

N I N T E N D O
NITRO-System
g2dcvtr Manual

Version 1.0.6

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Revision History

Version	Revision Date	Description
1.0.6	2007/04/05	Implemented a feature that checks for illegal character numbers within cells (added the <code>-cic</code> option).
1.0.5	2007/03/14	Added the <code>-cza</code> option.
1.0.4	2006/05/29	Fixed a problem with the border radius calculation. Added the <code>-afs</code> option.
1.0.3	2005/12/26	Corrected a problem related to the VRAM transfer information. Made changes such that when the cell's region information is calculated, the same data are output for OBJ set to double-size affine mode as for OBJ not set to this mode.
1.0.2	2005/09/01	Added the <code>-cr</code> option. Corrected a problem concerning an excessive output of VRAM transfer information. Added the <code>-rtp</code> option. Added the <code>-oua</code> option.
1.0.1	2005/06/06	Added warning about 1D mapping character data with invalid size. Added the <code>-ncn</code> option, which uses nce file titles as output NCGR and NCBR file names.
1.0.0	2005/01/31	Fixed the bug that caused file conversion to fail when the related file path information used absolute path names. Applied the extended comment information to the label definition header file. Fixed the bug that caused the cell animation playback mode information to be set incorrectly when converting multicell data. Deleted the source file format output feature.
0.9.1	2004/12/06	Added the <code>-aXXX</code> options (specification of animation element types).
0.9.0	2004/10/12	Changed the specifications for output messages. Added the control option (<code>-v</code>). Added the <code>-pcm</code> option to output palette compression format data. Added the <code>-br</code> option to output cell rectangle area information data. Added a description of converter return values.
0.8.0	2004/09/16	Implemented the BG screen data conversion feature.
0.7.0	2004/09/02	Corrected typos. Added command line examples. Described the feature for replacing incorrect scale parameters.
0.6.0	2004/08/10	Added the <code>-bg</code> option. Added the <code>-lbl</code> option. Added the sections on using label definition header files and converting character files.

Version	Revision Date	Description
0.5.0	2004/08/02	Changed the names of the converter and manual. Added support for the 8/2 version. Added an option.
0.4.0	2004/07/20	Added support for the 8/20 version.
0.3.0	2004/06/22	Added support for the 6/22 version.
0.2.0	2004/06/10	Added support for the 6/10 version. Corrected errors.
0.1.0	2004/05/10	Initial version.

1 Introduction

This document describes how to use the g2dcvtr (`g2dcvtr.exe`) program. g2dcvtr is a Windows application that converts the intermediate binary format, output by NITRO-CHARACTER, to the runtime binary format used by the NITRO-System G2D runtime library.

Note: NITRO-CHARACTER is a 2D graphics editing application that is supplied with NITRO-System.

2 Use

g2dcvtr.exe [filename] [-m] [-bmp] ...

If the output is successful, a value of 0 is returned. If the output fails, a non-zero value is returned.

[filename]	Required	<p>Specifies the path + filename + extension to be converted.</p> <p>g2dcvtr outputs the specified files and the files related to them in a chain. For example, when specified, <code>ncc</code>, <code>ncg</code>, and <code>nc1</code> files are also output. If the file extension is omitted, output for path + filename + supported file extensions will be attempted. In this case, related files will not be output.</p>
[-bmp]	Optional	<p>Converts to and outputs bitmap format when there is a character file input.</p> <p>If software sprite rendering is used, bitmap format character data (=texture data) are required.</p> <p>Caution: If bitmap format data are used, they must be of a size that can be referenced as texture data. Use caution with custom-size characters.</p>
[-vta]	Optional	<p>Outputs the data into a VRAM transfer animation format.</p> <p>To be usable, these data must be output with the character compression mode set to OFF and in the 1D mapping mode.</p>
[-o/]	Optional	<p>Specifies the data output directory.</p> <p>Describe the path without leaving a blank space after <code>-o/</code>.</p> <p>If the specified directory does not exist, there will be no output.</p>
[-pcm]	Optional	<p>Extracts the used palette number parts from the palette data and outputs them as data.</p> <p>If all 16 colors of a 16-color palette are set to black (RBG(0,0,0)), or if all 256 colors of a 256-color extended palette are set to black, the palette number is treated as unused. This option is meaningless in the 256-color palette mode.</p> <p>To properly recover data output with this option, the data must be loaded using <code>NNS_G2dLoadPaletteEx()</code>.</p>

<code>[-bg]</code>	Optional	<p>Converts the character file (<code>.ncg</code>) to character data for BG.</p> <p>When converting the file as the OBJ character data without using the <code>-bg</code> option, the associated cell data are needed. This is automatically specified when converting a <code>*.ncg</code> file that is referenced from a <code>*.nsc</code> file as an associated file.</p>
<code>[-v]</code>	Optional	<p>Enables output of the detailed operation messages of the converter.</p> <p>If this option is not specified, error messages will output only when an error to the standard output has occurred. If this option is specified, detailed operation messages are output to the standard output.</p>
<code>[-lbl]</code>	Optional	<p>Outputs a header file which upon output defines another name for the animation sequence numbers.</p> <p>For details, see Chapter 5, How to use the Label Definition Header File.</p>
<code>[-br]</code>	Optional	<p>Outputs the cell information that includes rectangular area information.</p> <p>To use the data output specified by this option, you must use the October 12, 2004 version (or later) of the G2D Runtime Library.</p>
<code>[-aXXX]</code>	Optional	<p>Specifies the animation element type for the output animation data.</p> <p>The three options are <code>-ai</code>, <code>-aisrt</code>, and <code>-ait</code>. With <code>-ai</code>, output is the animation with only the index value. With <code>-aisrt</code>, output is the animation with index value + SRT (scale, rotate, translate) value. With <code>-ait</code>, output is the animation with index value + T value.</p>
<code>[-ncn]</code>	Optional	<p>Uses <code>.nce</code> file titles as the output NCGR (NCBR) file titles. Use this option when several 1D mapping format <code>.nce</code> files are referencing a single <code>.ncg</code> file.</p>
<code>-cr/ [XYWH]</code>	Optional	<p>Defines the input rectangle used when converting <code>.ncg</code> files.</p> <p>X and Y define the placement of the upper-left corner of the input rectangle of the character unit within the character data set. W and H specify the size of the character unit input rectangle.</p> <p>Specify each value such that the total character size is not exceeded.</p> <p>Currently, values for X and W are invalid. Regardless of the specified values, X=0 and W=total character data width used.</p>

[-rtp]	Optional	Removes transparent pixels from the boundary region when calculating boundary region information.
[-oua]	Optional	Extracts and outputs the comment characters in the extended comment field as the extended attribute information. For a detailed description see Chapter 6 Using the -oua Option.
[-afs]	Optional	Aligns the size of the output file to be a multiple of 4 bytes.
[-cza]	Optional	Checks for animation frames for which zero was specified as the number of displayed animation frames, and treats them as illegal data.
[-cic]	Optional	Checks if there is illegal data in the character number referenced by an OBJ in the cell. (This option is used to determine the cause of a problem, such as when the converter is forced to stop.)

Deleted Options

[-src]	Optional	Outputs the output data converted into C source file format.
[-m]	Optional	When there is animation input, forces the conversion of animation to multicell animation.

This feature is provisional until multicell animation support becomes available with NITRO-CHARACTER.

Example: `>g2dcvtr.exe c:/data/test.nce -bmp`
`>g2dcvtr.exe c:/data/test.nce -o/d:/data`

3 How to use Output Files

Load each project with the NITRO-SDK file system using the output file. For details, see the file system documentation. Most of the test programