles
Update document styles automatically based on template.

Compatibility Options

\notabind
Don't add automatic tab stop for hanging indent.

\wraptrsp
Wrap trailing spaces onto the next line.

\prcolbl
Print all colors as black.

\noextrasprl
Don't add extra space to line height for showing raised/lowered characters.

\nocolbal
Don't balance columns.

\cvmme
Treat old-style escaped quotation marks (\") as current style ("") in mail merge data documents.

\sprstsp
Suppress extra line spacing at top of page. Basically, this means to ignore any line spacing larger than Auto at the top of a page.

\sprsspbf
Suppress space before paragraph property after hard page or column break.

\otblrul
Combine table borders as done in Word 5.x for the Macintosh. Contradictory table border information is resolved in favor of the first cell.

\transmf
Metafiles are considered transparent; don't blank the area behind metafiles.

\swpbdr
If a paragraph has a left border (not a box) and the Different Odd And Even or Mirror Margins check box is selected, Word will print the border on the right for odd-numbered pages.

\brkfrm
Show hard (manual) page breaks and column breaks in frames.

\sprslnsp
Suppress extra line spacing like WordPerfect version 5.x.

\subfontbysize
Substitute fonts based on size first.

\truncatefont
height
Round down to the nearest font size instead of rounding up.

\truncex
Don't add leading (extra space) between rows of text.

\bdbfhdr
Print body before header/footer. Option for compatibility with Word 5.x for the Macintosh.

\dntblnsbdb

Don't balance SBCS/DBCS characters. Option for compatibility with Word 6.0 (Japanese).

\expshrtn

Expand character spaces on line-ending with shift+return. Option for compatibility with Word 6.0 (Japanese).

\lytexcttp

Donít center exact line height lines.

\lytprtmet

Use printer metrics to lay out document.

\msmcap

Small caps like Word 5.x for the Macintosh.

\nolead

No external leading. Option for compatibility with Word 5.x for the Macintosh.

\nospaceforul

Don't add space for underline. Option for compatibility with Word 6.0 (Japanese).

\noultrlspc

Don't underline trailing spaces. Option for compatibility with Word 6.0 (Japanese).

\noxlattoyen

Don't translate backslash to Yen sign. Option for compatibility with Word 6.0 (Japanese).

\oldlinewrap

Lines wrap like Word 6.0.

\sprsbsp

Suppress extra line spacing at bottom of page.

\sprstsm

Does nothing. This keyword should be ignored.

\wpjst

Do full justification like WordPerfect 6.x for Windows.

\wpsp

Set the width of a space like WordPerfect 5.x.

\wptab

Advance to next tab stop like WordPerfect 6.x.

\splytwnine

Donít lay out AutoShapes like Word 97.

\ftnlytwnine

Donít lay out footnotes like Word 6.0, Word 95, and Word 97.

\htmautsp
Use HTML paragraph auto spacing.

\useltbaln
Donít forget last tab alignment.

\alntblind
Donít align table rows independently.

\lytcalctblwd
Donít lay out tables with raw width.

\lyttblrtgr
Donít allow table rows to lay out apart.

\oldas
Use Word 95 Auto spacing.

\lnbrkrule
Donít use Word 97 line breaking rules for Asian text.

\bdrrlswsix
Use Word 6.0/Word 95 borders rules.

\nolnhtadjtbl
Don't adjust line height in table.

\ApplyBrkRules
Use line breaking rules compatible with Thai text.

\rempersonalinfo
This will indicate to the emitting program to remove personal information such as the authorís name as a document property or in a comment.

\snapgridtocell
Snap text to grid inside table with inline objects.

\wrppunct
Allow hanging punctuation in character grid.

\asianbrkrule
Use Asian rules for line breaks with character grid.

\nobrkwrptbl
Donít break wrapped tables across pages.

\toplinepunct
Turns on a check box in the Paragraph Formatting dialogue box with a setting to allow punctuation at the start of the line to compress.

\viewnobound
Hide white space between pages.

\donotshowmarkup
Don't show markup while reviewing.

\donotshowcomments
Don't show comments while reviewing.

\donotshowinsdel
Don't show insertions and deletions while reviewing.

\donotshowprops
Don't show formatting while reviewing.

\allowfieldendsel
Enables selecting the entire field with the first or last character.

\nocompatoptions
Specifies that all compatibility options should be set to default.

Forms

\formprot
This document is protected for forms.

\allprot
This document has no unprotected areas.

\formshade
This document has form field shading on.

\formdisp
This document currently has a forms drop-down box or check box selected.

\printdata
This document has print form data only on.

Revision Marks

\revprot
This document is protected for revisions. The user can edit the document, but revision marking cannot be disabled.

\revisions
Turns on revision marking.

\revpropN
Argument indicates how revised text will be displayed: ¶0
No properties shown¶1
Bold¶2
Italic¶3
Underline (default)¶4
Double underline

\revbarN

Vertical lines mark altered text, based on the argument: ¶0
No marking¶1
Left margin ¶2
Right margin ¶3
Outside (the default: left on left pages, right on right pages)

Tables

\tsdN
Sets the default table style for this document. N references an entry in the table styles list.

Comments (Annotations)

\annotprot
This document is protected for comments (annotations). The user cannot edit the document but can insert comments (annotations).

Bidirectional Controls

\rtldoc
This document will be formatted to have Arabic-style pagination.

\ltrdoc
This document will have English-style pagination (the default).

Click-and-Type

\ctsN
Index to the style to be used for Click-and-Type (0 is the default).

Kinsoku Characters (Far East)

\jsksu
Indicates that the strict Kinsoku set must be used for Japanese; \jsku should not be present if \ksulangN is present and the language N is Japanese.

\ksulangN
N indicates which language the customized Kinsoku characters defined in the \fchars and \lchars destinations belong to.

*\fchars
List of following Kinsoku characters.

*\lchars
List of leading Kinsoku characters.

Drawing Grid

\dghspaceN
Drawing grid horizontal spacing in twips (the default is 120).

\dgvspaceN
Drawing grid vertical spacing in twips (the default is 120).

\dghoriginN
Drawing grid horizontal origin in twips (the default is 1701).

\dgvoriginN
Drawing grid vertical origin in twips (the default is 1984).

\dghshowN
Show Nth horizontal gridline (the default is 3).

\dgvshowN
Show Nth vertical gridline (the default is 0).

\dgsnap
Snap to drawing grid.

\dgmargin
Drawing grid to follow margins.

¶Page Borders

\pgbrdrhead
Page border surrounds header.

\pgbrdrfoot
Page border surrounds footer.

\pgbrdrt
Page border top.

\pgbrdrb
Page border bottom.

\pgbrdrl
Page border left.

\pgbrdrr
Page border right.

\brdrartN
Page border art; the N argument is a value from 1 to165 representing the number of the border.

\pgbrdroptN
8
Page border measure from text. Always display in front option is set to off.
¶32
Page border measure from edge of page. Always display in front option is set to on.¶40
Page border measure from edge of page. Always display in front option is set to off.

\pgbrdrsnap
Align paragraph borders and table edges with page border.

¶The color, width, border style, and border spacing keywords for page borders are the same as the keywords defined for paragraph borders.¶Section Text¶Each section in the RTF file has the following syntax:¶<section>

```
 <secfmt>* <hdrftr>? <para>+ (\sect <section>)?
```

Section Formatting Properties¶At the beginning of each section, there may be some section-formatting control words (described as <secfmt> in the section text syntax description). These control words specify section-formatting properties, which apply to the text following the control word, with the exception of the section-break control words (those beginning with \sbk). Section-break control words describe the break preceding the text. These control words can appear anywhere in the section, not just at the start.¶Note that if the \sectd control word is not present, the current section inherits all section properties defined in the previous section.¶The section-formatting control words are listed in the following table.¶Control word
Meaning

\sect
New section.

\sectd
Reset to default section properties.

\endnhere
Endnotes included in the section.

\binfsxnN
N is the printer bin used for the first page of the section. If this control is not defined, then the first page uses the same printer bin as defined by the \binsxnN control.

\binsxnN
N is the printer bin used for the pages of the section.

\dsN
Designates section style. If a section style is specified, style properties must be specified with the section.

\pnseclvlN
Used for multilevel lists. This property sets the default numbering style for each corresponding \pnlvlN control word (bullets and numbering property for paragraphs) within that section. This is a destination control word.

\sectunlocked
This section is unlocked for forms.

Section Break

\sbknone
No section break.

\sbkcol
Section break starts a new column.

\sbkpage
Section break starts a new page (the default).

\sbkeven
Section break starts at an even page.

\sbkodd
Section break starts at an odd page.

Columns

\colsN
Number of columns for "snaking" (the default is 1).

\colsxN
Space between columns in twips (the default is 720).

\colnoN
Column number to be formatted; used to specify formatting for variable-width columns.

\colsrN
Space to right of column in twips; used to specify formatting for variable-width columns.

\colwN
Width of column in twips; used to override the default constant width setting for variable-width columns.

\linebetcol
Line between columns.

Footnotes and Endnotes

\sftntj
Footnotes beneath text (top justified).

\sftnbj
Footnotes at the bottom of the page (bottom justified).

\sftnstartN
Beginning footnote number (the default is 1).

\saftnstartN
Beginning endnote number (the default is 1).

\sftnrstpg
Restart footnote numbering each page.

\sftnrestart
Footnote numbers restart at each section. Microsoft Word for the Macintosh uses this control to restart footnote numbering at each page.

\sftnrstcont
Continuous footnote numbering (the default).

\saftnrestart
Restart endnote numbering each section.

\saftnrstcont
Continuous endnote ¬n¬u¬m¬b¬e¬r¬i¬n¬g¬ ¬(¬t¬h¬e¬ ¬d¬e¬f¬a¬u¬l¬t¬)¬.¬
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¬\¬s¬f¬t¬n¬n¬a¬r¬
¬F¬o¬o¬t¬n¬o¬t¬e¬ ¬n¬u¬m¬b¬e¬r¬i¬n¬g¬
 A¬r¬a¬b¬i¬c¬ ¬n¬u¬m¬b¬e¬r¬i¬n¬g¬ ¬(¬1¬,¬ ¬2¬,¬ ¬3¬,¬ ¬º)¬.¬
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¬F¬o¬o¬t¬n¬o¬t¬e¬ ¬n¬u¬m¬b¬e¬r¬i¬n¬g¬
 A¬l¬p¬h¬a¬b¬e¬t¬i¬c¬ ¬l¬o¬w¬e¬r¬c¬a¬s¬e¬ ¬(¬a¬,¬ ¬b¬,¬ ¬c¬,¬ ¬º)¬.¬
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¬F¬o¬o¬t¬n¬o¬t¬e¬ ¬n¬u¬m¬b¬e¬r¬i¬n¬g¬
 A¬l¬p¬h¬a¬b¬e¬t¬i¬c¬ ¬u¬p¬p¬e¬r¬c¬a¬s¬e¬ ¬(¬A¬,¬ ¬B¬,¬ ¬C¬,¬ ¬º)¬.¬
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¬F¬o¬o¬t¬n¬o¬t¬e¬ ¬n¬u¬m¬b¬e¬r¬i¬n¬g¬
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 R¬o¬m¬a¬n¬ ¬u¬p¬p¬e¬r¬c¬a¬s¬e¬ ¬(¬I¬,¬ ¬I¬I¬,¬ ¬I¬I¬I¬,¬ ¬º)¬.¬
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¬F¬o¬o¬t¬n¬o¬t¬e¬ ¬K¬o¬r¬e¬a¬n¬ ¬n¬u¬m¬b¬e¬r¬i¬n¬g¬ ¬1¬ ¬(¬*
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¬F¬o¬o¬t¬n¬o¬t¬e¬ ¬C¬i¬r¬c¬l¬e¬ ¬n¬u¬m¬b¬e¬r¬i¬n¬g¬ ¬(¬*¬c¬i¬r¬c¬l¬e¬n¬um).

\sftnndbnum
Footnote kanji numbering without the digit character (*dbnum1).

\sftnndbnumd
Footnote kanji numbering with the digit character (*dbnum2).

\sftnndbnumt
Footnote kanji numbering 3 (*dbnum3).

\sftnndbnumk
Footnote kanji numbering 4 (*dbnum4).

\sftnndbar
Footnote double-byte numbering (*dbchar).

\sftnnganada
Footnote Korean numbering 2 (*ganada).

\sftnngbnum
Footnote Chinese numbering 1 (*gb1).

\sftnngbnumd
Footnote Chinese numbering 2 (*gb2).

\sftnngbnuml
Footnote Chinese numbering 3 (*gb3).

\sftnngbnumk
Footnote Chinese numbering 4 (*gb4).

\sftnnzodiac
Footnote numberingóChinese Zodiac numbering 1 (* zodiac1).

\sftnnzodiacd
Footnote numberingóChinese Zodiac numbering 2 (* zodiac2).

\sftnnzodiacl
Footnote numberingóChinese Zodiac numbering 3 (* zodiac3).

\saftnnar
Endnote numberingóArabic numbering (1, 2, 3,
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¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬º)¬.¬
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¬\¬s¬a¬f¬t¬n¬n¬a¬l¬c¬
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 A¬l¬p¬h¬a¬b¬e¬t¬i¬c¬ ¬l¬o¬w¬e¬r¬c¬a¬s¬e¬ ¬(¬a¬,¬ ¬b¬,¬ ¬c¬,¬ ¬º)¬.¬
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¬E¬n¬d¬n¬o¬t¬e¬ ¬n¬u¬m¬b¬e¬r¬i¬n¬g¬
 A¬l¬p¬h¬a¬b¬e¬t¬i¬c¬ ¬u¬p¬p¬e¬r¬c¬a¬s¬e¬ ¬(¬A¬,¬ ¬B¬,¬ ¬C¬,¬ ¬º)¬.¬
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 R¬o¬m¬a¬n¬ ¬l¬o¬w¬e¬r¬c¬a¬s¬e¬ ¬(¬i¬,¬ ¬i¬i¬,¬ ¬i¬i¬i¬,¬ ¬º)¬.¬
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¬E¬n¬d¬n¬o¬t¬e¬ ¬n¬u¬m¬b¬e¬r¬i¬n¬g¬
 R¬o¬m¬a¬n¬ ¬u¬p¬p¬e¬r¬c¬a¬s¬e¬ ¬(¬I¬,¬ ¬I¬I¬,¬ ¬I¬I¬I¬,¬ ¬º)¬.¬
¬
¬\¬s¬a¬f¬t¬n¬n¬c¬h¬i¬
¬E¬n¬d¬n¬o¬t¬e¬ ¬n¬u¬m¬b¬e¬r¬i¬n¬g¬
 C¬h¬i¬c¬a¬g¬o¬ ¬M¬a¬n¬u¬a¬l¬ ¬o¬f¬ ¬S¬t¬y¬l¬e¬ ¬(¬*¬,¬ ¬ ,¬ ¬! ,¬ ¬ß¬)¬.¬

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¬E¬n¬d¬n¬o¬t¬e¬ ¬K¬o¬r¬e¬a¬n¬ ¬n¬u¬m¬b¬e¬r¬i¬n¬g¬ ¬1¬ ¬(¬*¬c¬h¬o¬s¬u¬n¬g¬)¬.¬
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¬E¬n¬d¬n¬o¬t¬e¬ ¬C¬i¬r¬c¬l¬e¬ ¬n¬u¬m¬b¬e¬r¬i¬n¬g¬ ¬(¬*¬c¬i¬r¬c¬l¬e¬n¬u¬m¬)¬.¬
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¬d¬i¬g¬i¬t¬ ¬c¬h¬a¬r¬a¬c¬t¬e¬r¬ ¬(¬*¬d¬b¬n¬u¬m¬1¬)¬.¬
¬
\saftnndbnumd
Endnote kanji numbering with the digit character (*dbnum2).

\saftnndbnumt
Endnote kanji numbering 3 (*dbnum3).

\saftnndbnumk
Endnote kanji numbering 4 (*dbnum4).

\saftnndbar
Endnote double-byte numbering (*dbchar).

\saftnnganada
Endnote Korean numbering 2 (*ganada).

\saftnngbnum
Endnote Chinese numbering 1 (*gb1).

\saftnngbnumd
Endnote Chinese numbering 2 (*gb2).

\saftnngbnuml
Endnote Chinese numbering 3 (*gb3).

\saftnngbnumk
Endnote Chinese numbering 4 (*gb4).

\saftnnzodiac
Endnote numberingóChinese Zodiac numbering 1 (* zodiac1).

\saftnnzodiacd
Endnote numberingóChinese Zodiac numbering 2 (* zodiac2).

\saftnnzodiacl
Endnote numberingóChinese Zodiac numbering 3 (* zodiac3).

Line Numbering

\linemodN
Line-number modulus amount to increase each line number (the default is 1).

\linexN
Distance from the line number to the left text margin in twips (the default is 360). The automatic distance is 0.

\linestartsN
Beginning line number (the default is 1).

\linerestart
Line numbers restart at \linestarts value.

\lineppage
Line numbers restart on each page.

\linecont
Line numbers continue from the preceding section.

Page Information

\pgwsxnN
N is the page width in twips. A \sectd resets the value to that specified by \paperwN in the document properties.

\pghsxnN
N is the page height in twips. A \sectd resets the value to that specified by \paperhN in the document properties.

\marglsxnN
N is the left margin of the page in twips. A \sectd resets the value to that specified by \marglN in the document properties.

\margrsxnN
N is the right margin of the page in twips. A \sectd resets the value to that specified by \margrN in the document properties.

\margtsxnN
N is the top margin of the page in twips. A \sectd resets the value to that specified by \margtN in the document properties.

\margbsxnN
N is the bottom margin of the page in twips. A \sectd resets the value to that specified by \margbN in the document properties.

\guttersxnN
N is the width of the gutter margin for the section in twips. A \sectd resets the value to that specified by \gutterN from the document properties. If Facing Pages is turned off, the gutter will be added to the left margin of all pages. If Facing Pages is turned on, the gutter will be added to the left side of odd-numbered pages and the right side of even-numbered pages.

\margmirsxn
Switches margin definitions on left and right pages. Used in conjunction with \facingp.

\lndscpsxn

Page orientation is in landscape format. To mix portrait and landscape sections within a document, the \landscape control should not be used so that the default for a section is portrait, which may be overridden by the \lndscpsxn control.

\titlepg
First page has a special format.

\headeryN
Header is N twips from the top of the page (the default is 720).

\footeryN
Footer is N twips from the bottom of the page (the default is 720).

Page Numbers

\pgnstartsN
Beginning page number (the default is 1).

\pgncont
Continuous page numbering (the default).

\pgnrestart
Page numbers restart at \pgnstarts value.

\pgnxN
Page number is N twips from the right margin (the default is 720). This control word is understood but not used by current versions (6.0 or later) of Word.

\pgnyN
Page number is N twips from the top margin (the default is 720). This control word is understood but not used by current versions (6.0 or later) of Word.

\pgndec
Page-number format is decimal.

\pgnucrm
Page-number format is uppercase Roman numeral.

\pgnlcrm
Page-number format is lowercase Roman numeral.

\pgnucltr
Page-number format is uppercase letter.

\pgnlcltr
Page-number format is lowercase letter.

\pgnbidia
Page-number format is Abjad Jawaz if language is Arabic and Biblical Standard if language is Hebrew.

\pgnbidib

Page-number format is Alif Ba Tah if language is Arabic and Non-standard Decimal if language is Hebrew.

\pgnchosung
Korean numbering 1 (* chosung).

\pgncnum
Circle numbering (*circlenum).

\pgndbnum
Kanji numbering without the digit character.

\pgndbnumd
Kanji numbering with the digit character.

\pgndbnumt
Kanji numbering 3 (*dbnum3).

\pgndbnumk
Kanji numbering 4 (*dbnum4).

\pgndecd
Double-byte decimal numbering.

\pgnganada
Korean numbering 2 (*ganada).

\pgngbnum
Chinese numbering 1 (*gb1).

\pgngbnumd
Chinese numbering 2 (*gb2).

\pgngbnuml
Chinese numbering 3 (*gb3).

\pgngbnumk
Chinese numbering 4 (*gb4).

\pgnzodiac
Chinese Zodiac numbering 1 (*zodiac1).

\pgnzodiacd
Chinese Zodiac numbering 2 (*zodiac2).

\pgnzodiacl
Chinese Zodiac numbering 3 (*zodiac3).

\pgnhindia
Hindi vowel numeric format.

\pgnhindib
Hindi consonants.

\pgnhindic
Hindi digits.

\pgnhindid
Hindi descriptive (cardinal) text.

\phnthaia
Thai letters.

\pgnthaib
Thai digits.

\pgnthaic
Thai descriptive.

\pgnvieta
Vietnamese descriptive.

\pgnid
Page number in dashes (Korean).

\pgnhnN
Indicates which heading level is used to prefix a heading number to the page number. This control word can only be used in conjunction with numbered heading styles. 0 specifies to not show heading level (the default). Values 1 through 9 correspond to heading levels 1 through 9.

\pgnhnsh
Hyphen separator character. This separator and the successive ones appear between the heading level number and the page number.

\pgnhnsp
Period separator character.

\pgnhnsc
Colon separator character.

\pgnhnsm
Em dash (ó) separator character.

\pgnhnsn
En dash (ñ) separator character.

Vertical Alignment

\vertalt
Text is top-aligned (the default).

\vertalb
Text is bottom-aligned.

\vertalc
Text is centered vertically.

\vertalj
Text is justified vertically.

Bidirectional Controls

\rtlsect
This section will snake (newspaper style) columns from right to left.

\ltrsect
This section will snake (newspaper style) columns from left to right (the default).

Asian Controls

\horzsect
Horizontal rendering.

\vertsect
Vertical rendering.

Text Flow

\stextflow
Section property for specifying text flow:¶0
Text flows left to right and top to bottom¶1
Text flows top to bottom and right to left, vertical¶2
Text flows left to right and bottom to top¶3
Text flows right to left and top to bottom¶4
Text flows left to right and top to bottom, vertical¶5
Text flows vertically, non-vertical font

Page Borders

\pgbrdrhead
Page border surrounds header.

\pgbrdrfoot
Page border surrounds footer.

\pgbrdrt
Page border top.

\pgbrdrb
Page border bottom.

\pgbrdrl
Page border left.

\pgbrdrr
Page border right.

\brdrartN
Page border art; the N argument is a value from 1 through 165 representing the number of the border.

\pgbrdroptN
8
Page border measure from text. Always display in front option is set to off.
¶32
Page border measure from edge of page. Always display in front option is set to on.¶40
Page border measure from edge of page. Always display in front option is set to off.

\pgbrdrsnap
Align paragraph borders and table edges with page border.

Line and Character Grid

\sectexpandN
Character space basement (character pitch minus font size) N in device-independent units (a device-independent unit is 1/294912th of an inch).

\sectlinegridN
Line grid, where N is the line pitch in 20ths of a point.

\sectdefaultcl
Default state of section. Indicates \sectspecifycl and \sectspecifyl are not emitted.

\sectspecifycl
Specify number of characters per line only.

\sectspecifyl
Specify both number of characters per line and number of lines per page.

\sectspecifygenN
Indicates that text should snap to the character grid. Note that the N is part of the keyword.

¶The color, width, border style, and border spacing keywords for page borders are the same as the keywords defined for paragraph borders.¶Headers and Footers¶Headers and footers are RTF destinations. Each section in the document can have its own set of headers and footers. If no headers or footers are defined for a given section, the headers and footers from the previous section (if any) are used. Headers and footers have the following syntax:¶<hdrftr>
'{' <hdrctl> <para>+ '}' <hdrftr>?

<hdrctl>
\header | \footer | \headerl | \headerr | \headerf | \footerl | \footerr | \footerf

Note that each separate <hdrftr> group must have a distinct <hdrctl> introducing it.¶Control word
Meaning

\header

Header on all pages. This is a destination control word.

\footer
Footer on all pages. This is a destination control word.

\headerl
Header on left pages only. This is a destination control word.

\headerr
Header on right pages only. This is a destination control word.

\headerf
Header on first page only. This is a destination control word.

\footerl
Footer on left pages only. This is a destination control word.

\footerr
Footer on right pages only. This is a destination control word.

\footerf
Footer on first page only. This is a destination control word.

¶The \headerl, \headerr, \footerl, and \footerr control words are used in conjunction with the \facingp control word, and the \headerf and \footerf control words are used in conjunction with the \titlepg control word. Many RTF readers will not function correctly if the appropriate document properties are not set. In particular, if \facingp is not set, then only \header and \footer should be used; if \facingp is set, then only \headerl, \headerr, \footerl, and \footerr should be used. Combining both \facingp and \titlepg is allowed. You should not use \header to set the headers for both pages when \facingp is set. You can use \headerf if \titlepg is not set, but no header will appear. For more information, see
 HYPERLINK \l "Document_Formatting_Properties"

Document Formatting Properties
 and
 HYPERLINK \l "Section_Formatting_Properties"

Section Formatting Properties
 in this Specification.¶If the previous section had a first page header or footer and had \titlepg set, and the current section does not, then the previous section's first page header or footer is disabled. However, it is not destroyed; if subsequent sections have \titlepg set, then the first page header or footer is restored.¶Paragraph Text¶There are two kinds of paragraphs: plain and table. A table is a collection of paragraphs, and a table row is a continuous sequence of paragraphs partitioned into cells. The \intbl paragraph-formatting control word identifies the paragraph as part of a table. Additional keywords related to table styles are documented next, and refer to properties of the cell within which the paragraph resides. For more information, see the
 HYPERLINK \l "Table_Definitions"

Table Definitions

section of this Specification. This control is inherited between paragraphs that do not have paragraph properties reset with \pard.¶<para>
<textpar> | <row>

<textpar>
<pn>? <brdrdef>? <parfmt>* <apoctl>* <tabdef>? <shading>? (/v /spv)? (\subdocument | <char>+) (\par <para>)?

<row>
(<tbldef> <cell>+ <tbldef> \row) | (<tbldef> <cell>+ \row) | (<cell>+ <tbldef> \row)

<cell>
(<nestrow>? <tbldef>?) & <textpar>+ \cell

<nestrow>
<nestcell>+ ë{*í\nesttableprops <tbldef> \nestrow ë}í

<nestcell>
<textpar>+ \nestcell

Paragraph Formatting Properties¶These control words (described as <parfmt> in the paragraph-text syntax description) specify generic paragraph formatting properties. These control words can appear anywhere in the body of the paragraph, not just at the beginning.¶Note that if the \pard control word is not present, the current paragraph inherits all paragraph properties defined in the previous paragraph.¶The paragraph-formatting control words are listed in the following table.¶Control word
Meaning

\par
New paragraph.

\ pard
Resets to default paragraph properties.

\spv
Style separator feature that causes the paragraph mark to not appear even in ShowAll. Used to nest paragraphs within the document view or outline without generating a new heading.

\hyphpar
Toggles automatic hyphenation for the paragraph. Append 1 or nothing to toggle property on; append 0 to turn it off.

\intbl
Paragraph is part of a table.

\itapN
Paragraph nesting level, where 0 is the main document, 1 is a table cell, 2 is a nested table cell, 3 is a doubly nested table cell, and so forth. The default is 1.

\keep

Keep paragraph intact.

\keepn
Keep paragraph with the next paragraph.

\levelN
N is the outline level of the paragraph.

\noline
No line numbering.

\nowidctlpar
No widow/orphan control. This is a paragraph-level property and is used to override the document-level \widowctrl.

\widctlpar
Widow/orphan control is used for the current paragraph. This is a paragraph property used to override the absence of the document-level \widowctrl.

\outlinelevelN
Outline level of paragraph. The N argument is a value from 0 to 8 representing the outline level of the paragraph. In the default case, no outline level is specified (same as body text).

\pagebb
Break page before the paragraph.

\sbys
Side-by-side paragraphs.

\sN
Designates paragraph style. If a paragraph style is specified, style properties must be specified with the paragraph. N references an entry in the style sheet.

Table Style Specific

\yts
Designates the table style that was applied to the row/cell.

\tscfirstrow
This cell is in the first row.

\tsclastrow
This cell is in the last row.

\tscfirstcol
This cell is in the first column.

\tsclastcol
This cell is in the last column.

\tscbandhorzodd
This cell is in the odd row band.

\tscbandhorzeven
This cell is in the even row band.

\tscbandvertodd
This cell is in the odd column band.

\tscbandverteven
This cell is in the even column band.

\tscnwcell
This is the NW cell in the table (top left).

\tscnecell
NE cell.

\tscswcell
SW cell.

\tscsecell
SE cell.

Alignment

\qc
Centered.

\qj
Justified.

\ql
Left-aligned (the default).

\qr
Right-aligned.

\qd
Distributed.

\qkN
Percentage of line occupied by Kashida justification (0 ñ low, 10 ñ medium, 20 ñ high).

\qt
For Thai distributed justification.

Font Alignment

\faauto
Font alignment. The default setting for this is "Auto."

\fahang
Font alignment: Hanging.

\facenter
Font alignment: Center.

\faroman
Font alignment†: Roman (default).

\favar
Font alignment: Upholding variable.

\fafixed
Font alignment: Upholding fixed.

Indentation

\fiN
First-line indent (the default is 0).

\cufiN
First-line indent in hundredths of a character unit; overrides \fiN, although they should both be emitted with equivalent values.

\liN
Left indent (the default is 0).

\linN
Left indent for left-to-right paragraphs; right indent for right-to-left paragraphs (the default is 0). \linN defines space before the paragraph.

\culiN
Left indent (space before) in hundredths of a character unit. Behaves like \linN and overrides \liN and \linN, although they should all be emitted with equivalent values.

\riN
Right indent (the default is 0).

\rinN
Right indent for left-to-right paragraphs; left indent for right-to-left paragraphs (the default is 0). \rinN defines space after the paragraph.

\curiN
Right indent (space after) in hundredths of a character unit. Behaves like \rinN and overrides \riN and \rinN, although they should all be emitted with equivalent values.

\adjustright
Automatically adjust right indent when document grid is defined.

Spacing

\sbN
Space before (the default is 0).

\saN

Space after (the default is 0).

\sbautoN
Auto spacing before:¶0
Space before determined by \sb¶1
Space before is Auto (ignores \sb)¶The default is 0.

\saautoN
Auto spacing after:¶0
Space after determined by \sa¶1
Space after is Auto (ignores \sa)¶The default is 0.

\lisbN
Space before in hundredths of a character unit. Overrides \sbN, although they should both be emitted with equivalent values.

\lisaN
Space after in hundredths of a character unit. Overrides \saN, although they should both be emitted with equivalent values.

\slN
Space between lines. If this control word is missing or if \sl0 is used, the line spacing is automatically determined by the tallest character in the line. If N is a positive value, this size is used only if it is taller than the tallest character (otherwise, the tallest character is used); if N is a negative value, the absolute value of N is used, even if it is shorter than the tallest character.

\slmultN
Line spacing multiple. Indicates that the current line spacing is a multiple of "Single" line spacing. This control word can follow only the \sl control word and works in conjunction with it. ¶0
"At Least" or "Exactly" line spacing¶1
Multiple line spacing, relative to "Single"

\nosnaplinegrid
Disable snap line to grid.

Subdocuments

\subdocumentN
Indicates that a subdocument in a master document/subdocument relationship should occur here. N represents an index into the file table. This control word must be the only item in a paragraph.

Bidirectional Controls

\rtlpar
Text in this paragraph will be displayed with right-to-left precedence.

\ltrpar
Text in this paragraph will be displayed with left-to-right precedence (the default).

Asian Typography

\nocwrap
No character wrapping.

\nowwrap
No word wrapping.

\nooverflow
No overflow period and comma.

\aspalpha
Auto spacing between DBC and English.

\aspnum
Auto spacing between DBC and numbers.

Pocket Word

\collapsed
Paragraph property active in outline view that specifies that the paragraph is collapsed (not viewed).

Tabs¶Any paragraph may have its own set of tabs. Tabs must follow this syntax:¶<tabdef>
(<tab> | <bartab>)+

<tab>
<tabkind>? <tablead>? \tx

<bartab>
<tablead>? \tb

<tabkind>
\tqr | \tqc | \tqdec

<tablead>
\tldot | \tlmdot | \tlhyph | \tlul | \tlth | \tleq

¶Control word
Meaning

\txN
Tab position in twips from the left margin.

\tqr
Flush-right tab.

\tqc
Centered tab.

\tqdec
Decimal tab.

\tbN
Bar tab position in twips from the left margin.

\tldot
Leader dots.

\tlmdot
Leader middle dots.

\tlhyph
Leader hyphens.

\tlul
Leader underline.

\tlth
Leader thick line.

\tleq
Leader equal sign.

Bullets and Numbering¶Word 6.0 and Word 95 RTF¶To provide compatibility with existing RTF readers, all applications that can automatically format paragraphs with bullets or numbers will also emit the generated text as plain text in the \pntext group. This will allow existing RTF readers to capture the plain text and safely ignore the auto number instructions. This group precedes all bulleted or numbered paragraphs, and will contain all the text and formatting that would be automatically generated. It should precede the
'{'*\pn ¬¬¬¬¬¬º ¬'¬}¬'¬ ¬d¬e¬s¬t¬i¬n¬a¬t¬i¬o¬n¬,¬ ¬a¬n¬d¬ ¬i¬t¬ ¬i¬s¬
¬t¬h¬e¬ ¬r¬e¬s¬p¬o¬n¬s¬i¬b¬i¬l¬i¬t¬y¬ ¬o¬f¬ ¬R¬T¬F¬ ¬r¬e¬a¬d¬e¬r¬s¬ ¬t¬h¬a¬t¬
¬u¬n¬d¬e¬r¬s¬t¬a¬n¬d¬ ¬t¬h¬e¬ ¬'¬{¬'¬\¬*¬\¬p¬n¬ ¬º ¬'¬}¬'¬
¬d¬e¬s¬t¬i¬n¬a¬t¬i¬o¬n¬ ¬t¬o¬ ¬i¬g¬n¬o¬r¬e¬ ¬t¬h¬e¬ ¬\¬p¬n¬t¬e¬x¬t¬
¬g¬r¬o¬u¬p¬.¬ ¬ ¬T¬h¬e¬ ¬f¬o¬l¬l¬o¬w¬i¬n¬g¬ ¬t¬a¬b¬l¬e¬ ¬d¬e¬f¬i¬n¬e¬s¬
¬t¬h¬e¬ ¬g¬r¬a¬m¬m¬a¬r¬ ¬o¬f¬ ¬t¬h¬i¬s¬ ¬g¬r¬o¬u¬p¬.¬¶¬<¬p¬n¬>¬
¬<¬p¬n¬s¬e¬c¬l¬v¬l¬>¬ ¬|¬ ¬<¬p¬n¬p¬a¬r¬a¬>¬
¬
¬<¬p¬n¬s¬e¬c¬l¬v¬l¬>¬
¬'¬{¬\¬*¬'¬ ¬\¬p¬n¬s¬e¬c¬l¬v¬l¬ ¬<¬p¬n¬d¬e¬s¬c>'}'

<pnpara>
<pntext> <pnprops>

<pntext>
'{' \pntext <char> '}'

<pnprops>
'{*' \pn <pnlevel> <pndesc>'}'

<pnlevel>
\pnlvl | \pnlvlblt | \pnlvlbody | \pnlvlcont

<pndesc>
<pnnstyle> & <pnchrfmt> & <pntxtb> & <pntxta> & <pnfmt>

<pnnstyle>
\pncard | \pndec | \pnucltr | \pnucrm | \pnlcltr | \pnlcrm | \pnord | \pnordt
| \pnbidia | \pnbidib | \pnaiu | \pnaiud | \pnaiueo | \pnaiueod | \pnchosung
| \pncnum | \pndbnum | \pndbnumd | \pndbnumk | \pndbnuml | \pndbnumt | \
pndecd | \pnganada | \pnganada | \pngbnum | \pngbnumd | \pngbnumk | \pngbnuml
| \pniroha | \pnirohad | \pnuldash | \pnuldashd | \pnuldashdd | \pnulhair | \
pnulth | \pnulwave | \pnzodiac | \pnzodiacd | \pnzodiacl

<pnchrfmt>
\pnf? & \pnfs? & \pnb? & \pni? & \pncaps? & \pnscaps? & <pnul>? & \pnstrike?
& \pncf?

<pnul>
\pnul | \pnuld | \pnuldb | \pnulnone | \pnulw

<pnfmt>
\pnnumonce? & \pnacross? & \pnindent? & \pnsp? & \pnprev? & <pnjust>? & \
pnstart? & \pnhang? & \pnrestart?

<pnjust>
\pnqc | \pnql | \pnqr

<pntxtb>
'{' \pntxtb #PCDATA'}'

<pntxta>
'{' \pntxta #PCDATA'}'

Settings in the following table marked with an asterisk can be turned off by
appending 0 to the control word.¶Control word
Meaning

\pntext
This group precedes all numbered/bulleted paragraphs and contains all
automatically generated text and formatting. It should precede the '{*'\pn
¬¬¬
¬¬¬
¬¬º ¬'¬}¬'¬
¬d¬e¬s¬t¬i¬n¬a¬t¬i¬o¬n¬,¬ ¬a¬n¬d¬ ¬i¬t¬ ¬i¬s¬ ¬t¬h¬e¬
¬r¬e¬s¬p¬o¬n¬s¬i¬b¬i¬l¬i¬t¬y¬ ¬o¬f¬ ¬R¬T¬F¬ ¬r¬e¬a¬d¬e¬r¬s¬ ¬t¬h¬a¬t¬
¬u¬n¬d¬e¬r¬s¬t¬a¬n¬d¬ ¬t¬h¬e¬ ¬'¬{¬\¬*¬'¬\¬p¬n¬ ¬º ¬'¬}¬'¬
¬d¬e¬s¬t¬i¬n¬a¬t¬i¬o¬n¬ ¬t¬o¬ ¬i¬g¬n¬o¬r¬e¬ ¬t¬h¬i¬s¬ ¬p¬r¬e¬c¬e¬d¬i¬n¬g¬
¬g¬r¬o¬u¬p¬.¬ ¬T¬h¬i¬s¬ ¬i¬s¬ ¬a¬ ¬d¬e¬s¬t¬i¬n¬a¬t¬i¬o¬n¬ ¬c¬o¬n¬t¬r¬o¬l¬
¬w¬o¬r¬d¬.¬
¬
¬\¬p¬n¬
¬T¬u¬r¬n¬s¬ ¬o¬n¬ ¬p¬a¬r¬a¬g¬r¬a¬p¬h¬ ¬n¬u¬m¬b¬e¬r¬i¬n¬g¬.¬ ¬T¬h¬i¬s¬ ¬i¬s¬
¬a¬ ¬d¬e¬s¬t¬i¬n¬a¬t¬i¬o¬n¬ ¬c¬o¬n¬t¬r¬o¬l¬ ¬w¬o¬r¬d¬.¬
¬
¬\¬p¬n¬l¬v¬l¬N
Paragraph level, where N is a level from 1 to 9. Default set by \pnseclvlN
section formatting property.

\pnlvlblt

Bulleted paragraph (corresponds to level 11). The actual character used for the bullet is stored in the \pntxtb group.

\pnlvlbody
Simple paragraph numbering (corresponds to level 10).

\pnlvlcont
Continue numbering but do not display number (ìskip numberingî).

\pnnumonce
Number each cell only once in a table (the default is to number each paragraph in a table).

\pnacross
Number across rows (the default is to number down columns).

\pnhang
Paragraph uses a hanging indent.

\pnrestart
Restart numbering after each section break. Note that this control word is used only in conjunction with the Heading Numbering feature (applying multilevel numbering to Heading style definitions).

\pncard
Cardinal numbering (One, Two, Three).

\pndec
Decimal numbering (1, 2, 3).

\pnucltr
Uppercase alphabetic numbering (A, B, C).

\pnucrm
Uppercase Roman numbering (I, II, III).

\pnlcltr
Lowercase alphabetic numbering (a, b, c).

\pnlcrm
Lowercase Roman numbering (i, ii, iii).

\pnord
Ordinal numbering (1st, 2nd, 3rd).

\pnordt
Ordinal text numbering (First, Second, Third).

\pnbidia
Abjad Jawaz if language is Arabic and Biblical Standard if language is Hebrew.

\pnbidib
Alif Ba Tah if language is Arabic and Non-standard Decimal if language is

Hebrew.

\pnaiu
46 phonetic katakana characters in "aiueo" order (*aiueo).

\pnaiud
46 phonetic double-byte katakana characters (*aiueo*dbchar).

\pnaiueo
46 phonetic katakana characters in "aiueo" order (*aiueo).

\pnaiueod
46 phonetic double-byte katakana characters (*aiueo*dbchar).

\pnchosung
Korean numbering 2 (*chosung).

\pncnum
20 numbered list in circle (*circlenum).

\pndbnum
Kanji numbering without the digit character (*dbnum1).

\pndbnumd
Kanji numbering with the digit character (*dbnum2).

\pndbnumk
Kanji numbering 4 (*dbnum4).

\pndbnuml
Kanji numbering 3 (*dbnum3).

\pndbnumt
Kanji numbering 3 (*dbnum3).

\pndecd
Double-byte decimal numbering (*arabic*dbchar).

\pnganada
Korean numbering 2 (*ganada).

\pnganada
Korean numbering 1 (*ganada).

\pngbnum
Chinese numbering 1 (*gb1).

\pngbnumd
Chinese numbering 2 (*gb2).

\pngbnumk
Chinese numbering 4 (*gb4).

\pngbnuml

Chinese numbering 3 (*gb3).

\pniroha
46 phonetic katakana characters in "iroha" order (*iroha).

\pnirohad
46 phonetic double-byte katakana characters (*iroha*dbchar).

\pnuldash
Dashed underline.

\pnuldashd
Dash-dotted underline.

\pnuldashdd
Dash-dot-dotted underline.

\pnulhair
Hairline underline.

\pnulth
Thick underline.

\pnulwave
Wave underline.

\pnzodiac
Chinese Zodiac numbering 1 (*zodiac1).

\pnzodiacd
Chinese Zodiac numbering 2 (*zodiac2).

\pnzodiacl
Chinese Zodiac numbering 3 (*zodiac3).

\pnb
Bold numbering.*

\pni
Italic numbering.*

\pncaps
All caps numbering.*

\pnscaps
Small caps numbering.*

\pnul
Continuous underline.*

\pnuld
Dotted underline.

\pnuldb

Double underline.

\pnulnone
Turns off underlining.

\pnulw
Word underline.

\pnstrike
Strikethrough numbering.*

\pncfN
Foreground coloróindex into color table (the default is 0).

\pnfN
Font number.

\pnfsN
Font size (in half-points).

\pnindentN
Minimum distance from margin to body text.

\pnspN
Distance from number text to body text.

\pnprev
Used for multilevel lists. Include information from previous level in this level; for example, 1, 1.1, 1.1.1, 1.1.1.1

\pnqc
Centered numbering.

\pnql
Left-justified numbering.

\pnqr
Right-justified numbering.

\pnstartN
Start at number.

\pntxta
Text after. This group contains the text that succeeds the number. This is a destination control word.

\pntxtb
Text before. This group contains the text that precedes the number. This is a destination control word.

¶Note that there is a limit of 32 characters total for the sum of text before and text after for simple numbering. Multilevel numbering has a limit of 64 characters total for the sum of all levels.¶Word 97 through Word 2002 RTF¶Each paragraph that is part of a list must contain some keyword to

indicate which list itís in, and which level of the list it belongs to. Word 97 through Word 2002 also provide the flat text representation of each number (in the \listtext destination); so, RTF readers that doní understand Word 97 numbering will get the paragraph number, along with appropriate character properties, inserted into their document at the beginning of the paragraph. Any RTF reader that does understand Word 97 through Word 2002 numbering should ignore the entire \listtext destination.¶Control word
Meaning

\ls
Should exactly match the ls for one of the list overrides in the List Override table.

\ilvl
The 0-based level of the list to which the paragraph belongs. For all simple lists, this should always be 0. For multilevel lists, it can be 0 through 8.

\listtext
Contains the flat text representation of the number, including character properties. Should be ignored by any reader that understands Word 97 through Word 2002 numbering. This is a destination control word.

¶Revision Marks for Paragraph Numbers and ListNum Fields¶Paragraph numbers and ListNum fields track revision information with special properties applied to the paragraph mark and ListNum field, respectively. The special properties hold the "old" value of the numberóthe value it held when revision-mark tracking began. At display time, Word checks the number's current value and compares it with this "old" value to determine whether it has changed. If the numbers are different, the old value shows up as deleted and the new value as inserted; if the numbers are the same, Word displays the new value normally, with no revision information. If there was no old value, the new value shows up as inserted. The following table lists the RTF specifications for these special properties.¶Control word
Meaning

\pnrauthN
Index into the revision table. The content of the Nth group in the revision table is considered to be the author of that revision. ¶Note This keyword is used to indicate paragraph number revisions.

\pnrdateN
Time of the revision. The 32-bit DTTM structure is emitted as a long integer.

\pnrnot
Indicates whether the paragraph number for the current paragraph is marked as "inserted."

\pnrxstN
The keywords \pnrxst, \pnrrgb, \pnrpnbr, and \pnrnfc describe the "deleted number" text for the paragraph number. Their values are binary. Each of these keywords is represented as an array. The deleted number is written out with a \pnrstart keyword, followed by the arrayís keyword, followed by the first byte of the array, followed by the arrayís keyword, followed by the second byte of the arrayís keyword, followed by the arrayís keyword, followed by the

third byte of the arrayís keyword, and so on. This sequence is followed by the \pnrstop keyword.¶\pnrxst is a 32-item Unicode character array (double bytes for each character) with a length byte as the first numberóit has the actual text of the number, with "level" place holders written out as digits from 0 through 8.

\pnrrgbN
Nine-item array of indices of the level place holders in the \pnrxst array.

\pnrnfcN
Nine-item array containing the number format codes of each level (using the same values as the \levelnfc keyword). The number format code is represented as a short integer.

\pnrpnbrN
Nine-item array of the actual values of the number in each level. The number is represented as a long integer.

\pnrstartN
The \pnrxst, \pnrrgb, \pnrpnbr, and \pnrnfc arrays are each preceded by the \pnrstart keyword, whose argument is 0 through 3, depending on the array.

\pnrstopN
The \pnrxst, \pnrrgb, \pnrpnbr, and \pnrnfc arrays are each terminated by the \pnrstop keyword, whose argument is the number of bytes written out in the array.

¶Example¶Letís take an example of the number "3-4b." which represents the third level of the list. The following table lists the values of each array.¶Array
Binary
Comment

pnrxst
\'05\'00-\'01\'02
The length of the string is 5. Then, first level (level 0), followed by a dash, followed by the second and third levels (levels 1 and 2), followed by a period.

pnrrgb
\'01\'03\'04
The level place holders are at indices 1, 3, and 4 in the string.

pnrnfc
\'00\'00\'04
The nfc values are Arabic (0), Arabic (0), and lowercase letter (4).

pnrpnbr
\'03\'04\'02
The numbers or 3, 4, and 2 (b)

¶Here is the RTF for this number:¶\pnrstart0¶\pnrxst0\pnrxst5\pnrxst0\pnrxst1\pnrxst0\pnrxst45\pnrxst0\pnrxst2\pnrxst0\pnrxst3\pnrxst0\pnrxst46¶\pnrstop12¶¶\pnrstart1¶\pnrrgb1\pnrrgb3\pnrrgb4¶\pnrrgb0\pnrrgb0\pnrrgb0¶\

pnrrgb0\pnrrgb0\pnrrgb0¶\pnrstop9¶¶\pnrstart2¶\pnrnfc0\pnrnfc0\pnrnfc0\
pnrnfc0\pnrnfc0\pnrnfc4¶\pnrnfc0\pnrnfc0\pnrnfc0\pnrnfc0\pnrnfc0\pnrnfc0¶\
pnrnfc0\pnrnfc0\pnrnfc0\pnrnfc0\pnrnfc0\pnrnfc0¶\pnrstop18¶¶\pnrstart3¶\
pnrpnbr0\pnrpnbr0\pnrpnbr0\pnrpnbr3¶\pnrpnbr0\pnrpnbr0\pnrpnbr0\pnrpnbr4¶\
pnrpnbr0\pnrpnbr0\pnrpnbr0\pnrpnbr2¶\pnrpnbr0\pnrpnbr0\pnrpnbr0\pnrpnbr0 ¶\
pnrpnbr0\pnrpnbr0\pnrpnbr0\pnrpnbr0¶\pnrpnbr0\pnrpnbr0\pnrpnbr0\pnrpnbr0¶\
pnrpnbr0\pnrpnbr0\pnrpnbr0\pnrpnbr0¶\pnrpnbr0\pnrpnbr0\pnrpnbr0\pnrpnbr0¶\
pnrpnbr0\pnrpnbr0\pnrpnbr0\pnrpnbr0¶\pnrstop36¶¶Control word
Meaning

Track Changes (Revision Mark) Properties for ListNum Fields

\dfrauthN
Index into the revision table. The content of the Nth group in the revision table is considered the author of that revision. ¶Note This keyword is used to indicate the deleted value of a ListNum field.

\dfrdateN
Time of the revision. The 32-bit DTTM structure is emitted as a long integer.

\dfrxst
Unicode character array with a length byte.

\dfrstart
The \dfrxst array is preceded by the \dfrstart keyword.

\dfrstop
The \dfrxst array is terminated by the \dfrstop keyword.

¶Example¶Letís look again at the preceding example, in which the deleted value is "3-4b." The RTF would then be¶\dfrstart0\dfrxst0\dfrxst5\dfrxst0\
dfrxst51\dfrxst0\dfrxst45\dfrxst0\dfrxst52¶\dfrxst0\dfrxst66\dfrxst0\
dfrxst46\dfrstop10¶¶where 5 is the length byte, 51 is Unicode for "3", 45 is Unicode for "-", 52 is Unicode for "4", and so on.¶Paragraph Borders¶Paragraph borders have the following syntax:¶<brdrdef>
(<brdrseg> <brdr>)+

<brdrseg>
\brdrt | \brdrb | \brdrl | \brdrr | \brdrbtw | \brdrbar | \box

<brdr>
<brdrk> \brdrw? \brsp? \brdrcf?

<brdrk>
\brdrs | \brdrth | \brdrsh | \brdrdb | \brdrdot | \brdrdash | \brdrhair |
brdrinset | \brdrdashsm | \brdrdashd | \brdrdashdd | \brdrtriple | \
brdrtnthsg | \brdrthtnsg | \brdrtnthtnsg | \brdrtnthmg | \brdrthtnmg | \
brdrtnthtnmg | \brdrtnthlg | \brdrthtnlg | \brdrtnthtnlg | \brdrwavy | \
brdrwavydb | \brdrdashdotstr | \brdremboss | \brdrengrave \brdroutset | \
brdrnone | \brdrtbl | \brdrnil

¶Control word
Meaning

\brdrt
Border top.

\brdrb
Border bottom.

\brdrl
Border left.

\brdrr
Border right.

\brdrbtw
Consecutive paragraphs with identical border formatting are considered part of a single group with the border information applying to the entire group. To have borders around individual paragraphs within the group, the \brdrbtw control must be specified for that paragraph.

\brdrbar
Border outside (right side of odd-numbered pages, left side of even-numbered pages).

\box
Border around the paragraph (box paragraph).

\brdrs
Single-thickness border.

\brdrth
Double-thickness border.

\brdrsh
Shadowed border.

\brdrdb
Double border.

\brdrdot
Dotted border.

\brdrdash
Dashed border.

\brdrhair
Hairline border.

\brdrinset
Inset border.

\brdrdashsm
Dashed border (small).

\brdrdashd
Dot-dashed border.

\brdrdashdd
Dot-dot-dashed border.

\brdroutset
Outset border.

\brdrtriple
Triple border.

\brdrtnthsg
Thick-thin border (small).

\brdrthtnsg
Thin-thick border (small).

\brdrtnthtnsg
Thin-thick thin border (small).

\brdrtnthmg
Thick-thin border (medium).

\brdrthtnmg
Thin-thick border (medium).

\brdrtnthtnmg
Thin-thick thin border (medium).

\brdrtnthlg
Thick-thin border (large).

\brdrthtnlg
Thin-thick border (large).

\brdrtnthtnlg
Thin-thick-thin border (large).

\brdrwavy
Wavy border.

\brdrwavydb
Double wavy border.

\brdrdashdotstr
Striped border.

\brdremboss
Embossed border.

\brdrengrave
Engraved border.

\brdrframe
Border resembles a ìFrame.î

\brdrwN
N is the width in twips of the pen used to draw the paragraph border line. N cannot be greater than 75. To obtain a larger border width, the \brdth control word can be used to obtain a width double that of N.

\brdrcfN
N is the color of the paragraph border, specified as an index into the color table in the RTF header.

\brspN
Space in twips between borders and the paragraph.

\brdrnil
No border specified.

\brdrtbl
Table cell has no borders.

Paragraph Shading¶Paragraph shading has the following syntax:¶<shading>
(\shading | <pat>) \cfpat? \cbpat?

<pat>
\bghoriz | \bgvert | \bgfdiag | \bgbdiag | \bgcross | \bgdcross | \bgdkhoriz | \bgdkvert | \bgdkfdiag | \bgdkbdiag | \bgdkcross | \bgdkdcross

¶Control word
Meaning

\shadingN
N is the shading of the paragraph in hundredths of a percent.

\bghoriz
Specifies a horizontal background pattern for the paragraph.

\bgvert
Specifies a vertical background pattern for the paragraph.

\bgfdiag
Specifies a forward diagonal background pattern for the paragraph (\\\\).

\bgbdiag
Specifies a backward diagonal background pattern for the paragraph (////).

\bgcross
Specifies a cross background pattern for the paragraph.

\bgdcross
Specifies a diagonal cross background pattern for the paragraph.

\bgdkhoriz
Specifies a dark horizontal background pattern for the paragraph.

\bgdkvert

Specifies a dark vertical background pattern for the paragraph.

\bgdkfdiag
Specifies a dark forward diagonal background pattern for the paragraph (\\\\ ).

\bgdkbdiag
Specifies a dark backward diagonal background pattern for the paragraph (////).

\bgdkcross
Specifies a dark cross background pattern for the paragraph.

\bgdkdcross
Specifies a dark diagonal cross background pattern for the paragraph.

\cfpatN
N is the fill color, specified as an index into the document's color table.

\cbpatN
N is the background color of the background pattern, specified as an index into the document's color table.

Positioned Objects and Frames¶The following paragraph-formatting control words specify the location of a paragraph on the page. Consecutive paragraphs with the same frame formatting are considered part of the same frame. For two framed paragraphs to appear at the same position on a page, they must be separated by a paragraph with different or no frame information.¶Note that if any paragraph in a table row has any of these control words specified, then all paragraphs in the table row must have the same control words specified, either by inheriting the properties from the previous paragraph or by re-specifying the controls.¶Paragraph positioning has the following syntax:¶< apoctl>
<framesize> & <horzpos> & <vertpos> & <txtwrap> & <dropcap> & <txtflow> & \absnoovrlp?

<framesize>
\absw? & \absh?

<horzpos>
<hframe> & <hdist>

<vertpos>
<vframe> & <vdist>

<txtwrap>
\nowrap? & \dxfrtext? & \dfrmtxtx? &\dfrmtxty?

<dropcap>
\dropcapli? & \dropcapt?

<hframe>
\phmrg? | \phpg? | \phcol?

<hdist>
\posx? | \posnegx? | \posxc? | \posxi? | \posxo? | \posxl? | \posxr?

<vframe>
\pvmrg? | \pvpg? | \pvpara?

<vdist>
\posy? | \posnegy? | \posyt? | \posyil? | \posyb? | \posyc? | \posyin? | \posyout? & \abslock?

<txtflow>
\frmtxlrtb | \frmtxtbrl | \frmtxbtlr | \frmtxlrtbv | \frmtxtbrlv

¶Control word
Meaning

Frame Size

\abswN
N is the width of the frame in twips.

\abshN
N is the height of the frame in twips. A positive number indicates the minimum height of the frame, and a negative number indicates the exact height of the frame. A value of zero indicates that the height of the frame adjusts to the contents of the frame. This is the default for frames where no height is given.

Horizontal Position

\phmrg
Use the margin as the horizontal reference frame.

\phpg
Use the page as the horizontal reference frame.

\phcol
Use the column as the horizontal reference frame. This is the default if no horizontal reference frame is given.

\posxN
Positions the frame N twips from the left edge of the reference frame.

\posnegxN
Same as \posx but allows arbitrary negative values.

\posxc
Centers the frame horizontally within the reference frame.

\posxi
Positions the paragraph horizontally inside the reference frame.

\posxo
Positions the paragraph horizontally outside the reference frame.

\posxr
Positions the paragraph to the right within the reference frame.

\posxl
Positions the paragraph to the left within the reference frame. This is the default if no horizontal positioning information is given.

Vertical Position

\pvmrg
Positions the reference frame vertically relative to the margin. This is the default if no vertical frame positioning information is given.

\pvpg
Positions the reference frame vertically relative to the page.

\pvpara
Positions the reference frame vertically relative to the top left corner of the next unframed paragraph in the RTF stream.

\posyN
Positions the paragraph N twips from the top edge of the reference frame.

\posnegyN
Same as \posy but allows arbitrary negative values.

\posyil
Positions the paragraph vertically to be inline.

\posyt
Positions the paragraph at the top of the reference frame.

\posyc
Centers the paragraph vertically within the reference frame.

\posyb
Positions the paragraph at the bottom of the reference frame.

\posyin
Positions the paragraph vertically inside the reference frame.

\posyout
Positions the paragraph vertically outside the reference frame.

\abslockN
Lock anchor:¶0
Do not lock anchor (default).¶1
Locks a frame anchor to the current paragraph that it is associated with.

Text Wrapping

\nowrap
Prevents text from flowing around the positioned object.

\dxfrtextN
Distance in twips of a positioned paragraph from text in the main text flow in all directions.

\dfrmtxtxN
N is the horizontal distance in twips from text on both sides of the frame.

\dfrmtxtyN
N is the vertical distance in twips from text on both sides of the frame.

\overlay
Text flows underneath frame.

Drop Caps

\dropcapliN
Number of lines drop cap is to occupy. The range is 1 through 10.

\dropcaptN
Type of drop cap:¶1
In-text drop cap¶2
Margin drop cap

Overlap

\absnoovrlpN
Allow overlap with other frames or objects with similar wrapping:¶0
Allow overlap (default)¶1
Do not allow overlap

Text Flow

\frmtxlrtb
Frame box flows from left to right and top to bottom (default).

\frmtxtbrl
Frame box flows right to left and top to bottom.

\frmtxbtlr
Frame box flows left to right and bottom to top.

\frmtxlrtbv
Frame box flows left to right and top to bottom, vertical.

\frmtxtbrlv
Frame box flows top to bottom and right to left, vertical.

¶The following is an example of absolute-positioned text in a document:¶\par \pard \pvpg\phpg\posxc\posyt\absw5040\dxfrtest173 First APO para¶\par \pard \phmrg\posxo\posyc\dxfrtext1152 Second APO para¶Table Definitions¶There is no RTF table group; instead, tables are specified as paragraph properties. A table is represented as a sequence of table rows. A table row is a continuous sequence of paragraphs partitioned into cells. The table row begins with the

\trowd control word and ends with the \row control word. Every paragraph that is contained in a table row must have the \intbl control word specified or inherited from the previous paragraph. A cell may have more than one paragraph in it; the cell is terminated by a cell mark (the \cell control word), and the row is terminated by a row mark (the \row control word). Table rows can also be positioned. In this case, every paragraph in a table row must have the same positioning controls (see the <apoctl> controls on the
 HYPERLINK \l "Positioned_Objects_and_Frames"

Positioned Objects and Frames
 subsection of this Specification. Table properties may be inherited from the previous row; therefore, a series of table rows may be introduced by a single <tbldef>.¶An RTF table row has the following syntax, as shown in the general paragraph-text syntax shown in the
 HYPERLINK \l "Paragraph_Text"

Paragraph Text
 section of this Specification:¶<row>
(<tbldef> <cell>+ <tbldef> \row) | (<tbldef> <cell>+ \row) | (<cell>+ <tbldef> \row)

<cell>
(<nestrow>? <tbldef>?) & <textpar>+ \cell

<nestrow>
<nestcell>+ ë{*í\nesttableprops <tbldef> \nestrow ë}í

<nestcell>
<textpar>+ \nestcell

¶Note that while Word 97 emitted the row properties (<tbldef>) at the beginning of the row, a reader should not assume that this is the case. Properties can be emitted at the end, and, in fact, Word 2002 does this. To avoid breaking readers that might make the aforementioned assumption, Word 2002 will write a copy at the beginning as well, so the properties of a typical row in a Word 2002 document are repeated at the beginning and at the end of the row. Note that for nested cells, Word 2002 writes the properties at the end only.¶¶A table definition has the following syntax:¶<tbldef>
\trowd \irowN \irowbandN \tsN \trgaph & <rowjust>? & <rowwrite>? & <rowtop>? & <rowbot>? & <rowleft>? & <rowright>? & <rowhor>? & <rowvert>? & <rowpos> ? & \trleft? & \trrh? \trhdr? & \trkeep? & <rowwidth>? & <rowinv>? & \trautofit? & <rowspc>? & <rowpad>? & \taprtl? <trrevision>? <tflags>? <celldef>+

<rowjust>
 \trql | \trqr | \trqc

<rowwrite>
\ltrrow | \rtlrow

<rowtop>
\trbrdrt <brdr>

<rowbot>

```
\trbrdrl <brdr>

<rowleft>
\trbrdrb <brdr>

<rowright>
\trbrdrr <brdr>

<rowhor>
\trbrdrh <brdr>

<rowvert>
\trbrdrv <brdr>

<rowpos>
<rowhorzpos> & <rowvertpos> & <rowwrap> & \tabsnoovrlp?

<rowhorzpos>
<rowhframe>& <rowhdist>

<rowvertpos>
<rowvframe>& <rowvdist>

<rowwrap>
\tdfrmtxtLeft? & \tdfrmtxtRight? & \tdfrmtxtTop? & \tdfrmtxtBottom?

<rowhframe>
\phmrg? | \phpg? | \phcol?

<rowhdist>
\tposx? | \tposnegx? | \tposxc? | \tposxi? | \tposxo? | \tposxl? | \tposxr?

<rowvframe>
\tpvmrg? | \tpvpg? | \tpvpara?

<rowvdist>
\tposy? | \tposnegy? | \tposyt? | \tposyil? | \tposyb? | \tposyc? | tposyin
| tposyout

<rowwidth>
\trftsWidth & \trwWidth?

<rowinv>
(\trftsWidthB & \trwWidthB?)? & (\trftsWidthA & \trwWidthA?)?

<rowspc>
(\trspdl & \trspdfl?)? & (\trspdt & \trspdft?)? & (\trspdb & \trspdfb?)? & (\
trspdr & \trspdfr?)?

<rowpad>
(\trpaddl & \trpaddfl?)? & (\trpaddt & \trpaddft?)? & (\trpaddb & \
trpaddfb?)? & (\trpaddr & \trpaddfr?)?

<trrevision>
```

```
\trauthN \trdateN

<tflags>
\tbllkborder & \tbllkshading  & \tbllkfont & \tbllkcolor & \tbllkbestfit & \tbllkhdrrows & \tbllklastrow & \tbllkhdrcols & \tbllklastcol

<celldef>
(\clmgf? & \clmrg? & \clvmgf? & \clvmrg? <celldgu>? & <celldgl>? & <cellalign>? & <celltop>? & <cellleft>? & <cellbot>? & <cellright>? & <cellshad>? & <cellflow>? & clFitText? & clNoWrap? & <cellwidth>? & <cellpad>?) \cellx

<celldgu>
\cldglu <brdr>

<celldgl>
\cldgll <brdr>

<cellalign>
\clvertalt | \clvertalc | \clvertalb

<celltop>
\clbrdrt <brdr>

<cellleft>
\clbrdrl <brdr>

<cellbot>
\clbrdrb <brdr>

<cellright>
\clbrdrr <brdr>

<cellshad>
<cellpat>? \clcfpat? & \clcbpat? & \clshdng

<cellpat>
\clbghoriz | \clbgvert | \clbgfdiag | \clbgbdiag | \clbgcross | \clbgdcross | \clbgdkhor | \clbgdkvert | \clbgdkfdiag | \clbgdkbdiag | \clbgdkcross | \clbgdkdcross

<cellflow>
\cltxlrtb | \cltxtbrl | \cltxbtlr | \cltxlrtbv | \cltxtbrlv

<cellwidth>
\clftsWidth & \clwWidth?

<cellpad>
(\clpadl & \clpadfl?)? & (\clpadt & \clpadft?)? & (\clpadb & \clpadfb?)? & (\clpadr & \clpadfr?)?
```

¶Note for <tbldef> that the number of \cellxs must match the number of \cells in the \row.¶The following control words further define options for each row of the table.¶Control word

Meaning

\trowd
Sets table row defaults.

\irowN
N is the row index of this row.

\irowbandN
N is the row index of the row, adjusted to account for header rows. A header row has a value of ñ1.

\row
Denotes the end of a row.

\lastrow
Output if this is the last row in the table.

\tcelld
Sets table cell defaults.

\nestcell
Denotes the end of a nested cell.

\nestrow
Denotes the end of a nested row.

\nesttableprops
Defines the properties of a nested table. This is a destination control word.

\nonesttables
Contains text for readers that do not understand nested tables. This destination should be ignored by readers that support nested tables.

\trgaphN
Half the space between the cells of a table row in twips.

\cellxN
Defines the right boundary of a table cell, including its half of the space between cells.

\cell
Denotes the end of a table cell.

\clmgf
The first cell in a range of table cells to be merged.

\clmrg
Contents of the table cell are merged with those of the preceding cell.

\clvmgf
The first cell in a range of table cells to be vertically merged.

\clvmrg

Contents of the table cell are vertically merged with those of the preceding cell.

Table Row Revision Tracking

\trauthN
With revision tracking enabled, this control word identifies the author of changes to a table rowís properties. N refers to a value in the revision table.

\trdateN
With revision tracking enabled, this control word identifies the date on which a revision was made.

Autoformatting Flags

\tbllkborder
Flag sets table autoformat to format borders.

\tbllkshading
Flag sets table autoformat to affect shading.

\tbllkfont
Flag sets table autoformat to affect font.

\tbllkcolor
Flag sets table autoformat to affect color.

\tbllkbestfit
Flag sets table autoformat to apply best fit.

\tbllkhdrrows
Flag sets table autoformat to format the first (header) row.

\tbllklastrow
Flag sets table autoformat to format the last row.

\tbllkhdrcols
Flag sets table autoformat to format the first (header) column.

\tbllklastcol
Flag sets table autoformat to format the last column.

Row Formatting

\taprtl
Table direction is right to left.

\trautofitN
AutoFit:¶0
No AutoFit (default).¶1
AutoFit is on for the row. Overridden by \clwWidthN and \trwWidthN in any table row.

\trhdr
Table row header. This row should appear at the top of every page on which the current table appears.

\trkeep
Keep table row together. This row cannot be split by a page break. This property is assumed to be off unless the control word is present.

\trkeepfollow
Keep row in the same page as the following row.

\trleftN
Position in twips of the leftmost edge of the table with respect to the left edge of its column.

\trqc
Centers a table row with respect to its containing column.

\trql
Left-justifies a table row with respect to its containing column.

\trqr
Right-justifies a table row with respect to its containing column.

\trrhN
Height of a table row in twips. When 0, the height is sufficient for all the text in the line; when positive, the height is guaranteed to be at least the specified height; when negative, the absolute value of the height is used, regardless of the height of the text in the line.

\trpaddbN
Default bottom cell margin or padding for the row.

\trpaddlN
Default left cell margin or padding for the row.

\trpaddrN
Default right cell margin or padding for the row.

\trpaddtN
Default top cell margin or padding for the row.

\trpaddfbN
Units for \trpaddbN:¶0
Null. Ignore \trpaddbN in favor of \trgaph (Word 97 style padding).¶3
Twips.

\trpaddflN
Units for \trpaddlN:¶0
Null. Ignore \trpaddlN in favor of \trgaph (Word 97 style padding).¶3
Twips.

\trpaddfrN
Units for \trpaddrN:¶0

Null. Ignore \trpaddrN in favor of \trgaph (Word 97 style padding).¶3
Twips.

\trpaddftN
Units for \trpaddtN:¶0
Null. Ignore \trpaddtN in favor of \trgaph (Word 97 style padding).¶3
Twips.

\trspdlN
Default left cell spacing for the row. The total horizontal spacing between adjacent cells is equal to the sum of \trspdlN from the rightmost cell and \trspdrN from the leftmost cell, both of which will have the same value when written by Word.

\trspdtN
Default top cell spacing for the row. The total horizontal spacing between adjacent cells is equal to the sum of \trspdtN from the bottom cell and \trspdbN from the top cell, both of which will have the same value when written by Word.

\trspdbN
Default bottom cell spacing for the row. The total horizontal spacing between adjacent cells is equal to the sum of \trspdtN from the bottom cell and \trspdbN from the top cell, both of which will have the same value when written by Word.

\trspdrN
Default right cell spacing for the row. The total horizontal spacing between adjacent cells is equal to the sum of \trspdlN from the rightmost cell and \trspdrN from the leftmost cell, both of which will have the same value when written by Word.

\trspdflN
Units for \trspdlN:¶0
Null. Ignore \trspdlN.¶3
Twips.

\trspdftN
Units for \trspdtN:¶0
Null. Ignore \trspdtN.¶3
Twips.

\trspdfbN
Units for \trspdbN:¶0
Null. Ignore \trspdbN.¶3
Twips.

\trspdfrN
Units for \trspdrN:¶0
Null. Ignore \trspdrN.¶3
Twips.

\trwWidthN
Preferred row width. Overrides \trautofitN.

\trftsWidthN
Units for \clwWidthN:¶0
Null. Ignore \trwWidth in favor of \cellx (Word 97 style of determining cell and row width)¶1
Auto, no preferred row width, ignores \clwWidthN if present; \clwWidthN will generally not be written, giving precedence to row defaults and autofit.¶2
Percentage (in 50ths of a percent).¶3
Twips.

\trwWidthBN
Width of invisible cell at the beginning of the row. Used only in cases where rows have different widths.

\trftsWidthBN
Units for \clwWidthBN:¶0
Null. No invisible cell before.¶1
Auto. ignores \clwWidthBN if present; \clwWidthBN will generally not be written.¶2
Percentage (in 50ths of a percent).¶3
Twips.

\trwWidthAN
Width of invisible cell at the end of the row. Used only in cases where rows have different widths.

\trftsWidthAN
Units for \clwWidthBN:¶0
Null. No invisible cell after.¶1
Auto, ignores \clwWidthBN if present; \clwWidthBN will generally not be written.¶2
Percentage (in 50ths of a percent).¶3
Twips.

Row Shading and Background Color

\trcbpatN
Background pattern color for the table row shading.

\trcfpatN
Foreground pattern color for the table row shading.

\trpatN
Pattern for table row shading.

\trshdngN
Percentage shading for table row shading.

\trbgbdiag
Backward diagonal pattern.

\trbgcross
Cross pattern.

\trbgdcross
Diagonal cross pattern.

\trbgdkbdiag
Dark backward diagonal pattern.

\trbgdkcross
Dark cross pattern.

\trbgdkdcross
Dark diagonal cross pattern.

\trbgdkfdiag
Dark forward diagonal pattern.

\trbgdkhor
Dark horizontal pattern.

\trbgdkvert
Dark vertical pattern.

\trbgfdiag
Forward diagonal pattern.

\trbghoriz
Horizontal pattern.

\trbgvert
Vertical pattern.

Cell Formatting

\clFitText
Fit text in cell, compressing each paragraph to the width of the cell.

\clNoWrap
Do not wrap text for the cell. Only has an effect if the table cell does not have a preferred \clwWidthN, which overrides \trautofitN.

\clpadlN
Left cell margin or padding. Overrides \trpaddlN.

\clpadtN
Top cell margin or padding. Overrides \trpaddtN.

\clpadbN
Bottom cell margin or padding. Overrides \trpaddbN.

\clpadrN
Right cell margin or padding. Overrides \trpaddrN.

\clpadflN
Units for \clpadlN:¶0
Null. Ignore \clpadl in favor of \trgaph (Word 97 style cell padding).¶3

Twips.

\clpadftN
Units for \clpadtN:¶0
Null. Ignore \clpadt in favor of \trgaph (Word 97 style cell padding).¶3
Twips.

\clpadfbN
Units for \clpadbN:¶0
Null. Ignore \clpadb in favor of \trgaph (Word 97 style cell padding).¶3
Twips.

\clpadfrN
Units for \clpadrN:¶0
Null. Ignore \clpadr in favor of \trgaph (Word 97 style cell padding).¶3
Twips.

\clwWidthN
Preferred cell width. Overrides \trautofitN.

\clftsWidthN
Units for \clwWidthN:¶0
Null. Ignore \clwWidth in favor of \cellx (Word 97 style of determining cell and row width).¶1
Auto, no preferred cell width, ignores \clwWidthN if present; \clwWidthN will generally not be written, giving precedence to row defaults.¶2
Percentage (in 50ths of a percent).¶3
Twips.

Positioned Wrapped Tables (The following properties must be the same for all rows in the table.)

\tdfrmtxtLeftN
Distance in twips, between the left of the table and surrounding text (the default is 0).

\tdfrmtxtRightN
Distance in twips, between the right of the table and surrounding text (the default is 0).

\tdfrmtxtTopN
Distance in twips, between the top of the table and surrounding text (the default is 0).

\tdfrmtxtBottomN
Distance in twips, between the bottom of the table and surrounding text (the default is 0).

\tabsnoovrlp
Do not allow the table to overlap with other tables or shapes with similar wrapping not contained within it.

\tphcol
Use the column as the horizontal reference frame. This is the default if no

horizontal table positioning information is given.

\tphmrg
Use the margin as the horizontal reference frame.

\tphpg
Use the page as the horizontal reference frame.

\tposnegxN
Same as \tposx but allows arbitrary negative values.

\tposnegyN
Same as \tposy but allows arbitrary negative values.

\tposxN
Positions the table N twips from the left edge of the horizontal reference frame.

\tposxc
Centers the table within the horizontal reference frame.

\tposxi
Positions the table inside the horizontal reference frame.

\tposxl
Positions the table at the left of the horizontal reference frame.

\tposxo
Positions the table outside the horizontal reference frame.

\tposxr
Positions the table at the right of the horizontal reference frame.

\tposy
Positions the table N twips from the top edge of the vertical reference frame.

\tposyb
Positions the table at the bottom of the vertical reference frame.

\tposyc
Centers the table within the vertical reference frame

\tposyil
Positions the table to be inline.

\tposyin
Positions the table inside within the vertical reference frame.

\tposyout
Positions the table outside within the vertical reference frame.

\tposyt
Positions the table at the top of the vertical reference frame.

\tpvmrg
Positions the table vertically relative to the top margin. This is the default if no vertical table positioning information is given.

\tpvpara
Positions the table vertically relative to the top left corner of the next unframed paragraph in the stream.

\tpvpg
Positions the table vertically relative to the top of the page.

Bidirectional Controls

\rtlrow
Cells in this table row will have right-to-left precedence.

\ltrrow
Cells in this table row will have left-to-right precedence (the default).

Row Borders

\trbrdrt
Table row border top.

\trbrdrl
Table row border left.

\trbrdrb
Table row border bottom.

\trbrdrr
Table row border right.

\trbrdrh
Table row border horizontal (inside).

\trbrdrv
Table row border vertical (inside).

Cell Borders

\brdrnil
No border specified.

\clbrdrb
Bottom table cell border.

\clbrdrt
Top table cell border.

\clbrdrl
Left table cell border.

\clbrdrr
Right table cell border.

\cldglu
Diagonal line (top left to bottom right).

\cldgll
Diagonal line (top right to bottom left).

Cell Shading and Background Pattern

\clshdrawnil
No shading specified.

\clshdngN
N is the shading of a table cell in hundredths of a percent. This control should be included in RTF along with cell border information.

\clshdngrawN
Same as \clshdngN for use with table styles.

\clbghoriz
Specifies a horizontal background pattern for the cell.

\rawclbghoriz
Same as \clbghoriz for use with table styles.

\clbgvert
Specifies a vertical background pattern for the cell.

\rawclbgvert
Same as \clbgvert for use with table styles.

\clbgfdiag
Specifies a forward diagonal background pattern for the cell (\\\\).

\rawclbgfdiag
Same as \clbgfdiag for use with table styles.

\clbgbdiag
Specifies a backward diagonal background pattern for the cell (////).

\rawclbgbdiag
Same as \clbgbdiag for use with table styles.

\clbgcross
Specifies a cross background pattern for the cell.

\rawclbgcross
Same as \clbgcross for use with table styles.

\clbgdcross
Specifies a diagonal cross background pattern for the cell.

\rawclbgdcross
Same as clbgdcross for use with table styles.

\clbgdkhor
Specifies a dark horizontal background pattern for the cell.

\rawclbgdkhor
Same as \clbgdkhor for use with table styles.

\clbgdkvert
Specifies a dark vertical background pattern for the cell.

\rawclbgdkvert
Same as \clbgdkvert for use with table styles.

\clbgdkfdiag
Specifies a dark forward diagonal background pattern for the cell (\\\\).

\rawclbgdkfdiag
Same as \clbgdkfdiag for use with table styles.

\clbgdkbdiag
Specifies a dark backward diagonal background pattern for the cell (////).

\rawclbgdkbdiag
Same as \clbgdkbdiag for use with table styles.

\clbgdkcross
Specifies a dark cross background pattern for the cell.

\rawclbgdkcross
Same as \clbgdkcross for use with table styles.

\clbgdkdcross
Specifies a dark diagonal cross background pattern for the cell.

\rawclbgdkdcross
Same as \clbgdkdcross for use with table styles.

\clcfpatN
N is the line color of the background pattern.

\clcfpatrawN
Same as \clcfpatN for use with table styles.

\clcbpatN
N is the background color of the background pattern.

\clcbpatrawN
Same as \clcbpatN for use with table styles.

Cell Vertical Text Alignment

\clvertalt

Text is top-aligned in cell (the default).

\clvertalc
Text is centered vertically in cell.

\clvertalb
Text is bottom-aligned in cell.

Cell Text Flow

\cltxlrtb
Text in a cell flows from left to right and top to bottom (default).

\cltxtbrl
Text in a cell flows right to left and top to bottom.

\cltxbtlr
Text in a cell flows left to right and bottom to top.

\cltxlrtbv
Text in a cell flows left to right and top to bottom, vertical.

\cltxtbrlv
Text in a cell flows top to bottom and right to left, vertical.

¶Example¶The following is an example of a complex Word 2000 table RTF. It does not take account of the table styles implemented in Word 2002. The BMP showing the tableís look and position is followed by the corresponding RTF, which is followed by a piece-by-piece analysis of the RTF.¶¶The image shows a freely positioned Word table, with two cells at an offset. Inside the topmost cell is a nested table. The table has green borders, yellow shading, a small amount of spacing between cells, and inner cell margins or padding.¶¶ ¶¶The following is the RTF for this table as emitted by Word 2000. Word 2000 also emits RTF that older readers (such as previous versions of Word) can understand, so new features degrade nicely.¶¶\trowd \trgaph115\trleft388\trbrdrt\brdrs\brdrw15\brdrcf11 \trbrdrl\brdrs\brdrw15\brdrcf11 \trbrdrb\brdrs\brdrw15\brdrcf11 \trbrdrr\brdrs\brdrw15\brdrcf11 ¶\trbrdrh\brdrs\brdrw15\brdrcf11 \trbrdrv\brdrs\brdrw15\brdrcf11 ¶\tphmrg\tposxc\tposyc\tdfrmtxtLeft187\tdfrmtxtRight187\trftsWidth1\trftsWidthB3\trwWidthB504\trftsWidthA3\trautofit1\trspdl14\trspdt14\trspdb14\trspdr14\trspdfl3\trspdft3\trspdfb3\trspdfr3\trpaddl115\trpaddr115\trpaddfl3\trpaddfr3 \clvertalc\clbrdrt¶\brdrs\brdrw15\brdrcf11 \clbrdrl\brdrs\brdrw15\brdrcf11 \clbrdrb\brdrs\brdrw15\brdrcf11 \clbrdrr\brdrs\brdrw15\brdrcf11 \clcbpat17\cltxlrtb\clftsWidth3\clwWidth4644 \cellx5074\pard\plain ¶\qc \li0\ri0\widctlpar\intbl\phmrg\posxc\posyc\dxfrtext187\dfrmtxtx187\dfrmtxty0\aspalpha\aspnum\faauto\adjustright\rin0\lin0 \fs24\lang1033\langfe2052\loch\af0\hich\af0\dbch\af17\cgrid\langnp1033\langfenp2052 {\hich\af0\dbch\af17\loch\f0 CELL ONE¶\par }\pard \qc \li0\ri0\widctlpar\intbl\phmrg\posxc\posyc\dxfrtext187\dfrmtxtx187\dfrmtxty0\aspalpha\aspnum\faauto\adjustright\rin0\lin0\itap2 {\hich\af0\dbch\af17\loch\f0 NESTED TABLE\nestcell{\nonesttables¶\par }}\pard \ql \li0\ri0\widctlpar\intbl\aspalpha\aspnum\faauto\adjustright\rin0\lin0\itap2 {{*\nesttableprops\trowd \trgaph108\trleft8\trbrdrt\brdrs\brdrw15\brdrcf11 \trbrdrl\brdrs\brdrw15\brdrcf11 \trbrdrb\brdrs\brdrw15\brdrcf11 \trbrdrr¶\brdrs\brdrw15\brdrcf11 \trbrdrh\brdrs\brdrw15\brdrcf11 \trbrdrv\

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brdrs\brdrw15\brdrcf11 \trftsWidth1\trautofit1\trpaddl108\trpaddr108\
trpaddfl3\trpaddfr3 \clvertalt\clbrdrt\brdrs\brdrw15\brdrcf11 \clbrdrl\brdrs\
brdrw15\brdrcf11 \clbrdrb¶\brdrs\brdrw15\brdrcf11 \clbrdrr\brdrs\brdrw15\
brdrcf11 \cltxlrtb\clftsWidth3\clwWidth2340 \cellx2348\nestrow}{\
nonesttables¶\par }}\trowd \trgaph115\trleft388\trbrdrt\brdrs\brdrw15\
brdrcf11 \trbrdrl\brdrs\brdrw15\brdrcf11 \trbrdrb\brdrs\brdrw15\brdrcf11 \
trbrdrr\brdrs\brdrw15\brdrcf11 \trbrdrh\brdrs\brdrw15\brdrcf11 \trbrdrv\
brdrs\brdrw15\brdrcf11 ¶\tphmrg\tposxc\tposyc\tdfrmtxtLeft187\
tdfrmtxtRight187\trftsWidth1\trftsWidthB3\trwWidthB504\trftsWidthA3\
trautofit1\trspdl14\trspdt14\trspdb14\trspdr14\trspdfl3\trspdft3\trspdfb3\
trspdfr3\trpaddl115\trpaddr115\trpaddfl3\trpaddfr3 \clvertalc\clbrdrt¶\brdrs\
brdrw15\brdrcf11 \clbrdrl\brdrs\brdrw15\brdrcf11 \clbrdrb\brdrs\brdrw15\
brdrcf11 \clbrdrr\brdrs\brdrw15\brdrcf11 \clcbpat17\cltxlrtb\clftsWidth3\
clwWidth4644 \cellx5074\pard ¶\qc \li0\ri0\widctlpar\intbl\phmrg\posxc\posyc\
dxfrtext187\dfrmtxtx187\dfrmtxty0\aspalpha\aspnum\faauto\adjustright\rin0\
lin0 {\cell }\pard \ql \li0\ri0\widctlpar\intbl\aspalpha\aspnum\faauto\
adjustright\rin0\lin0 {\trowd \trgaph115\trleft388\trbrdrt¶\brdrs\brdrw15\
brdrcf11 \trbrdrl\brdrs\brdrw15\brdrcf11 \trbrdrb\brdrs\brdrw15\brdrcf11 \
trbrdrr\brdrs\brdrw15\brdrcf11 \trbrdrh\brdrs\brdrw15\brdrcf11 \trbrdrv\
brdrs\brdrw15\brdrcf11 ¶\tphmrg\tposxc\tposyc\tdfrmtxtLeft187\
tdfrmtxtRight187\trftsWidth1\trftsWidthB3\trwWidthB504\trftsWidthA3\
trautofit1\trspdl14\trspdt14\trspdb14\trspdr14\trspdfl3\trspdft3\trspdfb3\
trspdfr3\trpaddl115\trpaddr115\trpaddfl3\trpaddfr3 \clvertalc\clbrdrt¶\brdrs\
brdrw15\brdrcf11 \clbrdrl\brdrs\brdrw15\brdrcf11 \clbrdrb\brdrs\brdrw15\
brdrcf11 \clbrdrr\brdrs\brdrw15\brdrcf11 \clcbpat17\cltxlrtb\clftsWidth3\
clwWidth4644 \cellx5074\row }\trowd \trgaph115\trleft-158\trbrdrt\brdrs\
brdrw15\brdrcf11 \trbrdrl¶\brdrs\brdrw15\brdrcf11 \trbrdrb\brdrs\brdrw15\
brdrcf11 \trbrdrr\brdrs\brdrw15\brdrcf11 \trbrdrh\brdrs\brdrw15\brdrcf11 \
trbrdrv\brdrs\brdrw15\brdrcf11 ¶\tphmrg\tposxc\tposyc\tdfrmtxtLeft187\
tdfrmtxtRight187\trftsWidth1\trftsWidthB3\trftsWidthA3\trwWidthA900\
trautofit1\trspdl14\trspdt14\trspdb14\trspdr14\trspdfl3\trspdft3\trspdfb3\
trspdfr3\trpaddl115\trpaddr115\trpaddfl3\trpaddfr3 \clvertalt\clbrdrt¶\brdrs\
brdrw15\brdrcf11 \clbrdrl\brdrs\brdrw15\brdrcf11 \clbrdrb\brdrs\brdrw15\
brdrcf11 \clbrdrr\brdrs\brdrw15\brdrcf11 \clcbpat17\cltxlrtb\clftsWidth3\
clwWidth4248 \cellx4132\pard ¶\ql \li0\ri0\widctlpar\intbl\phmrg\posxc\posyc\
dxfrtext187\dfrmtxtx187\dfrmtxty0\aspalpha\aspnum\faauto\adjustright\rin0\
lin0 {\hich\af0\dbch\af17\loch\f0 CELL TWO\cell }\pard \ql \li0\ri0\
widctlpar\intbl\aspalpha\aspnum\faauto\adjustright\rin0\lin0 {¶\trowd \
trgaph115\trleft-158\trbrdrt\brdrs\brdrw15\brdrcf11 \trbrdrl\brdrs\brdrw15\
brdrcf11 \trbrdrb\brdrs\brdrw15\brdrcf11 \trbrdrr\brdrs\brdrw15\brdrcf11 \
trbrdrh\brdrs\brdrw15\brdrcf11 \trbrdrv\brdrs\brdrw15\brdrcf11 ¶\tphmrg\
tposxc\tposyc\tdfrmtxtLeft187\tdfrmtxtRight187\trftsWidth1\trftsWidthB3\
trftsWidthA3\trwWidthA900\trautofit1\trspdl14\trspdt14\trspdb14\trspdr14\
trspdfl3\trspdft3\trspdfb3\trspdfr3\trpaddl115\trpaddr115\trpaddfl3\trpaddfr3
\clvertalt\clbrdrt¶\brdrs\brdrw15\brdrcf11 \clbrdrl\brdrs\brdrw15\brdrcf11 \
clbrdrb\brdrs\brdrw15\brdrcf11 \clbrdrr\brdrs\brdrw15\brdrcf11 \clcbpat17\
cltxlrtb\clftsWidth3\clwWidth4248 \cellx4132\row }¶¶The following is an
analysis of the preceding RTF. It has been restructured for ease of
explanation. All text in red are comments. The topmost cell is cell 1 (inside
row 1). The bottom cell is cell 2 (inside row 2).¶¶Begin table row defaults
for row 1.¶\trowd¶¶\trgaph115¶\trleft388¶¶Row borders¶\trbrdrt\brdrs\brdrw15\
brdrcf11 \trbrdrl\brdrs\brdrw15\brdrcf11 \trbrdrb\brdrs\brdrw15\brdrcf11 \
trbrdrr\brdrs\brdrw15\brdrcf11 ¶\trbrdrh\brdrs\brdrw15\brdrcf11 \trbrdrv\
brdrs\brdrw15\brdrcf11 ¶¶Absolute positioning of the table. All rows should
```

```
have the same positioning.¶\tphmrg\tposxc\tposyc\tdfrmtxtLeft187\
tdfrmtxtRight187¶¶Width of invisible cell before cell one (to simulate
offset)¶\trftsWidth1\trftsWidthB3\trwWidthB504\trftsWidthA3¶¶Autofit is on.¶\
trautofit1¶¶Default cell spacing for the row¶\trspdl14\trspdt14\trspdb14\
trspdr14\trspdfl3\trspdft3\trspdfb3\trspdfr3\trpaddl115\trpaddr115\trpaddfl3\
trpaddfr3 ¶¶Cell 1 definition begins.¶¶Vertical alignment of contents¶\
clvertalc¶¶Cell borders¶\clbrdrt\brdrs\brdrw15\brdrcf11 \clbrdrl\brdrs\
brdrw15\brdrcf11 \clbrdrb\brdrs\brdrw15\brdrcf11 \clbrdrr\brdrs\brdrw15\
brdrcf11 ¶¶Cell shading¶\clcbpat17¶¶Cell text flow¶\cltxlrtb¶¶Cell width,
using new properties and old ones¶\clftsWidth3\clwWidth4644 \cellx5074¶¶Text
for cell 1 begins here. Includes paragraph absolute positioning equivalent to
the table absolute positioning above so that old readers get it right.¶\pard\
plain \qc \li0\ri0\widctlpar\intbl\phmrg\posxc\posyc\dxfrtext187\dfrmtxtx187\
dfrmtxty0\aspalpha\aspnum\faauto\adjustright\rin0\lin0 \fs24\lang1033\
langfe2052\loch\af0\hich\af0\dbch\af17\cgrid\langnp1033\langfenp2052 {\hich\
af0\dbch\af17\loch\f0 CELL ONE¶\par }¶¶Begin definition of nested table
inside cell 1.¶\pard \qc \li0\ri0\widctlpar\intbl\phmrg\posxc\posyc\
dxfrtext187\dfrmtxtx187\dfrmtxty0\aspalpha\aspnum\faauto\adjustright\rin0\
lin0¶¶Notice itap is set to 2, indicating second nesting level.¶\itap2
¶¶Nested cell ends with a \nestcell and is followed by a paragraph mark
inside a \nonesttables destination, which is only read by readers that do not
understand nested tables. This way the text in the nested table is in its own
paragraph.¶{\hich\af0\dbch\af17\loch\f0 NESTED TABLE\nestcell{\nonesttables¶\
par }}\pard \ql \li0\ri0\widctlpar\intbl\aspalpha\aspnum\faauto\adjustright\
rin0\lin0\itap2 ¶¶Nested table properties occur after the text for the nested
cell.¶{{\*\nesttableprops\trowd \trgaph108\trleft8\trbrdrt\brdrs\brdrw15\
brdrcf11 \trbrdrl\brdrs\brdrw15\brdrcf11 \trbrdrb\brdrs\brdrw15\brdrcf11 \
trbrdrr¶\brdrs\brdrw15\brdrcf11 \trbrdrh\brdrs\brdrw15\brdrcf11 \trbrdrv\
brdrs\brdrw15\brdrcf11 \trftsWidth1\trautofit1\trpaddl108\trpaddr108\
trpaddfl3\trpaddfr3 \clvertalt\clbrdrt\brdrs\brdrw15\brdrcf11 \clbrdrl\brdrs\
brdrw15\brdrcf11 \clbrdrb¶\brdrs\brdrw15\brdrcf11 \clbrdrr\brdrs\brdrw15\
brdrcf11 \cltxlrtb\clftsWidth3\clwWidth2340 \cellx2348\nestrow}{\
nonesttables¶\par }}¶End of nested table properties¶¶Set the default for the
row again after nested table! Weíre still in the first row, and this repeats
what was written in the beginning of the row. Defaults of the table are reset
and the cell is closed with a \cell.¶\trowd \trgaph115\trleft388\trbrdrt\
brdrs\brdrw15\brdrcf11 \trbrdrl\brdrs\brdrw15\brdrcf11 \trbrdrb\brdrs\
brdrw15\brdrcf11 \trbrdrr\brdrs\brdrw15¶cf11 \trbrdrh\brdrs\brdrw15\brdrcf11
\trbrdrv\brdrs\brdrw15\brdrcf11 ¶\tphmrg\tposxc\tposyc\tdfrmtxtLeft187\
tdfrmtxtRight187\trftsWidth1\trftsWidthB3\trwWidthB504\trftsWidthA3\
trautofit1\trspdl14\trspdt14\trspdb14\trspdr14\trspdfl3\trspdft3\trspdfb3\
trspdfr3\trpaddl115\trpaddr115\trpaddfl3\trpaddfr3 \clvertalc\clbrdrt¶\brdrs\
brdrw15\brdrcf11 \clbrdrl\brdrs\brdrw15\brdrcf11 \clbrdrb\brdrs\brdrw15\
brdrcf11 \clbrdrr\brdrs\brdrw15\brdrcf11 \clcbpat17\cltxlrtb\clftsWidth3\
clwWidth4644 \cellx5074\pard ¶\qc \li0\ri0\widctlpar\intbl\phmrg\posxc\posyc\
dxfrtext187\dfrmtxtx187\dfrmtxty0\aspalpha\aspnum\faauto\adjustright\rin0\
lin0 {\cell }\pard \ql \li0\ri0\widctlpar\intbl\aspalpha\aspnum\faauto\
adjustright\rin0\lin0¶This is the end of the table cell.¶¶Now the row ends,
repeating the defaults of the row at the end of it!¶{\trowd \trgaph115\
trleft388\trbrdrt¶\brdrs\brdrw15\brdrcf11 \trbrdrl\brdrs\brdrw15\brdrcf11 \
trbrdrb\brdrs\brdrw15\brdrcf11 \trbrdrr\brdrs\brdrw15\brdrcf11 \trbrdrh\
brdrs\brdrw15\brdrcf11 \trbrdrv\brdrs\brdrw15\brdrcf11 ¶\tphmrg\tposxc\
tposyc\tdfrmtxtLeft187\tdfrmtxtRight187\trftsWidth1\trftsWidthB3\
trwWidthB504\trftsWidthA3\trautofit1\trspdl14\trspdt14\trspdb14\trspdr14\
trspdfl3\trspdft3\trspdfb3\trspdfr3\trpaddl115\trpaddr115\trpaddfl3\trpaddfr3
\clvertalc\clbrdrt¶\brdrs\brdrw15\brdrcf11 \clbrdrl\brdrs\brdrw15\brdrcf11 \
clbrdrb\brdrs\brdrw15\brdrcf11 \clbrdrr\brdrs\brdrw15\brdrcf11 \clcbpat17\
cltxlrtb\clftsWidth3\clwWidth4644 \cellx5074\row }¶END OF ROW 1¶¶Row 2 begins
here and is structured similarly.¶¶Row defaults¶\trowd \trgaph115\trleft-158\
trbrdrt\brdrs\brdrw15\brdrcf11 \trbrdrl¶\brdrs\brdrw15\brdrcf11 \trbrdrb\
brdrs\brdrw15\brdrcf11 \trbrdrr\brdrs\brdrw15\brdrcf11 \trbrdrh\brdrs\
brdrw15\brdrcf11 \trbrdrv\brdrs\brdrw15\brdrcf11¶¶Absolute positioning for
the table row, matching the previous one¶\tphmrg\tposxc\tposyc\
tdfrmtxtLeft187\tdfrmtxtRight187\trftsWidth1\trftsWidthB3\trftsWidthA3\
trwWidthA900\trautofit1\trspdl14\trspdt14\trspdb14\trspdr14\trspdfl3\
trspdft3\trspdfb3\trspdfr3\trpaddl115\trpaddr115\trpaddfl3\trpaddfr3 ¶¶Cell 2
properties¶\clvertalt\clbrdrt¶\brdrs\brdrw15\brdrcf11 \clbrdrl\brdrs\brdrw15\
brdrcf11 \clbrdrb\brdrs\brdrw15\brdrcf11 \clbrdrr\brdrs\brdrw15\brdrcf11 \
clcbpat17\cltxlrtb\clftsWidth3\clwWidth4248 \cellx4132¶¶Cell 2 text¶\pard ¶\
ql \li0\ri0\widctlpar\intbl\phmrg\posxc\posyc\dxfrtext187\dfrmtxtx187\
dfrmtxty0\aspalpha\aspnum\faauto\adjustright\rin0\lin0 {\hich\af0\dbch\af17\
loch\f0 CELL TWO\cell }\pard \ql \li0\ri0\widctlpar\intbl\aspalpha\aspnum\
faauto\adjustright\rin0\lin0 ¶End cell 2 text¶¶Now the row ends, repeating
the defaults of the row at the end of it!¶{\trowd \trgaph115\trleft-158\
trbrdrt\brdrs\brdrw15\brdrcf11 \trbrdrl\brdrs\brdrw15\brdrcf11 \trbrdrb\
brdrs\brdrw15\brdrcf11 \trbrdrr\brdrs\brdrw15\brdrcf11 \trbrdrh\brdrs\
brdrw15\brdrcf11 \trbrdrv\brdrs\brdrw15\brdrcf11 ¶\tphmrg\tposxc\tposyc\
tdfrmtxtLeft187\tdfrmtxtRight187\trftsWidth1\trftsWidthB3\trftsWidthA3\
trwWidthA900\trautofit1\trspdl14\trspdt14\trspdb14\trspdr14\trspdfl3\
trspdft3\trspdfb3\trspdfr3\trpaddl115\trpaddr115\trpaddfl3\trpaddfr3 \
clvertalt\clbrdrt¶\brdrs\brdrw15\brdrcf11 \clbrdrl\brdrs\brdrw15\brdrcf11 \
clbrdrb\brdrs\brdrw15\brdrcf11 \clbrdrr\brdrs\brdrw15\brdrcf11 \clcbpat17\
cltxlrtb\clftsWidth3\clwWidth4248 \cellx4132\row }¶END OF ROW TWO¶¶Table
Styles Example¶
¶Here is the stylesheet with one table style highlighted. Note that a single
table style can have multiple entries. \ts11 is the default table style. This
style gives the first row a fill color and font attributes. Every subsequent
odd row is filled with pale yellow.¶{\stylesheet{\ql \li0\ri0\widctlpar\
aspalpha\aspnum\faauto\adjustright\rin0\lin0\itap0 \fs24\lang1033\langfe1033\
cgrid\langnp1033\langfenp1033 \snext0 Normal;}{\*\cs10 \additive \ssemihidden
Default Paragraph Font;}{\*\ts11\tsrowd\trftsWidthB3\trpaddl108\trpaddr108\
trpaddfl3\trpaddft3\trpaddfb3\trpaddfr3\tscellwidthfts0\tsvertalt\tsbrdrt\
tsbrdrl\tsbrdrb\tsbrdrr\tsbrdrdgl\tsbrdrdgr\tsbrdrh\tsbrdrv \ql \li0\ri0\
widctlpar\aspalpha\aspnum\faauto\adjustright\rin0\lin0\itap0 \fs20\lang1024\
langfe1024\cgrid\langnp1024\langfenp1024 \snext11 \ssemihidden Normal
Table;}{\*\ts15\tsrowd\trbrdrt\brdrs\brdrw10 \trbrdrl\brdrs\brdrw10 \trbrdrb\
brdrs\brdrw10 \trbrdrr\brdrs\brdrw10 \trbrdrh\brdrs\brdrw10 \trbrdrv\brdrs\
brdrw10 \trftsWidthB3\trpaddl108\trpaddr108\trpaddfl3\trpaddft3\trpaddfb3\
trpaddfr3\tscellwidthfts0\tsvertalt\tsbrdrt\tsbrdrl\tsbrdrb\tsbrdrr\
tsbrdrdgl\tsbrdrdgr\tsbrdrh\tsbrdrv \ql \li0\ri0\widctlpar\aspalpha\aspnum\
faauto\adjustright\rin0\lin0\itap0 \fs20\lang1024\langfe1024\cgrid\
langnp1024\langfenp1024 \sbasedon11 \snext15 \styrsid353782 Table Grid;}{\*\
ts16\tsrowd\trbrdrt\brdrs\brdrw15\brdrcf1 \trbrdrl\brdrs\brdrw15\brdrcf1 ¶\
trbrdrb\brdrs\brdrw15\brdrcf1 \trbrdrr\brdrs\brdrw15\brdrcf1 \trbrdrv\brdrs\
brdrw15\brdrcf1 \trftsWidthB3\trpaddl108\trpaddr108\trpaddfl3\trpaddft3\
trpaddfb3\trpaddfr3\tscbandsh1\tscellwidthfts0\tsvertalt\tsbrdrt\tsbrdrl\
tsbrdrb\tsbrdrr\tsbrdrdgl\tsbrdrdgr\tsbrdrh\tsbrdrv \ql \li0\ri0\widctlpar\
aspalpha\aspnum\faauto\adjustright\rin0\lin0\itap0 ¶\fs20\lang1024\
langfe1024\cgrid\langnp1024\langfenp1024 \sbasedon11 \snext16 \styrsid353782
Table List 8;}{\*\ts16\tsrowd\tscellcfpat7\tscellcbpat8\tscellpct10000\
tsbrdrb\brdrs\brdrw15\brdrcf1 \tsbrdrdgl\brdrnil\tsbrdrdgr\brdrnil \b\i \
tscfirstrow Table List 8;}{\*\ts16\tsrowd\tsbrdrt\brdrs\brdrw15\brdrcf1 \
tsbrdrdgl\brdrnil\tsbrdrdgr\brdrnil \b \tsclastrow Table List 8;}{\*\ts16\
tsrowd\tsbrdrdgl\brdrnil\tsbrdrdgr\brdrnil \b \tscfirstcol Table List 8;}{\*\
ts16\tsrowd\tsbrdrdgl\brdrnil\tsbrdrdgr\brdrnil \b \tsclastcol Table List
8;}{\*\ts16\tsrowd\tscellcfpat7\tscellcbpat8\tscellpct2500\tsbrdrdgl\brdrnil\
tsbrdrdgr\brdrnil \cf0 \tscbandhorzodd Table List 8;}{\*\ts16\tsrowd\
tscellcfpat6\tscellcbpat8\tscellpct5000\tsbrdrdgl\brdrnil\tsbrdrdgr\brdrnil \
tscbandhorzeven Table List 8;}{\*\ts17\tsrowd\trbrdrt\brdrs\brdrw10 \trbrdrl\
brdrs\brdrw10 \trbrdrb\brdrs\brdrw10 \trbrdrr\brdrs\brdrw10 \trbrdrh\brdrs\
brdrw10 \trbrdrv\brdrs\brdrw10 \trftsWidthB3\trpaddl108\trpaddr108\trpaddfl3\
trpaddft3\trpaddfb3\trpaddfr3\tscbandsh1\tscellwidthfts0\tsvertalc\tsbrdrt\
tsbrdrl\tsbrdrb\tsbrdrr\tsbrdrdgl\tsbrdrdgr\tsbrdrh\tsbrdrv \qr \li0\ri0\
widctlpar\aspalpha\aspnum\faauto\adjustright\rin0\lin0\itap0 \fs20\lang1024\
langfe1024\cgrid\langnp1024\langfenp1024 \sbasedon15 \snext17 \styrsid353782
Table Style1;}{\*\ts17\tsrowd\tsvertalc\tscellcfpat0\tscellcbpat17\tscellpct0
\qc \f36\fs22 \tscfirstrow Table Style1;}{\*\ts17\tsrowd\tsvertalt \qr \
tsclastrow Table Style1;}{\*\ts17\tsrowd \ql \f36\fs18 \tscfirstcol Table
Style1;}{\*\ts17\tsrowd\tscellcfpat0\tscellcbpat18\tscellpct0 \tscbandhorzodd
Table Style1;}{\*\ts17\tsrowd \b\f36\fs20 \tscsecell Table Style1;}{\*\ts18\
tsrowd\trbrdrt\brdrs\brdrw10 \trbrdrl\brdrs\brdrw10 \trbrdrb\brdrs\brdrw10 \
trbrdrr\brdrs\brdrw10 \trbrdrh\brdrs\brdrw10 \trbrdrv\brdrs\brdrw10 \
trftsWidthB3\trpaddl108\trpaddr108\trpaddfl3\trpaddft3\trpaddfb3\trpaddfr3\
tscbandsh1\tscellwidthfts0\tsvertalt\tsbrdrt\tsbrdrl\tsbrdrb\tsbrdrr\
tsbrdrdgl\tsbrdrdgr\tsbrdrh\tsbrdrv \ql \li0\ri0\widctlpar\aspalpha\aspnum\
faauto\adjustright\rin0\lin0\itap0 ¶\fs20\lang1024\langfe1024\cgrid\
langnp1024\langfenp1024 \sbasedon15 \snext18 \styrsid353782 Table Style2;}{\*
\ts18\tsrowd\tscellcfpat0\tscellcbpat17\tscellpct0 \b \tscfirstrow Table
Style2;}{\*\ts18\tsrowd\tscellcfpat0\tscellcbpat18\tscellpct0 \
tscbandhorzeven Table Style2;}}¶¶Table RTF  Most of this has been explained
in the preceding example, so only some of the changes in Word 2002 have been
highlighted.¶\trowd \irow0\irowband-1\ts18\trgaph108\trleft-108\trbrdrt\
brdrs\brdrw10 \trbrdrl\brdrs\brdrw10 \trbrdrb\brdrs\brdrw10 \trbrdrr\brdrs\
brdrw10 \trbrdrh\brdrs\brdrw10 \trbrdrv\brdrs\brdrw10 \trftsWidth1\
trftsWidthB3\trftsWidthA3\trautofit1\trpaddl108\trpaddr108\trpaddfl3\
trpaddft3\trpaddfb3\trpaddfr3\tscbandsh1\tbllkhdrrows\tbllklastrow\
tbllkhdrcols\tbllklastcol \clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\
brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10 \clcbpat17\cltxlrtb\
clftsWidth3\clwWidth3208\clcbpatraw17 \cellx3100\clvertalt\clbrdrt\brdrs\
brdrw10 \clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10
\clcbpat17\cltxlrtb\clftsWidth3\clwWidth3207\clcbpatraw17 \cellx6307\pard\
plain \ql \li0\ri0\widctlpar\intbl\aspalpha\aspnum\faauto\adjustright\rin0\
lin0\tscfirstrow\yts18 \b\fs24\lang1033\langfe1033\cgrid\langnp1033\
langfenp1033 {\insrsid353782 Header 1\cell }\pard\plain \ql \li0\ri0\
widctlpar\intbl\aspalpha\aspnum\faauto\adjustright\rin0\lin0\tscfirstrow\
yts18 \b\fs24\lang1033\langfe1033\cgrid\langnp1033\langfenp1033 {\
insrsid353782 Header 2\cell }\pard\plain \ql \li0\ri0\widctlpar\intbl\
aspalpha\aspnum\faauto\adjustright\rin0\lin0 \fs24\lang1033\langfe1033\cgrid\
langnp1033\langfenp1033 {\insrsid353782 \trowd \irow0\irowband-1 \ts18\
trgaph108\trleft-108\trbrdrt\brdrs\brdrw10 \trbrdrl\brdrs\brdrw10 \trbrdrb\
brdrs\brdrw10 \trbrdrr\brdrs\brdrw10 \trbrdrh\brdrs\brdrw10 \trbrdrv\brdrs\
brdrw10 \trftsWidth1\trftsWidthB3\trftsWidthA3\trautofit1\trpaddl108\
trpaddr108\trpaddfl3\trpaddft3\trpaddfb3\trpaddfr3\tscbandsh1\tbllkhdrrows\
tbllklastrow\tbllkhdrcols\tbllklastcol \clvertalt\clbrdrt\brdrs\brdrw10 \
clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10 \
clcbpat17\cltxlrtb\clftsWidth3\clwWidth3208\clcbpatraw17 \cellx3100\
clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10
\clbrdrr\brdrs\brdrw10 \clcbpat17\cltxlrtb\clftsWidth3\clwWidth3207\
clcbpatraw17 \cellx6307\row }\trowd \irow1\irowband0\ts18\trgaph108\trleft-
108\trbrdrt\brdrs\brdrw10 \trbrdrl\brdrs\brdrw10 \trbrdrb\brdrs\brdrw10 \
trbrdrr\brdrs\brdrw10 \trbrdrh\brdrs\brdrw10 \trbrdrv\brdrs\brdrw10 \
trftsWidth1\trftsWidthB3\trftsWidthA3\trautofit1\trpaddl108\trpaddr108\
trpaddfl3\trpaddft3\trpaddfb3\trpaddfr3\tscbandsh1\tbllkhdrrows\tbllklastrow\
tbllkhdrcols\tbllklastcol \clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\
brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10 \cltxlrtb\clftsWidth3\
clwWidth3208\clshdrawnil \cellx3100\clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\
brdrs\brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10 \cltxlrtb\
clftsWidth3\clwWidth3207\clshdrawnil \cellx6307\pard\plain \ql \li0\ri0\
widctlpar\intbl\aspalpha\aspnum\faauto\adjustright\rin0\lin0\yts18 \fs24\
lang1033\langfe1033\cgrid\langnp1033\langfenp1033 {\insrsid353782 A1\cell B1\
cell }\pard\plain \ql \li0\ri0\widctlpar\intbl\aspalpha\aspnum\faauto\
adjustright\rin0\lin0 ¶\fs24\lang1033\langfe1033\cgrid\langnp1033\
langfenp1033 {\insrsid353782 \trowd \irow1\irowband0\ts18\trgaph108\trleft-
108\trbrdrt\brdrs\brdrw10 \trbrdrl\brdrs\brdrw10 \trbrdrb\brdrs\brdrw10 \
trbrdrr\brdrs\brdrw10 \trbrdrh\brdrs\brdrw10 \trbrdrv\brdrs\brdrw10 \
trftsWidth1\trftsWidthB3\trftsWidthA3\trautofit1\trpaddl108\trpaddr108\
trpaddfl3\trpaddft3\trpaddfb3\trpaddfr3\tscbandsh1\tbllkhdrrows\tbllklastrow\
tbllkhdrcols\tbllklastcol \clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\
brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10 \cltxlrtb\clftsWidth3\
clwWidth3208\clshdrawnil \cellx3100\clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\
brdrs\brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10 \cltxlrtb\
clftsWidth3\clwWidth3207\clshdrawnil \cellx6307\row }\trowd \irow2\irowband1\
ts18\trgaph108\trleft-108\trbrdrt\brdrs\brdrw10 \trbrdrl\brdrs\brdrw10 \
trbrdrb\brdrs\brdrw10 \trbrdrr\brdrs\brdrw10 \trbrdrh\brdrs\brdrw10 \trbrdrv\
brdrs\brdrw10 \trftsWidth1\trftsWidthB3\trftsWidthA3\trautofit1\trpaddl108\
trpaddr108\trpaddfl3\trpaddft3\trpaddfb3\trpaddfr3\tscbandsh1\tbllkhdrrows\
tbllklastrow\tbllkhdrcols\tbllklastcol \clvertalt\clbrdrt\brdrs\brdrw10 \
clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10 \
clcbpat18\cltxlrtb\clftsWidth3\clwWidth3208\clcbpatraw18 \cellx3100\
clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10
\clbrdrr\brdrs\brdrw10 \clcbpat18\cltxlrtb\clftsWidth3\clwWidth3207\
clcbpatraw18 \cellx6307\pard\plain \ql \li0\ri0\widctlpar\intbl\aspalpha\
aspnum\faauto\adjustright\rin0\lin0\tscbandhorzeven\yts18 \fs24\lang1033\
langfe1033\cgrid\langnp1033\langfenp1033 {\insrsid353782 A2\cell }\pard\plain
\ql \li0\ri0\widctlpar\intbl\aspalpha\aspnum\faauto\adjustright\rin0\lin0\
tscbandhorzeven\yts18 \fs24\lang1033\langfe1033\cgrid\langnp1033\langfenp1033
{\insrsid353782 B2\cell }\pard\plain \ql \li0\ri0\widctlpar\intbl\aspalpha\
aspnum\faauto\adjustright\rin0\lin0 \fs24\lang1033\langfe1033\cgrid\
langnp1033\langfenp1033 {\insrsid353782 \trowd \irow2\irowband1\ts18\
trgaph108\trleft-108\trbrdrt\brdrs\brdrw10 \trbrdrl\brdrs\brdrw10 \trbrdrb\
brdrs\brdrw10 \trbrdrr\brdrs\brdrw10 \trbrdrh\brdrs\brdrw10 \trbrdrv\brdrs\
brdrw10 \trftsWidth1\trftsWidthB3\trftsWidthA3\trautofit1\trpaddl108\
trpaddr108\trpaddfl3\trpaddft3\trpaddfb3\trpaddfr3\tscbandsh1\tbllkhdrrows\
tbllklastrow\tbllkhdrcols\tbllklastcol \clvertalt\clbrdrt\brdrs\brdrw10 \
clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10 \
clcbpat18\cltxlrtb\clftsWidth3\clwWidth3208\clcbpatraw18 \cellx3100\
clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10
\clbrdrr\brdrs\brdrw10 \clcbpat18\cltxlrtb\clftsWidth3\clwWidth3207\
clcbpatraw18 \cellx6307\row }\trowd \irow3\irowband2\ts18\trgaph108\trleft-
108\trbrdrt\brdrs\brdrw10 \trbrdrl\brdrs\brdrw10 \trbrdrb\brdrs\brdrw10 \
trbrdrr\brdrs\brdrw10 \trbrdrh\brdrs\brdrw10 \trbrdrv\brdrs\brdrw10 \
trftsWidth1\trftsWidthB3\trftsWidthA3\trautofit1\trpaddl108\trpaddr108\
trpaddfl3\trpaddft3\trpaddfb3\trpaddfr3\tscbandsh1\tbllkhdrrows\tbllklastrow\
tbllkhdrcols\tbllklastcol \clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\
brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10 \cltxlrtb\clftsWidth3\
clwWidth3208\clshdrawnil \cellx3100\clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\
brdrs\brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10 \cltxlrtb\
clftsWidth3\clwWidth3207\clshdrawnil \cellx6307\pard\plain \ql \li0\ri0\
widctlpar\intbl\aspalpha\aspnum\faauto\adjustright\rin0\lin0\yts18 \fs24\
lang1033\langfe1033\cgrid\langnp1033\langfenp1033 {\insrsid353782 A3\cell B3\
cell }\pard\plain \ql \li0\ri0\widctlpar\intbl\aspalpha\aspnum\faauto\
adjustright\rin0\lin0 ¶\fs24\lang1033\langfe1033\cgrid\langnp1033\
langfenp1033 {\insrsid353782 \trowd \irow3\irowband2\ts18\trgaph108\trleft-
108\trbrdrt\brdrs\brdrw10 \trbrdrl\brdrs\brdrw10 \trbrdrb\brdrs\brdrw10 \
trbrdrr\brdrs\brdrw10 \trbrdrh\brdrs\brdrw10 \trbrdrv\brdrs\brdrw10 \
trftsWidth1\trftsWidthB3\trftsWidthA3\trautofit1\trpaddl108\trpaddr108\
trpaddfl3\trpaddft3\trpaddfb3\trpaddfr3\tscbandsh1\tbllkhdrrows\tbllklastrow\
tbllkhdrcols\tbllklastcol \clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\
brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10 \cltxlrtb\clftsWidth3\
clwWidth3208\clshdrawnil \cellx3100\clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\
brdrs\brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10 \cltxlrtb\
clftsWidth3\clwWidth3207\clshdrawnil \cellx6307\row }\trowd \irow4\irowband3\
lastrow \ts18\trgaph108\trleft-108\trbrdrt\brdrs\brdrw10 \trbrdrl\brdrs\
brdrw10 \trbrdrb\brdrs\brdrw10 \trbrdrr\brdrs\brdrw10 \trbrdrh\brdrs\brdrw10
\trbrdrv\brdrs\brdrw10 \trftsWidth1\trftsWidthB3\trftsWidthA3\trautofit1\
trpaddl108\trpaddr108\trpaddfl3\trpaddft3\trpaddfb3\trpaddfr3\tscbandsh1\
tbllkhdrrows\tbllklastrow\tbllkhdrcols\tbllklastcol \clvertalt\clbrdrt\brdrs\
brdrw10 \clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10
\clcbpat18\cltxlrtb\clftsWidth3\clwWidth3208\clcbpatraw18 \cellx3100\
clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10
\clbrdrr\brdrs\brdrw10 \clcbpat18\cltxlrtb\clftsWidth3\clwWidth3207\
clcbpatraw18 \cellx6307\pard\plain \ql \li0\ri0\widctlpar\intbl\aspalpha\
aspnum\faauto\adjustright\rin0\lin0\tscbandhorzeven\yts18 \fs24\lang1033\
langfe1033\cgrid\langnp1033\langfenp1033 {\insrsid353782 A4\cell }\pard\plain
\ql \li0\ri0\widctlpar\intbl\aspalpha\aspnum\faauto\adjustright\rin0\lin0\
tscbandhorzeven\yts18 \fs24\lang1033\langfe1033\cgrid\langnp1033\langfenp1033
{\insrsid353782 B4\cell }\pard\plain \ql \li0\ri0\widctlpar\intbl\aspalpha\
aspnum\faauto\adjustright\rin0\lin0 \fs24\lang1033\langfe1033\cgrid\
langnp1033\langfenp1033 {\insrsid353782 \trowd \irow4\irowband3\lastrow \
ts18\trgaph108\trleft-108\trbrdrt\brdrs\brdrw10 \trbrdrl\brdrs\brdrw10 \
trbrdrb\brdrs\brdrw10 \trbrdrr\brdrs\brdrw10 \trbrdrh\brdrs\brdrw10 \trbrdrv\
brdrs\brdrw10 \trftsWidth1\trftsWidthB3\trftsWidthA3\trautofit1\trpaddl108\
trpaddr108\trpaddfl3\trpaddft3\trpaddfb3\trpaddfr3\tscbandsh1\tbllkhdrrows\
tbllklastrow\tbllkhdrcols\tbllklastcol \clvertalt\clbrdrt\brdrs\brdrw10 \
clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10 \clbrdrr\brdrs\brdrw10 \
clcbpat18\cltxlrtb\clftsWidth3\clwWidth3208\clcbpatraw18 \cellx3100\
clvertalt\clbrdrt\brdrs\brdrw10 \clbrdrl\brdrs\brdrw10 \clbrdrb\brdrs\brdrw10
\clbrdrr\brdrs\brdrw10 \clcbpat18\cltxlrtb\clftsWidth3\clwWidth3207\
clcbpatraw18 \cellx6307\row }\pard \ql \li0\ri0\widctlpar\aspalpha\aspnum\
faauto\adjustright\rin0\lin0\itap0 {\insrsid14034704 \par }¶Character
```

Text¶Character text has the following syntax:¶<char>
<ptext> | <atext> | '{' <char> '}'

<ptext>
(<chrfmt>* <data>+)+

<data>
#PCDATA | <spec> | <pict> | <obj> | <do> | <foot> | <annot> | <field> | <idx> | <toc> | <book>

Font (Character) Formatting Properties¶These control words (described as < chrfmt> in the syntax description) change font (character) formatting properties. A control word preceding plain text turns on the specified attribute. Some control words (indicated in the following table by an asterisk following the description) can be turned off by appending 0 to the control word. For example, \b turns on bold, while \b0 turns off bold.¶The font (character) formatting control words are listed in the following table.¶Control word
Meaning

\plain
Reset font (character) formatting properties to a default value defined by the application (for example, bold, underline and italic are disabled; font size is reset to 12 point). The associated font (character) formatting properties (described in the section
 HYPERLINK \l "Associated_Character_Properties"

Associated Character Properties
 of this Specification) are also reset.

\animtextN
Animated text properties:¶1
Las Vegas Lights¶2
Blinking Background¶3
Sparkle Text¶4
Marching Black Ants¶5
Marching Red Ants¶6
Shimmer

\accnone
No accent characters (over dot/over comma).

\accdot
Over-dot accent.

\acccomma
Over-comma accent.

\b
Bold.*

\caps
All capitals.*

\cbN
Background color (the default is 0).

\cchsN
Indicates any characters not belonging to the default document character set and tells which character set they do belong to. Macintosh character sets are represented by values greater than 255. The values for N correspond to the values for the \ fcharset control word.

\cfN
Foreground color (the default is 0).

\charscalexN
Character scaling value. The N argument is a value representing a percentage (the default is 100).

\csN
Designates character style. If a character style is specified, style properties must be specified with the character run. N refers to an entry in the style table.

\cgridN
Character grid.

\g
Destination related to character grids.

\gcw
Grid column width.

\gridtbl
Destination keyword related to character grids.

\deleted
Marks the text as deletion.*

\dnN
Subscript position in half-points (the default is 6).

\embo
Emboss.

\expndN
Expansion or compression of the space between characters in quarter-points; a negative value compresses (the default is 0).

\expndtwN
Expansion or compression of the space between characters in twips; a negative value compresses. For backward compatibility, both \expndtw and \expnd should be emitted.

\fittextN
Fit the text in the current group in N twips. When N is set to -1 (\fittext-1), it indicates a continuation of the previous \fittextN run. In other

words, {\fittext1000 Fit this} {\fittext-1 text} fits the string ìFit this textî in 1000 twips.

\fN
Font number. N refers to an entry in the font table.

\fsN
Font size in half-points (the default is 24).

\i
Italic.*

\impr
Engrave.

\kerningN
Point size (in half-points) above which to kern character pairs. \kerning0 turns off kerning.

\langfeN
Applies a language to a character. N is a number corresponding to a language. The \plain control word resets the language property to the language defined by \deflangfeN in the document properties.

\langfenpN
Applies a language to a character. N is a number corresponding to a language. The \plain control word resets the language property to the language defined by \deflangfeN in the document properties. Usually follows \langfeN.

\langN
Applies a language to a character. N is a number corresponding to a language. The \plain control word resets the language property to the language defined by \deflangN in the document properties.

\langnpN
Applies a language to a character. N is a number corresponding to a language. The \plain control word resets the language property to the language defined by \deflangN in the document properties. It is identical to \langN, but needed when \noproof is written together with \lang1024 in order to preserve the language of the text that is not being checked for spelling or grammar. Usually follows \langN.

\ltrch
The character data following this control word will be treated as a left-to-right run (the default).

\rtlch
The character data following this control word will be treated as a right-to-left run.

\noproof
Do not check spelling or grammar for text in the group. Serves the function of \lang1024. Usually \lang1024 is emitted with it for backwards compatibility with old readers.

\nosupersub
Turns off superscripting or subscripting.

\nosectexpand
Disables character space basement.

\outl
Outline.*

\rtlch
The character data following this control word will be treated as a right-to-left run.

\scaps
Small capitals.*

\shad
Shadow.*

\strike
Strikethrough.*

\striked1
Double strikethrough. \striked0 turns it off.

\sub
Subscripts text and shrinks point size according to font information.

\super
Superscripts text and shrinks point size according to font information.

\ul
Continuous underline. \ul0 turns off all underlining.

\ulcN
Underline color.

\uld
Dotted underline.

\uldash
Dashed underline.

\uldashd
Dash-dotted underline.

\uldashdd
Dash-dot-dotted underline.

\uldb
Double underline.

\ulhwave

Heavy wave underline.

\ulldash
Long dashed underline.

\ulnone
Stops all underlining.

\ulth
Thick underline.

\ulthd
Thick dotted underline.

\ulthdash
Thick dashed underline.

\ulthdashd
Thick dash-dotted underline.

\ulthdashdd
Thick dash-dot-dotted underline.

\ulthldash
Thick long dashed underline.

\ululdbwave
Double wave underline.

\ulw
Word underline.

\ulwave
Wave underline.

\upN
Superscript position in half-points (the default is 6).

\v
Hidden text.*

\webhidden
Indicates that the text in the group is hidden in the Word 2002 Web View and will not be emitted upon saving as Web page.

¶The following table defines the standard languages used by Microsoft. This table was generated by the Unicode group for use with TrueType and Unicode.¶¶Language
ID (hexadecimal)
ID (decimal)

Afrikaans
0x0436
1078

Albanian
0x041c
1052

Arabic
0x0401
1025

Arabic Algeria
0x1401
5121

Arabic Bahrain
0x3c01
15361

Arabic Egypt
0x0c01
3073

Arabic General
0x0001
1

Arabic Iraq
0x0801
2049

Arabic Jordan
0x2c01
11265

Arabic Kuwait
0x3401
13313

Arabic Lebanon
0x3001
12289

Arabic Libya
0x1001
4097

Arabic Morocco
0x1801
6145

Arabic Oman
0x2001
8193

Arabic Qatar

0x4001
16385

Arabic Syria
0x2801
10241

Arabic Tunisia
0x1c01
7169

Arabic U.A.E.
0x3801
14337

Arabic Yemen
0x2401
9217

Armenian
0x042b
1067

Assamese
0x044d
1101

Azeri Cyrillic
0x082c
2092

Azeri Latin
0x042c
1068

Basque
0x042d
1069

Bengali
0x0445
1093

Bosnia Herzegovina
0x101a
4122

Bulgarian
0x0402
1026

Burmese
0x0455
1109

Byelorussian
0x0423
1059

Catalan
0x0403
1027

Chinese China
0x0804
2052

Chinese General
0x0004
4

Chinese Hong Kong
0x0c04
3076

Chinese Macao
0x0c04
3076

Chinese Singapore
0x1004
4100

Chinese Taiwan
0x0404
1028

Croatian
0x041a
1050

Czech
0x0405
1029

Danish
0x0406
1030

Dutch Belgium
0x0813
2067

Dutch Standard
0x0413
1043

English Australia

```
0x0c09
3081

English Belize
0x2809
10249

English British
0x0809
2057

English Canada
0x1009
4105

English Caribbean
0x2409
9225

English General
0x0009
9

English Ireland
0x1809
6153

English Jamaica
0x2009
8201

English New Zealand
0x1409
5129

English Philippines
0x3409
13321

English South Africa
0x1c09
7177

English Trinidad
0x2c09
11273

English United States
0x0409
1033

English Zimbabwe
0x0409
1033
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Estonian
0x0425
1061

Faeroese
0x0438
1080

Farsi
0x0429
1065

Finnish
0x040b
1035

French
0x040c
1036

French Belgium
0x080c
2060

French Cameroon
0x2c0c
11276

French Canada
0x0c0c
3084

French Cote díIvoire
0x300c
12300

French Luxemburg
0x140c
5132

French Mali
0x340c
13324

French Monaco
0x180c
6156

French Reunion
0x200c
8204

French Senegal

0x280c
10252

French Swiss
0x100c
4108

French West Indies
0x1c0c
7180

French Zaire
0x240c
9228

Frisian
0x0462
1122

Gaelic
0x043c
1084

Gaelic Ireland
0x083c
2108

Galician
0x0456
1110

Georgian
0x0437
1079

German
0x0407
1031

German Austrian
0x0c07
3079

German Liechtenstein
0x1407
5127

German Luxemburg
0x1007
4103

German Switzerland
0x0807
2055

Greek
0x0408
1032

Gujarati
0x0447
1095

Hebrew
0x040d
1037

Hindi
0x0439
1081

Hungarian
0x040e
1038

Icelandic
0x040f
1039

Indonesian
0x0421
1057

Italian
0x0410
1040

Italian Switzerland
0x0810
2064

Japanese
0x0411
1041

Kannada
0x044b
1099

Kashmiri
0x0460
1120

Kashmiri India
0x0860
2144

Kazakh

0x043f
1087

Khmer
0x0453
1107

Kirghiz
0x0440
1088

Konkani
0x0457
1111

Korean
0x0412
1042

Korean Johab
0x0812
2066

Lao
0x0454
1108

Latvian
0x0426
1062

Lithuanian
0x0427
1063

Lithuanian Classic
0x0827
2087

Macedonian
0x043e
1086

Malay
0x043e
1086

Malay Brunei Darussalam
0x083e
2110

Malayalam
0x044c
1100

Maltese
0x043a
1082

Manipuri
0x0458
1112

Marathi
0x044e
1102

Mongolian
0x0450
1104

Nepali
0x0461
1121

Nepali India
0x0861
2145

Norwegian Bokmal
0x0414
1044

Norwegian Nynorsk
0x0814
2068

Oriya
0x0448
1096

Polish
0x0415
1045

Portuguese Brazil
0x0416
1046

Portuguese Iberian
0x0816
2070

Punjabi
0x0446
1094

Rhaeto-Romanic

0x0417
1047

Romanian
0x0418
1048

Romanian Moldova
0x0818
2072

Russian
0x0419
1049

Russian Moldova
0x0819
2073

Sami Lappish
0x043b
1083

Sanskrit
0x044f
1103

Serbian Cyrillic
0x0c1a
3098

Serbian Latin
0x081a
2074

Sindhi
0x0459
1113

Slovak
0x041b
1051

Slovenian
0x0424
1060

Sorbian
0x042e
1070

Spanish Argentina
0x2c0a
11274

```
Spanish Bolivia
0x400a
16394

Spanish Chile
0x340a
13322

Spanish Colombia
0x240a
9226

Spanish Costa Rica
0x140a
5130

Spanish Dominican Republic
0x1c0a
7178

Spanish Ecuador
0x300a
12298

Spanish El Salvador
0x440a
17418

Spanish Guatemala
0x100a
4106

Spanish Honduras
0x480a
18442

Spanish Mexico
0x080a
2058

Spanish Modern
0x0c0a
3082

Spanish Nicaragua
0x4c0a
19466

Spanish Panama
0x180a
6154

Spanish Paraguay
```

0x3c0a
15370

Spanish Peru
0x280a
10250

Spanish Puerto Rico
0x500a
20490

Spanish Traditional
0x040a
1034

Spanish Uruguay
0x380a
14346

Spanish Venezuela
0x200a
8202

Sutu
0x0430
1072

Swahili
0x0441
1089

Swedish
0x041d
1053

Swedish Finland
0x081d
2077

Tajik
0x0428
1064

Tamil
0x0449
1097

Tatar
0x0444
1092

Telugu
0x044a
1098

Thai
0x041e
1054

Tibetan
0x0451
1105

Tsonga
0x0431
1073

Tswana
0x0432
1074

Turkish
0x041f
1055

Turkmen
0x0442
1090

Ukrainian
0x0422
1058

Urdu
0x0420
1056

Urdu India
0x0820
2080

Uzbek Cyrillic
0x0843
2115

Uzbek Latin
0x0443
1091

Venda
0x0433
1075

Vietnamese
0x042a
1066

Welsh

0x0452
1106

Xhosa
0x0434
1076

Yiddish
0x043d
1085

Zulu
0x0435
1077

¶To read negative \expnd values from Word for the Macintosh, an RTF reader should use only the low-order 6 bits of the value read. Word for the Macintosh does not emit negative values for \expnd. Instead, it treats values from 57 through 63 as ñ7 through ñ1, respectively (the low-order 6 bits of 57 through 63 are the same as ñ7 through ñ1).¶Character Borders and Shading¶Character shading has the following syntax:¶<shading>
(\chshdng | <pat>) \chcfpat? \chcbpat?

<pat>
\chbghoriz | \chbgvert | \chbgfdiag | \chbgbdiag | \chbgcross | \chbgdcross | \chbgdkhoriz | \chbgdkvert | \chbgdkfdiag | \chbgdkbdiag | \chbgdkcross | \
chbgdkdcross

¶Control word
Meaning

\chbrdr
Character border (border always appears on all sides).

\chshdngN
Character shading. The N argument is a value representing the shading of the text in hundredths of a percent.

\chcfpatN
N is the color of the background pattern, specified as an index into the documentís color table.

\chcbpatN
N is the fill color, specified as an index into the document's color table.

\chbghoriz
Specifies a horizontal background pattern for the text.

\chbgvert
Specifies a vertical background pattern for the text.

\chbgfdiag
Specifies a forward diagonal background pattern for the text (\\\\).

\chbgbdiag
Specifies a backward diagonal background pattern for the text (////).

\chbgcross
Specifies a cross background pattern for the text.

\chbgdcross
Specifies a diagonal cross background pattern for the text.

\chbgdkhoriz
Specifies a dark horizontal background pattern for the text.

\chbgdkvert
Specifies a dark vertical background pattern for the text.

\chbgdkfdiag
Specifies a dark forward diagonal background pattern for the text (\\\\).

\chbgdkbdiag
Specifies a dark backward diagonal background pattern for the text (////).

\chbgdkcross
Specifies a dark cross background pattern for the text.

\chbgdkdcross
Specifies a dark diagonal cross background pattern for the text.

The color, width, and border style keywords for character borders are the same as the keywords for paragraph borders.¶¶Control word
Meaning

Track Changes (Revision Mark) Properties

\revised
Text has been added since revision marking was turned on.

\revauthN
Index into the revision table. The content of the Nth group in the revision table is considered to be the author of that revision.

\revdttmN
Time of the revision. The 32-bit DTTM structure is emitted as a long integer.

\crauthN
Index into the revision table. The content of the Nth group in the revision table is considered to be the author of that revision. ¶Note This keyword is used to indicate formatting revisions, such as bold, italic, and so on.

\crdateN
Time of the revision. The 32-bit DTTM structure is emitted as a long integer.

\revauthdelN
Index into the revision table. The content of the Nth group in the revision table is considered to be the author of that deletion.

\revdttmdelN
Time of the deletion. The 32-bit DTTM structure is emitted as a long integer.

Associated Character Properties¶Bidirectional-aware text processors often need to associate a Latin (or other left-to-right) font with an Arabic or Hebrew (or other right-to-left) font. The association is needed to match commonly used pairs of fonts in name, size, and other attributes. Although RTF defines a broad variety of associated character properties, any implementation may choose not to implement a particular associated character property and share the property between the Latin and Arabic fonts.¶Property association uses the following syntax:¶<atext>
<ltrrun> | <rtlrun>

<ltrrun>
\rtlch \af & <aprops>* \ltrch <ptext>

<rtlrun>
\ltrch \af & <aprops>* \rtlch <ptext>

<atext>
<losbrun> | <hisbrun> | <dbrun>

<losbrun>
\hich \af & <aprops> \dbch \af & <aprops> \loch <ptext>

<hisbrun>
\loch \af & <aprops> \dbch \af & <aprops> \hich <ptext>

<dbrun>
\loch \af & <aprops> \hich \af & <aprops> \dbch <ptext>

The following are some examples of property association. The first example is a right-to-left run. Text will use the default bidirectional font, and will be underlined. The left-to-right font associated with this run is font 2 (in the font table) with bold and underlining.¶\ltrch\af2\ab\au\rtlch\u Sample Text¶The next example is a left-to-right run. The right-to-left font and the left-to-right font use the default font (specified by \deff).¶\plain\rtlch\ltrch Sample Text ¶The following example is a left-to-right run. The right-to-left font is font 5, bold and italicized. The left-to-right font is the default font, underlined. If the reader does not support underlining in the associated font, both fonts will be underlined.¶\rtlch\af5\ab\ai\ltrch\u Sample Text¶The property association control words (described as <aprops> in the syntax description) are listed in the following table. Some control words (indicated in the table by an asterisk following the description) can be turned off by appending 0 to the control word.¶Control word
Meaning

\ab
Associated font is bold.*

\acaps
Associated font is all capitals.*

\acfN
Associated foreground color (the default is 0).

\adnN
Associated font is subscript position in half-points (the default is 6).

\aexpndN
Expansion or compression of the space between characters in quarter-points; a negative value compresses (the default is 0).

\afN
Associated font number (the default is 0).

\afsN
Associated font size in half-points (the default is 24).

\ai
Associated font is italic.*

\alangN
Language ID for the associated font. (This uses the same language ID codes described in the
HYPERLINK \l "Standard_Language_Table"

standard language table
in the
HYPERLINK \l "Character_Text"

Character Text
section of this Specification.)

\aoutl
Associated font is outline.*

\ascaps
Associated font is small capitals.*

\ashad
Associated font is shadow.*

\astrike
Associated font is strikethrough.*

\aul
Associated font is continuous underline. \aul0 turns off all underlining for the alternate font.

\auld
Associated font is dotted underline.

\auldb
Associated font is double underline.

\aulnone

Associated font is no longer underlined.

\aulw
Associated font is word underline.

\aupN
Superscript position in half-points (the default is 6).

\loch
The text consists of single-byte low-ANSI (0x00ñ0x7F) characters.

\hich
The text consists of single-byte high-ANSI (0x80ñ0xFF) characters.

\dbch
The text consists of double-byte characters.

Highlighting¶This property applies highlighting to text. The formatting is not a character format, so it cannot be part of a style definition.¶Control word
Meaning

\highlightN
Highlights the specified text. N specifies the color as an index of the color table.

Special Characters¶The RTF Specification includes control words for special characters (described as <spec> in the character-text syntax description). If a special-character control word is not recognized by the RTF reader, it is ignored and the text following it is considered plain text. The RTF Specification is flexible enough to allow new special characters to be added for interchange with other software.¶The special RTF characters are listed in the following table.¶Control word
Meaning

\chdate
Current date (as in headers).

\chdpl
Current date in long format (for example, Thursday, October 28, 1997).

\chdpa
Current date in abbreviated format (for example, Thu, Oct 28, 1997).

\chtime
Current time (as in headers).

\chpgn
Current page number (as in headers).

\sectnum
Current section number (as in headers).

\chftn

Automatic footnote reference (footnotes follow in a group).

\chatn
Annotation reference (annotation text follows in a group).

\chftnsep
Anchoring character for footnote separator.

\chftnsepc
Anchoring character for footnote continuation.

\cell
End of table cell.

\nestcell
End of nested table cell.

\row
End of table row.

\nestrow
End of nested table row.

\par
End of paragraph.

\sect
End of section and paragraph.

\page
Required page break.

\column
Required column break.

\line
Required line break (no paragraph break).

\lbrN
Text wrapping break of type:¶0
Default line break (just like \line)¶1
Clear left¶2
Clear right¶3
Clear all¶Whenever an \lbr is emitted, a \line will be emitted for the benefit of old readers.

\softpage
Nonrequired page break. Emitted as it appears in galley view.

\softcol
Nonrequired column break. Emitted as it appears in galley view.

\softline
Nonrequired line break. Emitted as it appears in galley view.

\softlheightN
Nonrequired line height. This is emitted as a prefix to each line.

\tab
Tab character.

\emdash
Em dash (ó).

\endash
En dash (ñ).

\emspace
Nonbreaking space equal to width of character "m" in current font. Some old RTF writers use the construct ë{\emspace }í (with two spaces before the closing brace) to trick readers unaware of \emspace into parsing a regular space. A reader should interpret this as an \emspace and a regular space.

\enspace
Nonbreaking space equal to width of character "n" in current font. Some old RTF writers use the construct ë{\enspace }í (with two spaces before the closing brace) to trick readers unaware of \enspace into parsing a regular space. A reader should interpret this as an \enspace and a regular space.

\qmspace
One-quarter em space.

\bullet
Bullet character.

\lquote
Left single quotation mark.

\rquote
Right single quotation mark.

\ldblquote
Left double quotation mark.

\rdblquote
Right double quotation mark.

\|
Formula character. (Used by Word 5.1 for the Macintosh as the beginning delimiter for a string of formula typesetting commands.)

\~
Nonbreaking space.

\-
Optional hyphen.

_

Nonbreaking hyphen.

\:
Specifies a subentry in an index entry.

*
Marks a destination whose text should be ignored if not understood by the RTF reader.

\'hh
A hexadecimal value, based on the specified character set (may be used to identify 8-bit values).

\ltrmark
The following characters should be displayed from left to right; usually found at the start of \ltrch runs.

\rtlmark
The following characters should be displayed from right to left; usually found at the start of \rtlch runs.

\zwbo
Zero-width break opportunity. Used to insert break opportunity between two characters.

\zwnbo
Zero-width nonbreak opportunity. Used to remove break opportunity between two characters.

\zwj
Zero-width joiner. This is used for ligating (joining) characters.

\zwnj
Zero-width nonjoiner. This is used for unligating a character.

¶A carriage return (character value 13) or linefeed (character value 10) will be treated as a \par control if the character is preceded by a backslash. You must include the backslash; otherwise, RTF ignores the control word. (You may also want to insert a carriage-return/linefeed pair without backslashes at least every 255 characters for better text transmission over communication lines.)¶A tab (character value 9) should be treated as a \tab control word. Not all RTF readers understand this; therefore, an RTF writer should always emit the control word for tabs.¶The following are the code values for the special characters listed.¶Control word
Word for Windows and OS/2
Apple Macintosh

\bullet
149
0xA5

\endash
150
0xD1

\emdash
151
0xD0

\lquote
145
0xD4

\rquote
146
0xD5

\ldblquote
147
0xD2

\rdblquote
148
0xD3

Document Variables¶Document variables are definable and accessed through macros. Document variables have the following syntax:¶<variables>
ë{*í <docvar>ë{í <varname> ë}í ë{í <vartext> ë}í ë}í*

<docvar>
\docvar

<varname>
#PCDATA

<vartype>
#PCDATA

¶The control word is described in the following table.¶Control word
Meaning

\ docvar
A group that defines a document variable name and its value.

Bookmarks¶This destination may specify one of two control words: *\ bkmkstart, which indicates the start of the specified bookmark, and *\ bkmkend, which indicates the end of the specified bookmark.¶Bookmarks have the following syntax:¶<book>
<bookstart> | <bookend>

<bookstart>
'{*' \bkmkstart (\bkmkcolf? & \bkmkcoll?) #PCDATA '}'

<bookend>
'{*' \bkmkend #PCDATA '}'

¶A bookmark is shown in the following example:¶\pard\plain \fs20 Kuhn believes that science, rather than ¶discovering in experience certain structured ¶relationships, actually creates (or already participates in) ¶a presupposed structure to which it fits the data. ¶{\bkmkstart paradigm} Kuhn calls such a presupposed ¶structure a paradigm.{\bkmkend paradigm}¶The bookmark start and end are matched with the bookmark tag. In this example, the bookmark tag is "paradigm." Each bookmark start should have a matching bookmark end; however, the bookmark start and the bookmark end may be in any order.¶\bkmkcolfN is used to denote the first column of a table covered by a bookmark. If it is not included, the first column is assumed. \bkmkcollN is used to denote the last column. If it is not used, the last column is assumed. These controls are used within the *\bkmkstart destination following the \bkmkstart control. For example, {*\bkmkstart\bkmkcolf2\bkmkcoll5 Table1} places the bookmark "Table1" in columns 2 through 5 of a table.¶Pictures¶An RTF file can include pictures created with other applications. These pictures can be in hexadecimal (the default) or binary format. Pictures are destinations and begin with the \pict control word. The \pict keyword is preceded by the *\shppict destination control keyword as described in the following example. A picture destination has the following syntax:¶<pict>

```
'{' \pict (<brdr>? & <shading>? & <picttype> & <pictsize> & <metafileinfo>?)
<data> '}'

<picttype>
| \emfblip | \pngblip | \jpegblip | \macpict | \pmmetafile | \wmetafile | \
dibitmap <bitmapinfo> | \wbitmap <bitmapinfo>

<bitmapinfo>
\wbmbitspixel & \wbmplanes & \wbmwidthbytes

<pictsize>
(\picw & \pich) \picwgoal? & \pichgoal? \picscalex? & \picscaley? & \
picscaled? & \piccropt? & \piccropb? & \piccropr? & \piccropl?

<metafileinfo>
\picbmp & \picbpp

<data>
(\bin #BDATA) | #SDATA
```

¶These control words are described in the following table. Some measurements in this table are in twips. A twip is one-twentieth of a point.¶Control word
Meaning

\emfblip
Source of the picture is an EMF (enhanced metafile).

\pngblip
Source of the picture is a PNG.

\jpegblip
Source of the picture is a JPEG.

\shppict
Specifies a Word 97 through Word 2002 picture. This is a destination control word.

\nonshppict
Specifies that Word 97 through Word 2002 has written a {\pict destination that it will not read on input. This keyword is for compatibility with other readers.

\macpict
Source of the picture is QuickDraw.

\pmmetafileN
Source of the picture is an OS/2 metafile. The N argument identifies the metafile type. The N values are described in the \pmmetafile
 HYPERLINK \l "Pmmetafile_Table"

table
 further on in this section.

\wmetafileN
Source of the picture is a Windows metafile. The N argument identifies the metafile type (the default type is 1).

\dibitmapN
Source of the picture is a Windows device-independent bitmap. The N argument identifies the bitmap type, which must equal 0.¶The information to be included in RTF from a Windows device-independent bitmap is the concatenation of the BITMAPINFO structure followed by the actual pixel data.

\wbitmapN
Source of the picture is a Windows device-dependent bitmap. The N argument identifies the bitmap type (must equal 0).¶The information to be included in RTF from a Windows device-dependent bitmap is the result of the GetBitmapBits function.

The following is an example of the \shppict group:¶{*\shppict {\pict \emfblip Ö.. }}{\nonshppict {\pict Ö.}}¶For best device-independence and interoperability with Microsoft products, use of the \wbitmap and \dibitmap control words is discouraged. Rather, bitmaps should be embedded within Windows metafiles and the \wmetafile control word should be used. For more information on the GetDIBits and GetBitmapBits functions and the structure of Windows device-independent and device-dependent bitmaps, as well as information on embedding bitmaps within metafiles, see Volume 1 and Volume 2 of the Programmer's Reference in the Microsoft Windows 3.1 Software Development Kit. The following table outlines picture control keywords:¶Control word
Meaning

Bitmap Information

\wbmbitspixelN
Number of adjacent color bits on each plane needed to define a pixel. Possible values are 1 (monochrome), 4 (16 colors), 8 (256 colors) and 24 (RGB). The default value is 1.

\wbmplanesN

Number of bitmap color planes (must equal 1).

\wbmwidthbytesN
Specifies the number of bytes in each raster line. This value must be an even number because the Windows Graphics Device Interface (GDI) assumes that the bit values of a bitmap form an array of integer (two-byte) values. In other words, \wbmwidthbytes multiplied by 8 must be the next multiple of 16 greater than or equal to the \picw (bitmap width in pixels) value.

Picture Size, Scaling, and Cropping

\picwN
xExt field if the picture is a Windows metafile; picture width in pixels if the picture is a bitmap or from QuickDraw. The N argument is a long integer.

\pichN
yExt field if the picture is a Windows metafile; picture height in pixels if the picture is a bitmap or from QuickDraw. The N argument is a long integer.

\picwgoalN
Desired width of the picture in twips. The N argument is a long integer.

\pichgoalN
Desired height of the picture in twips. The N argument is a long integer.

\picscalexN
Horizontal scaling value. The N argument is a value representing a percentage (the default is 100 percent).

\picscaleyN
Vertical scaling value. The N argument is a value representing a percentage (the default is 100 percent).

\picscaled
Scales the picture to fit within the specified frame. Used only with \macpict pictures.

\picprop
Indicates there are shape properties applied to an inline picture. This is a destination control word.

\defshp
Indicates that the inline picture is a WordArt shape.

\piccroptN
Top cropping value in twips. A positive value crops toward the center of the picture; a negative value crops away from the center, adding a space border around the picture (the default value is 0).

\piccropbN
Bottom cropping value in twips. A positive value crops toward the center of the picture; a negative value crops away from the center, adding a space border around the picture (the default value is 0).

\piccroplN
Left cropping value in twips. A positive value crops toward the center of the picture; a negative value crops away from the center, adding a space border around the picture (the default value is 0).

\piccroprN
Right cropping value in twips. A positive value crops toward the center of the picture; a negative value crops away from the center, adding a space border around the picture (the default value is 0).

Metafile Information

\picbmp
Specifies whether a metafile contains a bitmap.

\picbppN
Specifies the bits per pixel in a metafile bitmap. The valid range is 1 through 32, with 1, 4, 8, and 24 being recognized.

Picture Data

\binN
The picture is in binary format. The numeric parameter N is the number of bytes that follow. Unlike all other controls, this control word takes a 32-bit parameter.

\blipupiN
N represents units per inch on a picture (only certain image types need or output this)

\blipuid XXXXX
Used as {*\blipuid XXXXX} where XXXX is a 16-byte identification number for the image.

\bliptagN
A unique identifier for a picture, where N is a long integer value.

¶The \wbitmap control word is optional. If no other picture type is specified, the picture is assumed to be a Windows bitmap. If \wmetafile is specified, the N argument can be one of the following types.¶

Type	N argument
MM_TEXT	1
MM_LOMETRIC	2
MM_HIMETRIC	3
MM_LOENGLISH	4

MM_HIENGLISH
5

MM_TWIPS
6

MM_ISOTROPIC
7

MM_ANISOTROPIC
8

¶For more information about these types, see volume 1 of the Programmerís Reference in the Microsoft Windows 3.1 Software Development Kit.¶If \pmmetafile is specified, the N argument can be one of the following types.¶Type
N argument

PU_ARBITRARY
0x0004

PU_PELS
0x0008

PU_LOMETRIC
0x000C

PU_HIMETRIC
0x0010

PU_LOENGLISH
0x0014

PU_HIENGLISH
0x0018

PU_TWIPS
0x001C

¶For more information about these types, see volume 2 of the OS/2 Programmerís Reference.¶Be careful with spaces following control words when dealing with pictures in binary format. When reading files, RTF considers the first space after a control word the delimiter and subsequent spaces part of the document text. Therefore, any extra spaces are attached to the picture, with unpredictable results.¶RTF writers should not use the carriage return/line feed (CR/LF) combination to break up pictures in binary format. If they do, the CR/LF combination is treated as literal text and considered part of the picture data.¶The picture in hexadecimal or binary format follows the picture-destination control words. The following example illustrates the destination format:¶{\pict\wbitmap0\picw170\pich77\wbmbitspixel1\wbmplanes1\wbmwidthbytes22¶\picwgoal505¶\pichgoal221¶\picscalex172¶\picscaley172¶49f200000000000273023d1101a030¶3901000a00000000273023d98¶0048000200000275¶02040000200010275023e000000000¶273023d000002b90002b90002¶b90002b90002b9¶0002b90002b90002b90002b90002b90002¶b92222b90002b90002b90¶002b90002b9¶0002 b90002b90002b90002b9000¶Objects¶Microsoft OLE links, Microsoft OLE embedded objects, and Macintosh Edition Manager subscriber objects are represented in RTF as objects. Objects are destinations that contain data and a result. The data is generally hidden to the application that produced the document. A separate application uses the data and supplies the appearance of the data. This appearance is the result of the object.¶The representation of objects in RTF is designed to allow RTF readers that don't understand objects, or don't use a particular type of object, to use the current result in place of the object. This allows the appearance of the object to be maintained through the conversion even though the object functionality is lost. Each object comes with optional information about itself, a required destination that contains the object data, and an optional result that contains the current appearance of the object. This result contains standard RTF. The RTF writer is responsible for providing the result so that existing RTF readers that either do not support objects, or that do not support a particular type of object, will be able to display the object.¶When the object is an OLE embedded or linked object, the data part of the object is the structure produced by the OLESaveToStream function. Some OLE clients rely on the OLE system to render the object when a copy of the result is not available to the RTF writer for that application. In these cases, the object result can be extracted from the structure produced by the OLESaveToStream function. For information about the OLESaveToStream function, see the Microsoft Object Linking and Embedding Software Development Kit.¶This destination has the following syntax:¶<obj>

```
( '{' \object (<objtype> & <objmod>? & <objclass>? & <objname>? & <objtime>?
& <objsize>? & <rsltmod>?) <objdata> <result> '}' ) | <pubobject>

<objtype>
\objemb | \objlink | \objautlink | \objsub | \objpub | \objicemb | objhtml |
objocx

<objmod>
\linkself? & \objlock? | \objupdate?

<objclass>
'{\*' \objclass #PCDATA '}'

<objname>
'{\*' \objname #PCDATA '}'

<objtime>
'{\*' \objtime <time> '}'

<rsltmod>
\rsltmerge? & <rslttype>?

<rslttype>
\rsltrtf | \rslttxt | \rsltpict | \rsltbmp | \rslthtml

<objsize>
\objsetsize? & \objalign? & \objtransy? & <objhw>? & \objcropt? & \objcropb?
& \objcropl? & \objcropr? & \objscalex? & \objscaley?

<objhw>
\objh & \objw
```

<objdata>
'{*' \objdata (<objalias>? & <objsect>?) <data> '}'

<objalias>
'{*' \objalias <data> '}'

<objsect>
'{*' \objsect <data> '}'

<result>
'{' \result <para>+ '}'

¶These control words are described in the following table.¶Control word Meaning

Object Type

\objemb
An object type of OLE embedded object. If no type is given for the object, the object is assumed to be of type \objemb.

\objlink
An object type of OLE link.

\objautlink
An object type of OLE autolink.

\objsub
An object type of Macintosh Edition Manager subscriber.

\objpub
An object type of Macintosh Edition Manager publisher.

\objicemb
An object type of MS Word for the Macintosh Installable Command (IC) Embedder.

\objhtml
An object type of Hypertext Markup Language (HTML) control.

\objocx
An object type of OLE control.

Object Information

\linkself
The object is a link to another part of the same document.

\objlock
Locks the object from any updates.

\objupdate
Forces an update to the object before displaying it. Note that this will

override any values in the <objsize> control words, but values should always be provided for these to maintain backwards compatibility.

\objclass
The text argument is the object class to use for this object; ignore the class specified in the object data. This is a destination control word.

\objname
The text argument is the name of this object. This is a destination control word.

\objtime
Lists the time that the object was last updated.

Object Size, Position, Cropping, and Scaling

\objhN
N is the original object height in twips, assuming the object has a graphical representation.

\objwN
N is the original object width in twips, assuming the object has a graphical representation.

\objsetsize
Forces the object server to set the object's dimensions to the size specified by the client.

\objalignN
N is the distance in twips from the left edge of the objects that should be aligned on a tab stop. This is needed to place Equation Editor equations correctly.

\objtransyN
N is the distance in twips the objects should be moved vertically with respect to the baseline. This is needed to place Math Type equations correctly.

\objcroptN
N is the top cropping value in twips.

\objcropbN
N is the bottom cropping value in twips.

\objcroplN
N is the left cropping value in twips.

\objcroprN
N is the right cropping value in twips.

\objscalexN
N is the horizontal scaling percentage.

\objscaleyN

N is the vertical scaling percentage.

Object Data

\objdata
This subdestination contains the data for the object in the appropriate format; OLE objects are in OLESaveToStream format. This is a destination control word.

\objalias
This subdestination contains the alias record of the publisher object for the Macintosh Edition Manager. This is a destination control word.

\objsect
This subdestination contains the section record of the publisher object for the Macintosh Edition Manager. This is a destination control word.

Object Result

\rsltrtf
Forces the result to be RTF, if possible.

\rsltpict
Forces the result to be a Windows metafile or MacPict image format, if possible.

\rsltbmp
Forces the result to be a bitmap, if possible.

\rslttxt
Forces the result to be plain text, if possible.

\rslthtml
Forces the result to be HTML, if possible.

\rsltmerge
Uses the formatting of the current result whenever a new result is obtained.

\result
The result destination is optional in the \object destination. The result destination contains the last update of the result of the object. The data of the result destination should be standard RTF. This allows RTF readers that don't understand objects or the type of object represented to use the current result, in place of the object, to maintain appearance. This is a destination control word.

¶When Word is used as an editor for Mail, the following control word can be emitted. Otherwise, it is not seen.¶Control word
Meaning

\objattph
Object attachment placeholder. Used in the RTF stream when Word is started as an e-mail editor and the message contains attachments. The control word lists where in the text stream the attachment should be placed. It does not define

the actual attachment.

Macintosh Edition Manager Publisher Objects¶Word for the Macintosh writes publisher objects for the Macintosh Edition Manager in terms of bookmarks (see the
 HYPERLINK \l "Bookmarks"

Bookmark
 section of this specification). The range of publisher objects are marked as bookmarks, so these controls are all used within the \bkmkstart destination. The RTF syntax for a publisher object is:¶<pubobject>
'{*' \bkmkstart \bkmkpub \pubauto? (<objalias>? & <objsect>) #PCDATA '}'

¶These control words are descibed in the following table.¶Control word
Meaning

\bkmkpub
The bookmark identifies a Macintosh Edition Manager publisher object.

\pubauto
The publisher object updates all Macintosh Edition Manager subscribers of this object automatically, whenever it is edited.

Drawing Objects¶Drawing Objects in Word 6.0/95 RTF¶Drawing objects and the drawing primitives enumerated within drawing object groups use the following syntax:¶<do>
'{*' \do <dohead> <dpinfo>'}'

<dohead>
<dobx> <doby> <dodhgt> <dolock>?

<dobx>
\dobxpage | \dobxcolumn | \dobxmargin

<doby>
\dobypage | \dobypara | \dobymargin

<dodhgt>
\dodhgt

<dolock>
\dolock

<dpinfo>
 <dpgroup> | <dpcallout> | <dpsimple>

<dpgroup>
\dpgroup \dpcount <dphead> <dpinfo>+ \dpendgroup <dphead>

<dpcallout>
\dpcallout <cotype> <coangle>? <coaccent>? <cosmartattach>? <cobestfit>? < cominusx>? <cominusy>? <coborder>? <codescent>? \dpcooffset \dpcolength < dphead> <dppolyline> <dphead> <dpprops> <dptextbox> <dphead> <dpprops>

```
<dpsimple>
<dpsimpledpk> <dphead> <dpprops>

<dpsimpledpk>
<dpline> | <dprect> | <dptextbox> | <dpellipse> | <dppolyline> | <dparc>

<dpline>
\dpline <dppt> <dppt>

<dprect>
\dprect (\dproundr)?

<dptextbox>
\dptxbx (\dptxlrtb | \dptxtbrl | \dptxbtlr | \dptxlrtbv | \dptxtbrlv)? \
dptxbxmar '{' \dptxbxtext <para>+'}'

<dpellipse>
\dpellipse

<dparc>
\dparc \dparcflipx? \dparcflipy?

<dppolyline>
\dppolyline (\dppolygon)? \dppolycount <dppt>+

<dppt>
\dpptx \dppty

<dphead>
\dpx \dpy \dpxsize \dpysize
```

¶Note that in <dpgroup> the number of <dpinfo> occurrences is equal to the argument of \dpcount. This means that in <dppolyline> the number of <dppt> occurrence is equal to the argument of \dppolycount.¶The following elements of the drawing-object syntax pertain specifically to callout objects:¶<cotype>

```
\dpcotright | \dpcotsingle | \dpcotdouble | \dpcottriple

<coangle>
\dpcoa

<coaccent>
\dpcoaccent

<cosmartattach>
\dpcosmarta

<cobestfit>
\dpcobestfit

<cominusx>
\dpcominusx

<cominusy>
```

\dpcominusy

<coborder>
\dpcoborder

<codescent>
\dpcodtop | \dpcodcenter | \dpcodbottom | \dpcodabs

¶The remaining elements of the drawing object syntax are properties applied to individual drawn primitives. These remaining objects use the following syntax:¶<dpprops>
<lineprops>? <fillprops>? <endstylestart>? <endstyleend>? <shadow>?

<lineprops>
<linestyle> <linecolor> \dplinew

<linestyle>
\dplinesolid | \dplinehollow | \dplinedash | \dplinedot | \dplinedado | \dplinedadodo

<linecolor>
<linegray> | <linergb>

<linegray>
\dplinegray

<linergb>
\dplinecor \dplinecog \dplinecob<linepal>?

<linepal>
\dplinepal

<fillprops>
<fillcolorfg> <fillcolorbg> \dpfillpat

<fillcolorfg>
<fillfggray> | <fillfgrgb>

<fillfggray>
\dpfillfggray

<fillfgrgb>
\dpfillfgcr \dpfillfgcg \dpfillfgcb<fillfgpal>?

<fillfgpal>
\dpfillfgpal

<fillcolorbg>
<fillbggray> | <fillbgrgb>

<fillbggray>
\dpfillbggray

<fillbgrgb>

\dpfillbgcr \dpfillbgcg \dpfillbgcb<fillbgpal>?

<fillbgpal>
\dpfillbgpal

<endstylestart>
<arrowstartfill> \dpastartl \dpastartw

<arrowstartfill>
\dpastartsol | \dpastarthol

<endstyleend>
<arrowendfill> \dpaendl \dpaendw

<arrowendfill>
\dpaendsol | \dpaendhol

<shadow>
\dpshadow \dpshadx \dpshady

¶The following table describes the control words for the drawing object group. All color values are RGB values from 0 through 255. All distances are in twips. All other values are as indicated.¶Control word
Meaning

\do
Indicates a drawing object is to be inserted at this point in the character stream. This is a destination control word.

\dolock
The drawing object's anchor is locked and cannot be moved.

\dobxpage
The drawing object is page relative in the x-direction.

\dobxcolumn
The drawing object is column relative in the x-direction.

\dobxmargin
The drawing object is margin relative in the x-direction.

\dobypage
The drawing object is page relative in the y-direction.

\dobypara
The drawing object is paragraph relative in the y-direction.

\dobymargin
The drawing object is margin relative in the y-direction.

\dodhgtN
The drawing object is positioned at the following numeric address in the z-ordering.

Drawing Primitives

\dpgroup
Begin group of drawing primitives.

\dpcountN
Number of drawing primitives in the current group.

\dpendgroup
End group of drawing primitives.

\dparc
Arc drawing primitive.

\dpcallout
Callout drawing primitive, which consists of both a polyline and a text box.

\dpellipse
Ellipse drawing primitive.

\dpline
Line drawing primitive.

\dppolygon
Polygon drawing primitive (closed polyline).

\dppolyline
Polyline drawing primitive.

\dprect
Rectangle drawing primitive.

\dptxbx
Text box drawing primitive.

Position and Size

\dpxN
X-offset of the drawing primitive from its anchor.

\dpxsizeN
X-size of the drawing primitive.

\dpyN
Y-offset of the drawing primitive from its anchor.

\dpysizeN
Y-size of the drawing primitive.

Callouts

\dpcoaN
Angle of callout's diagonal line is restricted to one of the following: 0, 30, 45, 60, or 90. If this control word is absent, the callout has an

arbitrary angle, indicated by the coordinates of its primitives.

\dpcoaccent
Accent bar on callout (vertical bar between polyline and text box).

\dpcobestfit
Best fit callout (x-length of each line in callout is similar).

\dpcoborder
Visible border on callout text box.

\dpcodabs
Absolute distance-attached polyline.

\dpcodbottom
Bottom-attached polyline.

\dpcodcenter
Center-attached polyline.

\dpcodtop
Top-attached callout.

\dpcodescentN
Descent of the callout

\dpcolengthN
Length of callout.

\dpcominusx
Text box falls in quadrants II or III relative to polyline origin.

\dpcominusy
Text box falls in quadrants III or IV relative to polyline origin.

\dpcooffsetN
Offset of callout. This is the distance between the end of the polyline and the edge of the text box.

\dpcosmarta
Auto-attached callout. Polyline will attach to either the top or bottom of the text box depending on the relative quadrant.

\dpcotdouble
Double line callout.

\dpcotright
Right angle callout.

\dpcotsingle
Single line callout.

\dpcottriple
Triple line callout.

Text Boxes and Rectangles

\dptxbxmarN
Internal margin of the text box.

\dptxbxtext
Group that contains the text of the text box.

\dptxlrtb
Text box flows from left to right and top to bottom (default).

\dptxtbrl
Text box flows from right to left and top to bottom.

\dptxbtlr
Text box flows from left to right and bottom to top.

\dptxlrtbv
Text box flows from left to right and top to bottom, vertically.

\dptxtbrlv
Text box flows from right to left and top to bottom, vertically.

\dproundr
Rectangle is a round rectangle.

Lines and Polylines

\dpptxN
X-coordinate of the current vertex (only for lines and polylines). The coordinate order for a point must be x, y.

\dpptyN
Y-coordinate of the current vertex (only for lines and polylines). The coordinate order for a point must be x, y.

\dppolycountN
Number of vertices in a polyline drawing primitive.

Arcs

\dparcflipx
This indicates that the end point of the arc is to the right of the start point. Arcs are
drawn counter-clockwise.

\dparcflipy
This indicates that the end point of the arc is below the start point. Arcs are drawn counter-clockwise.

Line Style

\dplinecobN

Blue value for line color.

\dplinecogN
Green value for line color.

\dplinecorN
Red value for line color.

\dplinepal
Render line color using the PALETTERGB macro instead of the RGB macro in Windows.

\dplinedado
Dash-dotted line style.

\dplinedadodo
Dash-dot-dotted line style.

\dplinedash
Dashed line style.

\dplinedot
Dotted line style.

\dplinegrayN
Grayscale value for line color (in half-percentages).

\dplinehollow
Hollow line style (no line color).

\dplinesolid
Solid line style.

\dplinewN
Thickness of line (in twips).

Arrow Style

\dpaendhol
Hollow end arrow (lines only).

\dpaendlN
Length of end arrow, relative to pen width:¶1
Small¶2
Medium¶3
Large

\dpaendsol
Solid end arrow (lines only).

\dpaendwN
Width of end arrow, relative to pen width:¶1
Small¶2
Medium¶3

Large

\dpastarthol
Hollow start arrow (lines only).

\dpastartlN
Length of start arrow, relative to pen width:¶1
Small¶2
Medium¶3
Large

\dpastartsol
Solid start arrow (lines only).

\dpastartwN
Width of start arrow, relative to pen width:¶1
Small¶2
Medium¶3
Large

Fill Pattern

\dpfillbgcbN
Blue value for background fill color.

\dpfillbgcgN
Green value for background fill color.

\dpfillbgcrN
Red value for background fill color.

\dpfillbgpal
Render fill background color using the PALETTERGB macro instead of the RGB macro in Windows.

\dpfillbggrayN
Grayscale value for background fill (in half-percentages).

\dpfillfgcbN
Blue value for foreground fill color.

\dpfillfgcgN
Green value for foreground fill color.

\dpfillfgcrN
Red value for foreground fill color.

\dpfillfgpal
Render fill foreground color using the PALETTERGB macro instead of the RGB macro in Windows.

\dpfillfggrayN
Grayscale value for foreground fill (in half-percentages).

\dpfillpatN
Index into a list of fill patterns. See the fill pattern table that follows for list.

Shadow

\dpshadow
Current drawing primitive has a shadow.

\dpshadxN
X-offset of the shadow.

\dpshadyN
Y-offset of the shadow.

¶The following values are available for specifying fill patterns in drawing objects with the \dpfillpat control word.¶

Value	Fill pattern
0	Clear (no pattern)
1	Solid (100%)
2	5%
3	10%
4	20%
5	25%
6	30%
7	40%
8	50%
9	60%
10	70%
11	75%

12
80%

13
90%

14
Dark horizontal lines

15
Dark vertical lines

16
Dark left-diagonal lines (\\\)

17
Dark right-diagonal lines (///)

18
Dark grid lines

19
Dark trellis lines

20
Light horizontal lines

21
Light vertical lines

22
Light left-diagonal lines (\\\)

23
Light right-diagonal lines (///)

24
Light grid lines

25
Light trellis lines

¶Word 97 through Word 2002 RTF for Drawing Objects (Shapes)¶Basic Format¶The basic format for drawing objects in RTF is as follows:¶{ \shp   .... { *\shpinst { \spp { \sn .... } { \sp .... } } }¶
{ \shprslt   .... }   }¶The first destination (\shp) is always present. This control word groups everything related to a shape together. Following the destination change is basic information regarding the shape. The following keywords with values can appear in any order after the ì{ \shpî control word.¶¶Control word
Meaning

Shape Keywords

\shpleftN
Specifies position of shape from the left of the anchor. The value N is a measurement in twips.

\shptopN
Specifies position of shape from the top of the anchor. The value N is a measurement in twips.

\shpbottomN
Specifies position of shape from the bottom of the anchor. The value N is a measurement in twips.

\shprightN
Specifies position of shape from the right of the anchor. The value N is a measurement in twips.

\shplidN
A number that is unique to each shape. This keyword is primarily used for linked text boxes. The value N is a long integer.

\shpzN
Describes the z-order of the shape. It starts at 0 for the shape that is furthest from the top, and proceeds to the top most shape (N). The shapes that appear inside the header document will have a separate z-order, compared to the z-order of the shapes in the main document. For instance, both the back-most shape in the header and the back-most main-document shape will have a z-order of 0.

\shpfhdrN
Set to 0 if the shape is in the main document. Set to 1 if the shape is in the header document.

\shpbxpage
The shape is positioned relative to the page in the x (horizontal) direction.

\shpbxmargin
The shape is positioned relative to the margin in the x (horizontal) direction.

\shpbxcolumn
The shape is positioned relative to the column in the x (horizontal) direction.

\shpbxignore
Ignore \shpbxpage, \shpbxmargin, and \shpbxcolumn, in favor of \posrelh. The ignored properties will be written for backwards compatibility with older readers that do not understand \posrelh.

\shpbypage
The shape is positioned relative to the page in the y (vertical) direction.

\shpbymargin

The shape is positioned relative to the margin in the y (vertical) direction.

\shpbypara
The shape is positioned relative to the paragraph in the y (vertical) direction.

\shpbyignore
Ignore \shpbypage, \shpbymargin, and \shpbxpara, in favor of \posrelh. The ignored properties will be written for backwards compatibility with older readers that do not understand \posrelh.

\shpwrN
Describes the type of wrap for the shape:¶1
Wrap around top and bottom of shape (no text allowed beside shape)¶2
Wrap around shape¶3
None (wrap as if shape isnít present)¶4
Wrap tightly around shape¶5
Wrap text through shape

\shpwrkN
Wrap on side (for types 2 and 4 for \shpwrN):¶0
Wrap both sides of shape¶1
Wrap left side only¶2
Wrap right side only¶3
Wrap only on largest side

\shpfblwtxtN
Describes relative z-ordering:¶0
Text is below shape¶1
Shape is below text

\shplockanchor
Lock anchor for a shape.

\shptxt
Text for a shape. The text must follow all of the other properties for the shape (inside the \shpinst destination) and must appear in the following format:¶{ \shptxt Any valid RTF for the current text box }¶Note For linked text boxes, the first text box of the linked set has the entire story, so all following text boxes will not have a \shptxt field.

\shprslt
This is where the Word 6.0 and Word 95 drawn object RTF can be placed.

\shpgrp
Specifies a group shape. The parameters following this keyword are the same as those following \shp. The order of the shapes inside a group is from bottom to top in z-order. ¶Inside of a \shpgrp, no { \shprslt .... } fields would be generated (that is, only the root-level shape can have a \shprslt field (this field describes the entire group). For example:¶{ \shpgrp .... { \shp ..... (and all sub-items as usual) }¶
           { \shp ......(and all sub-items as usual) }¶Note { \shpgrp ...... } can be substituted for { \shp ..... } in order to create groups inside of groups.

¶With the exception of \shplid, the control words listed in the preceding table do not apply for shapes that are within a group. For more information about groups, see the
 HYPERLINK \l "_Introduction"

Introduction
 section of this specification.¶¶Control word
Meaning

\background
Specifies the document background. This is a destination control word. It contains the { \shp keyword and all the shape properties.

¶Drawing Object Properties¶The bulk of a drawing object is defined as a series of properties. The { \shp .... control word is followed by { *\shpinst Following the { *\shpinst   is a list of all the properties of a shape. Each of the properties is in the following format:¶¶{ \sp { \sn PropertyName } { \sv PropertyValueInformation } }¶¶The control word for the drawing object property is \sp. Each property has a pair of name (\sn) and value (\sv) control words placed in the shape property group. For example, the vertical flip property is represented as:¶{\sp{\sn fFlipV}{\sv 1}}¶¶Here, the name of the property is fFlipV and the value is 1, which indicates True. All shape properties follow this basic format. Only properties that have been explicitly set for a shape are written out in RTF. Other properties assume the default values (a property may be set to the default value explicitly). ¶The following table describes all the names of properties for drawing objects along with their corresponding value type.¶Property
Meaning
Type of value
Default

Position

posh
Horizontal alignment:¶1
Left¶2
Center¶3
Right¶4
Inside¶5
Outside¶This overrides the absolute position specified in \shpleftN and \shprightN.
Not applicable
Absolute position as specified in \shpleftN and \shprightN.

posrelh
Position horizontally relative to:¶0
Margin¶1
Page¶2
Column¶3
Character

Not applicable
2, if posh is present¶

posv
Vertical alignment:¶1
Center¶2
Column¶3
Bottom¶4
Inside¶5
Outside¶This overrides the absolute position specified in \shptopN and \shpbottomN..
Not applicable
Absolute position as specified in \shptopN and \shpbottomN.

posrelv
Position horizontally relative to:¶0
Margin¶1
Page¶2
Paragraph¶3
Line¶2 is the assumed value if the property is not explicitly written.
Not applicable
2, if posv is present

fLayoutInCell
Allows shape to anchor and position inside table cells.
Boolean
FALSE

fAllowOverlap
Allows shape to overlap other shapes unless it is a shape with None wrapping (\shpwr3), in which case it can always overlap an object with other types of wrapping and vice-versa.
Boolean
TRUE

fChangePage
Anchor may change page.
Boolean
FALSE

¶Object Type

fIsBullet
Boolean
Indicates whether a picture was inserted as a picture bullet.
FALSE

Rotation
Angle
Rotation of the shape.
0

fFlipV
Boolean
Vertical flip, applied after the rotation.
FALSE

fFlipH
Boolean
Horizontal flip, applied after the rotation.
FALSE

ShapeType
Not applicable
See below for values. 0 indicates user-drawn freeforms and polygons.
Not applicable

wzName
String
Shape name (only set through Visual Basic for Applications).
NULL

pWrapPolygonVertices
Array
Points of the text wrap polygon.
NULL

dxWrapDistLeft
EMU
Left wrapping distance from text.
114,305

dyWrapDistTop
EMU
Top wrapping distance from text.
0

dxWrapDistRight
EMU
Right wrapping distance from text.
114,305

dyWrapDistBottom
EMU
Bottom wrapping distance from text.
0

fBehindDocument
Boolean
Place the shape behind text.
FALSE

fIsButton
Boolean
A button shape (That is, clicking performs an action). Set for shapes with

attached hyperlinks or macros.
FALSE

fHidden
Boolean
Do not display or print (only set through Visual Basic for Applications).
FALSE

pihlShape
Hyperlink
The hyperlink in the shape.
NULL

fArrowheadsOK
Boolean
Allow arrowheads.
FALSE

fBackground
Boolean
This is the background shape.
FALSE

fDeleteAttachedObject
Boolean
Delete object attached to shape.
FALSE

fEditedWrap
Boolean
The shapeís wrap polygon has been edited.
FALSE

fHidden
Boolean
Do not display.
FALSE

fHitTestFill
Boolean
Hit test fill.
TRUE

fHitTestLine
Boolean
Hit test lines.
TRUE

fInitiator
Boolean
Set by the solver.
NULL

fNoFillHitTest

Boolean
Hit test a shape as though filled.
FALSE

fNoHitTestPicture
Boolean
Do not hit test the picture.
FALSE

fNoLineDrawDash
Boolean
Draw a dashed line if no line exists.
FALSE

fOleIcon
Boolean
For OLE objects, indicates whether the object is in icon form or not.
FALSE

fOnDblClickNotify
Boolean
Notify client on a double click.
FALSE

fOneD
Boolean
1D adjustment.
FALSE

fPreferRelativeResize
Boolean
For UI only. Prefer relative resizing.
FALSE

fPrint
Boolean
Print this shape.
TRUE

hspMaster
Shape ID
Master shape.
NULL

hspNext
Shape ID
ID of the next shape (used by Word for linked text boxes).
NULL

xLimo
Long integer
Defines the limo stretch point.
Not applicable

yLimo
Long integer
Defines the limo stretch point.
Not applicable

¶Lock

fLockRotation
Boolean
Lock rotation.
FALSE

fLockAspectRatio
Boolean
Lock aspect ratio.
FALSE

fLockAgainstSelect
Boolean
Lock against selection.
FALSE

fLockCropping
Boolean
Lock against cropping.
FALSE

fLockVerticies
Boolean
Lock against edit mode.
FALSE

fLockText
Boolean
Lock text against editing.
FALSE

fLockAdjustHandles
Boolean
Lock adjust handles.
FALSE

fLockAgainstGrouping
Boolean
Lock against grouping.
FALSE

fLockShapeType
Boolean
Lock the shape type (donít allow Change Shape).
FALSE

¶Text Box

dxTextLeft
EMU
Left internal margin of the text box.
91,440

dyTextTop
EMU
Top internal margin of the text box.
45,720

dxTextRight
EMU
Right internal margin of the text box.
91,440

dyTextBottom
EMU
Bottom internal margin of the text box.
45,720

WrapText
Not applicable
Wrap text at shape margins:¶0
Square¶1
Tight¶2
None¶3
Top bottom¶4
Through
0

anchorText
Not applicable
Text anchor point:¶0
Top¶1
Middle¶2
Bottom¶3
Top centered¶4
Middle centered¶5
Bottom centered¶6
Bottom centered baseline
0

txflTextFlow
Not applicable
Text flow:¶0
Horizontal non-ASCII font¶1
Top to bottom ASCII font¶2
Bottom to top non-ASCII font¶3

Top to bottom non-ASCII font¶4
Horizontal ASCII font
0

cdirFont
Direction
Font rotation:¶0
Right¶1
Down¶2
Left¶3
Up
0

fAutoTextMargin
Boolean
Use hostís margin calculations.
FALSE

scaleText
Long integer
Text zoom and scale.
0

lTxid
Long integer
ID for the text. The value is determined by the host.
0

fRotateText
Boolean
Rotate text with shape.
FALSE

fSelectText
Boolean
TRUE if single click selects text, FALSE if two clicks select text.
TRUE

fFitShapeToText
Boolean
Adjust shape to fit text size.
FALSE

fFitTextToShape
Boolean
Adjust text to fit shape size.
FALSE

¶WordArt Effect

gtextUNICODE

String
Unicode text string.
NULL

gtextAlign
Not applicable
Alignment on curve:¶0
Stretch each line of text to fit width¶1
Center text on width¶2
Left justify¶3
Right justify¶4
Spread letters out to fit width¶5
Spread words out to fit width
1

gtextSize
Fixed
Default point size.
2,359,296

gtextSpacing
Fixed
Adjust the spacing between characters (1.0 is normal).
65,536

gtextFont
String
Font name.
NULL

fGtext
Boolean
True if the text effect properties (gtext*) are used. False if these properties are ignored.
FALSE

gtextFVertical
Boolean
If available, an @ font should be used. Otherwise, rotate individual characters 90 degrees counter-clockwise.
FALSE

gtextFKern
Boolean
Use character pair kerning if it is supported by the font.
FALSE

gtextFTight
Boolean
Adjust the spacing between characters rather than the character advance by the gtextSpacingratio.
FALSE

gtextFStretch

Boolean
Stretch the text to fit the shape.
FALSE

gtextFShrinkFit
Boolean
When laying out the characters, consider the glyph bounding box rather than the nominal font character bounds.
FALSE

gtextFBestFit
Boolean
Scale text laid out on a path to fit the path.
FALSE

gtextFNormalize
Boolean
Stretch individual character heights independently to fit.
FALSE

gtextFDxMeasure
Boolean
When laying out characters, measure the distances along the x-axis rather than along the path.
FALSE

gtextFBold
Boolean
Bold font (if available).
FALSE

gtextFItalic
Boolean
Italic font (if available).
FALSE

gtextFUnderline
Boolean
Underline font (if available).
FALSE

gtextFShadow
Boolean
Shadow font (if available).
FALSE

gtextFSmallcaps
Boolean
Small caps font (if available).
FALSE

gtextFStrikethrough
Boolean
Strikethrough font (if available).

FALSE

fGtextOK
Boolean
Text effect (WordArt) supported.
FALSE

gtextFReverseRows
Boolean
Reverse row order.
FALSE

gtextRTF
String
RTF text string.
NULL

¶Picture

cropFromTop
Fixed
Top cropping percentage.
0

cropFromBottom
Fixed
Bottom cropping percentage.
0

cropFromLeft
Fixed
Left cropping percentage.
0

cropFromRight
Fixed
Right cropping percentage.
0

pib
Picture
Binary picture data.
NULL

pibName
String
Picture file name that is used to link to file pictures.
NULL

pibFlags
Not applicable

Flags for linked pictures:¶0
No links (default)¶10
Link to file; save with document¶14
Link to file; do not save picture with document
0

pictureTransparent
Color
Transparent color.
0

pictureContrast
Fixed
Contrast setting.
65,536

PictureBrightness
Fixed
Brightness setting.
0

pictureGamma
Fixed
Gamma correction setting.
0

pictureGray
Boolean
Display grayscale.
0

pictureBiLevel
Boolean
Display bi-level.
0

pibPrint
Picture
Blip to display when printing.
NULL

pibPrintFlags
Not applicable
Flags:¶0
No links (default)¶10
Link to file; save with document¶14
Link to file; do not save picture with document
0

pibPrintName
String
Blip file name.
NULL

pictureActive
Boolean
Server is active (OLE objects only).
FALSE

pictureDblCrMod
Color
Modification used if shape has double shadow.
No change

pictureFillCrMod
Color
Modification for BW views.
Undefined

pictureId
Long integer
Host-defined ID for OLE objects (usually a pointer).
0

pictureLineCrMod
Color
Modification for BW views.
Undefined

¶Geometry

geoLeft
Long integer
Left edge of the bounds of a user-drawn shape.
0

geoTop
Long integer
Top edge of the bounds of a user-drawn shape.
0

geoRight
Long integer
Right edge of the bounds of a user-drawn shape.
21,600

geoBottom
Long integer
Bottom edge of the bounds of a user-drawn shape.
21,600

pVerticies
Array
The points of the shape.
NULL

pSegmentInfo
Array
The segment information.
NULL

pFragments
Array
Fragments are optional, additional parts to the shape. They allow the shape to contain multiple paths and parts. This property lists the fragments of the shape.
NULL

pGuides
Array
Guide formulasóan array of elements that correspond to the VML <formulas> element, where each array entry is a single <f> entry.
NULL

pInscribe
Array
The inscribed rectangle definition.
NULL

pAdjustHandles
Array
The adjust handle definitions - an array of values corresponding to the VML < handles> element.
NULL

adjustValue
Integer
First adjust value from an adjust handle. The interpretation varies with the shape type. Adjust values alter the geometry of the shape in smart ways.
0

adjust2Value
Long integer
Second adjust value.
0

adjust3Value
Long integer
Third adjust value.
0

adjust4Value
Long integer
Fourth adjust value.
0

adjust5Value
Long integer
Fifth adjust value.

0

adjust6Value
Long integer
Sixth adjust value.
0

adjust7Value
Long integer
Seventh adjust value.
0

adjust8Value
Long integer
Eighth adjust value.
0

adjust9Value
Long integer
Ninth adjust value.
0

adjust10Value
Long integer
Tenth adjust value.
0

¶Grouped Shapes

fRelChangePage
Boolean
Anchor may change page.
FALSE

fRelFlipH
Boolean
Vertical flip of an object inside a group, relative to its container and applied after the rotation.
FALSE

fRelFlipV
Boolean
Horizontal flip of an object inside a group, relative to its container and applied after the rotation.
FALSE

groupBottom
Twips
Defines the height of the group rectangle, but does not necessarily indicate position on the page. The difference between groupBottom and groupTop should match the dimensions specified by \shptop and \shpbottom.

20,000

groupLeft
Twips
Defines the width of the group rectangle, but does not necessarily indicate position on the page. The difference between groupLeft and groupRight should match the dimensions specified by \shpleft and \shpright.
0

groupRight
Twips
See meaning for groupLeft.
20,000

groupTop
Twips
See meaning for groupBottom.
0

relBottom
Twips
Defines the bottom of a shape within its parent shape (used for shapes in a group). The measurement is relative to the position of the parent group or drawing.
1

relLeft
Twips
Defines the left of a shape within its parent shape (used for shapes in a group). The measurement is relative to the position of the parent group or drawing.
0

relRight
Twips
Defines the right of a shape within its parent shape (used for shapes in a group). The measurement is relative to the position of the parent group or drawing.
1

relRotation
Fixed
Represents the information stored in the site of a shape, which defines the size and location of the shape in the parent group or drawing. The coordinates are relative to the position of the parent group or drawing. The units are relative to the m_rcg of the parent.
0

relTop
Twips
Defines the top of a shape within its parent shape (used for shapes in a group). The measurement is relative to the position of the parent group or drawing.
0

lidRegroup
Long integer
Regroup ID.
0

¶Fill

fillType
Fill type
Type of fill:¶0
Solid color¶1
Pattern (bitmap)¶2
Texture (pattern with its own color map)¶3
Picture centered in the shape¶4
Shade from start to end points¶5
Shade from bounding rectangle to end point¶6
Shade from shape outline to end point¶7
Shade using the fillAngle
0

fillColor
Color
Foreground color.
White

fillOpacity
Fixed
Opacity.
65,536

fillBackColor
Color
Background color.
White

fillBackOpacity
Fixed
Opacity for shades only.
65,536

fillBlip
Picture
Pattern or texture picture for the fill.
NULL

fillBlipName
String
Picture file name for custom fills.
NULL

fillblipflags
Not applicable
Flags for fills:¶0
No links (default)¶10
Link to file; save picture with document¶14

Link to file; do not save picture with document
0

fillWidth
EMU
Exand the pattern or tile to approximately this size.
0

fillHeight
EMU
Expand the pattern or tile to approximately this size.
0

fillAngle
Fixed
Fade angle specified number of degrees.
0

fillFocus
Not applicable
Linear shaded fill focus percent.
0

fillToLeft
Fixed
The fillToLeft, fillToTop, fillToRight, and fillToBottom values define the "focus" rectangle for concentric shapes; they are specified as a fraction of the outer rectangle of the shade.
0

fillToTop
Fixed
See meaning for fillToLeft.
0

fillToRight
Fixed
See meaning for fillToLeft.
0

fillToBottom
Fixed
See meaning for fillToLeft.
0

fillShadeColors
Array
Custom or preset color ramps for graduated fills on shapes.

NULL

fillOriginX
Fixed
When a textured fill is used, the texture may be aligned with the shape (fFillShape)óif this is done, the default alignment is to the top left. The values FillOriginY, FillShapeOriginX, and fillShapeOriginY allow an arbitrary position in the texture (relative to the top left proportion of the texture's height and width) to be aligned with an arbitrary position on the shape (relative to the top-left proportion of the width and height of the bounding box).¶Note that all these values are fixed point fractions of the relevant width or height.
0

fillOriginY
Fixed
See meaning for fillOriginX.
0

fillShapeOriginX
Fixed
See meaning for fillOriginX.
0

fillShapeOriginY
Fixed
See meaning for fillOriginX.
0

fFilled
Boolean
The shape is filled.
TRUE

fillCrMod
Color
Modification for BW views
Undefined

fillDztype
Measurement type
Measurement type:¶0
Default size, ignore the values¶1
Values are in EMUs¶2
Values are in pixels¶3
Values are fixed fractions of the shape size¶4
Aspect ratio is fixed¶5
EMUs, fixed aspect ratio¶6
Pixels, fixed aspect ratio¶7
Proportion of shape, fixed aspect ratio¶8
Aspect ratio is fixed, favor larger size¶9
EMUs, fixed aspect ratio¶10
Pixels, fixed aspect ratio¶11
Proportion of shape, fixed aspect ratio

0

fillRectBottom
EMU
For shaded fills, use the specified rectangle instead of the shapeís bounding rectangle to define how large the fade will be.
0

fillRectLeft
EMU
For shaded fills, use the specified rectangle instead of the shapeís bounding rectangle to define how large the fade will be.
0

fillRectRight
EMU
For shaded fills, use the specified rectangle instead of the shapeís bounding rectangle to define how large the fade will be.
0

fillRectTop
EMU
For shaded fills, use the specified rectangle instead of the shapeís bounding rectangle to define how large the fade will be.
0

fillShadeColors
Array
Preset array of colors.
NULL

fillShadePreset
Long integer
Special shades.
0

fillShadeType

HYPERLINK \l "MSOSHADETYPE"

Shade
type
Type of shading, if using a shaded (gradient) fill.
Default

fillShape
Boolean
Register pattern on shape.
TRUE

fillUseRect
Boolean
Use the large rectangle.
FALSE

fillWidth
EMU
Size of a metafile texture.
0

fFillOK
Boolean
Define whether the shape can be filled through the user interface (UI) or Microsoft Visual Basic for Applications."
TRUE

fFillShadeShapeOK
Boolean
If TRUE, a concentric shade (repeatedly drawing the shape at a decreasing size) is permitted for this path. If FALSE, a concentric shade is not permitted (generally because the repeated drawing will overwrite the shape boundary).
FALSE

¶Line

lineColor
Color
Color of the line.
Black

lineBackColor
Color
Background color of the pattern.
White

lineType
Line type
Type of line:¶0
Solid fill with the line color¶1
Patterned fill with the lineFillBlip¶2
Textured fill with the lineFillBlip¶3
Picture fill with the lineFillBlip
0

lineFillBlip
Picture
Pattern for the line.
NULL

lineFillBlipFlags
Not applicable
Flags for patterned lines:¶0
No links (default)¶10
Link to file; save picture with document¶14

```
Link to file; do not save picture with document
0

lineFillWidth
EMU
Width of the pattern.
0

lineFillHeight
EMU
Height of the pattern.
0

lineWidth
EMU
Width of the line.
9,525 (0.75pt)

lineStyle
Line style
Line style:¶0
Single line (of width lineWidth)¶1
Double lines of equal width¶2
Double lines, one thick, one thin¶3
Double lines, reverse order¶4
Three lines, thin, thick, thin
0

lineDashing
Dash style
Dashing:¶0
Solid line¶1
Dashed line (Windows)¶2
Dotted line (Windows)¶3
Dash-dotted line (Windows)¶4
Dash-dot-dotted line (Windows)¶6
Dotted line¶7
Dashed line¶8
Long dashed line¶9
Dash-dotted line¶10
Long dash-dotted line ¶11
Long dash-dot-dotted line
0

lineStartArrowhead
Arrow type
Start arrow type:¶0
Nothing¶1
Arrow¶2
Stealth arrow¶3
Diamond¶4
Oval¶6
Open arrow¶7
Chevron arrow¶8
```

Double chevron arrow
0

lineEndArrowhead
Arrow type
End arrow type (for acceptable values see meaning for lineStartArrowhead).
0

lineStartArrowWidth
Arrow width
Start arrow width:¶0
Narrow¶1
Medium¶2
Wide
1

lineStartArrowLength
Arrow length
Start arrow length:¶0
Short¶1
Medium¶2
Long
1

lineEndArrowWidth
Arrow width
End arrow width (for acceptable values see meaning for lineStartArrowWidth).
1

lineEndArrowLength
Arrow length
End arrow length (for acceptable values see meaning for lineStartArrowLength).
1

fLine
Boolean
Has a line.
TRUE

lineBackColor
Color
Background color.
white

lineCrMod
Color
Modification for Black and White views.
undefined

lineDashStyle
Array
Line dash style.
NULL

lineEndCapStyle
Line cap style
Line cap style for shape:¶0
Round¶1
Square¶2
Flat
2

lineFillBlipName
String
Blip file name.
NULL

lineFillDztype
Measurement type
fillWidth/Height numbers:¶0
Default size, ignore the values¶1
Values are in EMUs¶2
Values are in pixels¶3
Values are fixed fractions of shape size¶4
Aspect ratio is fixed¶5
EMUs, fixed aspect ratio¶6
Pixels, fixed aspect ratio¶7
Proportion of shape, fixed aspect ratio¶8
Aspect ratio is fixed, favor larger size¶9
EMUs, fixed aspect ratio¶10
Pixels, fixed aspect ratio¶11
Proportion of shape, fixed aspect ratio
0

lineFillHeight
EMU
Size of a metafile texture.
0

lineJoinStyle
Line join style
Line join style for shape:¶0
Join edges by a straight line¶1
Extend edges until they join¶2
Draw an arc between the two edges
2

lineMiterLimit
Fixed
Ratio of width.
524,288

fLineOK
Boolean
Line style may be set.
TRUE

¶Shadow

shadowType
Not applicable
Type of shadow:¶0
Offset shadow¶1
Double offset shadow¶2
Rich perspective shadow (cast relative to shape)¶3
Rich perspective shadow (cast in shape space)¶4
Perspective shadow (cast in drawing space)¶6
Emboss or engrave
0

shadowColor
Color
Foreground color.
RGB (128,128,128)

shadowHighlight
Color
Embossed color.
RGB (203,203,203)

shadowOpacity
Fixed
Opacity of the shadow.
65,536

shadowOffsetX
EMU
Shadow offset toward the right.
0

shadowOffsetY
EMU
Shadow offset toward the bottom.
0

shadowSecondOffsetX
EMU
Double shadow offset toward the right.
25,400

shadowSecondOffsetY
EMU
Double shadow offset toward the bottom.
25,400

shadowScaleXToX
Fixed
The shadowScaleXToX to shadowWeight define a 3x2 transform matrix that is

applied to the shape to generate the shadow.
65,536

shadowScaleYToX
Fixed
See meaning for shadowScaleXToX.
0

shadowScaleXToY
Fixed
See meaning for shadowScaleXToX.
0

shadowScaleYToY
Fixed
See meaning for shadowScaleXToX.
65,536

shadowPerspectiveX
Fixed
See meaning for shadowScaleXToX.
0

shadowPerspectiveY
Fixed
See meaning for shadowScaleXToX.
0

shadowWeight
Fixed
See meaning for shadowScaleXToX.
32,768

shadowOriginX
Fixed
Defines the position of the origin relative to the center of the shapeó this position is determined based on a proportion of the rotated shape width and height. The shape will be rotated and then positioned such that the point is at (0,0) before the transformation is applied.
0

ShadowOriginY
Fixed
See meaning for shadowOriginX.
0

fShadow
Boolean
Turns the shadow on or off.
FALSE

shadowCrMod
Color
Modification for BW views.

Undefined

fshadowObscured
Boolean
Microsoft Excel 5 style shadow.
FALSE

fShadowOK
Boolean
Shadow may be set.
TRUE

¶3-D Effects

c3DSpecularAmt
Fixed
Specular amount for the material.
0

c3DDiffuseAmt
Fixed
Diffusion amount for the material.
65,536

c3DShininess
Long integer
Shininess of the material.
5

c3DEdgeThickness
EMU
Specular edge thickness.
12,700

c3DExtrudeForward
EMU
Extrusion amount forward.
0

c3DExtrudeBackward
EMU
Extrusion amount backward.
457,200

c3DExtrusionColor
Color
Color of the extrusion.

f3D
Boolean

True if shape has a three-dimensional (3D) effect, False if it does not.
FALSE

fc3DMetallic
Boolean
True if shape uses metallic specularity, False if it does not.
FALSE

fc3DUseExtrusionColor
Boolean
Extrusion color is set explicitly.
FALSE

fc3DLightFace
Boolean
Light the face of the shape.
TRUE

c3DYRotationAngle
Angle
Degrees about y-axis.¶If fc3DconstrainRotation (a Boolean property which defaults to True) is True, then the rotation is restricted to x-y rotation. In addition, the final rotation results from first rotating by c3DYRotationAngle degrees about the y-axis and then by c3DXRotationAngle degrees about the z-axis. ¶If fc3DconstrainRotation is False, then the final rotation results from a single rotation of c3DrotationAngle about

AIFF Format
Motorola byte order
Incomplete information

Information from File Format List 2.0 by Max Maischein.

--------!-CONTACT_INFO----------------------

If you notice any mistakes or omissions, please let me know! It is only with YOUR help that the list can continue to grow. Please send all changes to me rather than distributing a modified version of the list.

This file has been authored in the style of the INTERxxy.* file list by Ralf Brown, and uses almost the same format.

Please read the file FILEFMTS.1ST before asking me any questions. You may find that they have already been addressed.

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--------!-DISCLAIMER------------------------

DISCLAIMER: THIS MATERIAL IS PROVIDED "AS IS". I verify the information contained in this list to the best of my ability, but I cannot be held responsible for any problems caused by use or misuse of the information, especially for those file formats foreign to the PC, like AMIGA or SUN file formats. If an information it is marked "guesswork" or undocumented, you should check it carefully to make sure your program will not break with an unexpected value (and please let me know whether or not it works the same way).

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Some file formats were not released by their creators, others are regarded as proprietary, which means that if your programs deal with them, you might be looking for trouble. I don't care about this.

The Audio Interchangeable File Format files are digital audio files stored in the IFF format; the samples are stored in signed PCM. The header block is [AIFF], different subblocks are :

[AUTH]
The authors information; optional
[COMM]
This record stores information about the sampled data :

OFFSET	Count	TYPE	Description
0000h	1	word	??? number of channels ??? ??? number of instrument samples ???
0002h	1	dword	Sample length
0006h	1	dword	lower frequency
000Ah	1	dword	maximum frequency
000Dh	1	dword	???

[MARK]
[NAME]
The name of the instrument / sample
[SSND]
The stored sample data.

Further information wanted.
EXTENSION:AIF,IFF

CDA music tracks file format
by Wojtek Kaniewski 1997

Note: Everything in this file is based on my own investigations. All information that you'll find in this text file do not come from Microsoft Corp.

CDA files are generally RIFF resources. The RIFF id of .CDA file is "CDDA" (43h, 44h, 44h, 41h). They contain only one data block called "fmt " (66h, 6dh, 74h, 20h). In current version of .CDA file, this block is 24 bytes long. Here's structure of it:

Offset	Length	Description
00h	02h	CDA file version. Currently equals 1. If it has other value, following data may be out of date.
02h	02h	Number of track.
04h	04h	CD disc serial number (the one stored in CDPLAYER.INI)
08h	04h	Beginning of the track in HSG format.
0Ch	04h	Length of the track in HSG format.
10h	04h	Beginning of the track in Red-Book format.
14h	04h	Length of the track in Red-Book format.

As you see, time is represented in two formats: HSG and Red-Book. HSG can be calculated as following:

$$\text{time} = \text{minute} * 4500 + \text{second} * 75 + \text{frame}$$

Red-book is much easier to use, because it contains minutes, seconds and frames in unmodified form, byte-packed:

Offset	Length	Description
00h	01h	Frame
01h	01h	Second
02h	01h	Minute
03h	01h	not used

Now, I'll show you an example file. First part is a hex dump of the file, the second is the explanation of the fields.

```
   52 49 46 46 24 00 00 00  43 44 44 41 66 6D 74 20  RIFF$...CDDAfmt
   18 00 00 00 01 00 04 00  B8 24 F6 00 F7 11 01 00  .........$......
   B4 5C 00 00 0A 25 0F 00  20 10 05 00              .\...%.. ...
```

```
   01 00       - first version of CDA file :)
   04 00       - fourth track
   B8 24 F6 00 - serial number of CD in CDPLAYER.INI is [F623B8]

   F7 11 01 00 - begining of track in HSG format
   B4 5C 00 00 - length of track in HSG format

   0A 25 0F 00 - begining of track in Red-Book format (15:37)
   20 10 05 00 - length of track in Red-book format (05:16)
```

That's all. It should be enough to write CDA Viewer :) If you need more info or something isn't clear, feel free to write.

Wojtek Kaniewski
wojtekka@logonet.com.pl

COL Format
Intel byte order

Information from File Format List 2.0 by Max Maischein.

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A COL file stores the rgb values for entries in the color palette. Both Animator Pro and the original Animator produce COL files, but the formats are different. To process a COL file for input, check the file size. If it is exactly 768 bytes, the file is an original Animator COL file. If the file is any other size, it is an Animator Pro COL file - which makes identification almost impossible.

Animator Pro COL Files do have a 8-byte header :

OFFSET	Count	TYPE	Description
0000h	1	dword	File size, including this header
0004h	1	word	ID=0B123h
0006h	1	word	Version, currently 0

Following the file header are palette entries in rgbrgb... order. Each of the r, g, and b components is a single byte in the range of 0-255. Generally, there will be data for 256 palette entries, but this cannot be assumed. The actual number of palette entries is ((size-8)/3); if this value is not an even multiple of three, the file is corrupted.

Original Animator COL Files

A COL file created by the original Animator is exactly 768 bytes long. There is no file header or other control information in the file.

EXTENSION:COL
OCCURENCES:PC
PROGRAMS:Autodesk Animator, Autodesk Animator Pro
SEE ALSO:FLIc,FLT

LZW compression used to encode/decode a GIF file by Bob Montgomery [73357,3140]

ENCODER

Consider the following input data stream in a 4 color (A, B, C, D) system. We will build a table of codes which represent strings of colors. Each time we find a new string, we will give it the next code, and break it into a prefix string and a suffix color. The symbols \ or --- represent the prefix string, and / represents the suffix color. The first 4 entries in the table are the 4 colors with codes 0 thru 3, each of which represents a single color. The next 2 codes (4 and 5) are the clear code and the end of image code. The first available code to represent a string of colors is 6. Each time we find a new code, we will send the prefix for that code to the output data stream.

```
A B A B A B A B B B A B A B A  A  C  D A C D A D  C A B A A A B A B .....
\/\/---/-----/\/---/-------/\/ \/ \ /\/---/---/\ /\/-----/---/---/
6 7   8     9 10 11      12 13 14 15 16  17 18 19 20   21  22  23     Code
    6  8        10    8                14  16        8    13  7       Prefix
```

The encoder table is built from input data stream. Always start with the suffix of last code, and keep getting colors until you have a new combination.

```
Color     Code      Prefix    Suffix    String    Output
 A        0                             -
 B        1                             -
 C        2                             -
 D        3                             -
Clear     4                             -
End       5                             -
 A \                A         A                   First color is a special case.
 B /  \   6         A         B         AB        A
 A |  /   7         B         A         BA        B
 B |
 A /  |   8         6         A         ABA       6
 B    |
 A    |
 B \  /   9         8         B         ABAB      8
 B /  |   10        B         B         BB        B
 B    |
 A |  /   11        10        A         BBA       10
 B |
 A |
 B |
 A /  \   12        9         A         ABABA     9
 A \  /   13        A         A         AA        A
 C /  \   14        A         C         AC        A
 D \  /   15        C         D         CD        C
 A /  |   16        D         A         DA        D
 C    |
 D |  /   17        14        D         ACD       14
 A |
 D /  \   18        16        D         DAD       16
 C \  /   19        D         C         DC        D
 A /  |   20        C         A         CA        C
 B    |
 A    |
 A |  /   21        8         A         ABAA      8
 A |
 B /  |   22        13        B         AAB       13
 A    |
 B    /   23        7         B         BAB       7
```

The resultant output stream is: A B 6 8 B 10 9 A A C D 14 16 D C 8 ....
The GIF encoder starts with a code length of 2+1=3 bits for 4 colors, so when the code reaches 8 we will have to increase the code size to 4 bits. Similarly, when the code gets to 16 we will have to increse the code size to 5 bits, etc. If the code gets to 13 bits, we send a clear code and start over. See GIFENCOD.GIF for a flow diagram of the encoding process. This uses a tree method to search if a new string is already in the table, which is much simpler, faster, and easier to understand than hashing.

===

DECODER

We will now see if we can regenerate the original data stream and duplicate the table looking only at the output data stream generated by the encoder on the previous page. The output data stream is:

A B 6 8 B 10 9 A A C D 14 16 D C 8 ....

The docoding process is harder to see, but easier to implement, than the encoding process. The data is taken in pairs, and a new code is assigned to each pair. The prefix is the left side of the pair, and the suffix is the color that the right side of the pair decomposes to from the table. The decomposition is done by outputing the suffix of the code, and using the prefix as the new code. The process repeats until the prefix is a single color, and it is output too. The output of the decomposition is pushed onto a stack, and then poped off the stack to the display, which restores the original order that the colors were seen by the encoder. We will go thru the first few entries in detail, which will hopefully make the process clearer.

The first pair is (A B), so the prefix of code 6 is A and the suffix is B, and 6 represents the string AB. The color A is sent to the display.

The 2nd pair is (B 6), so the prefix of code 7 is B and the suffix is the the last color in the decomposition of code 6. Code 6 decomposes into BA, so code 7 = BA, and has a suffix A. The color B is sent to the display.

The 3rd pair is (6 8) and the next code is 8. How can we decompose 8. We know that the prefix of code 8 is 6, but we don't know the suffix. The answer is that we use the suffix of the prefix code; A in this case since the suffix of 6 is A. Thus, code 8 = ABA and has a suffix A. We decompose 6 to get BA, which becomes AB when we pop it off the stack to the display.

The 4th pair is (8 B), so code 9 has a prefix of 8 and a suffix of B, and code 9 = ABAB. We output ABA to the stack, and pop it off to the display as ABA.

The 5th pair is (B 10) and the next code is 10. The prefix of code 10 is B and the suffix is B (since the prefix is B). Code 10 = BB, and we output the prefix B to the display.

The 6th pair is (10 9) and the next code is 11. Thus the prefix of code 11 is 10 and the suffix is the last color in the decomposition of 9, which is A. Thus code 11 = BBA, And we output BB to the display.

So far, we have output the correct colors stream A B AB ABA B BB to the display, and have duplicated the codes 6 thru 11 in the encoder table. This process is repeated for the whole data stream to reconstruct the original color stream and build a table identical to the one built by the encoder. We start the table with codes 0-5 representing the 4 colors, the clear code, and the end code. When we get to code 8, we must increse the code size to 5 bits, etc. See GIFDECOD.GIF for a flow diagram of the decoding process.

I Hope this helps take some of the mystery out of LZW compression, which is really quite easy once you 'see' it.   Bob Montgomery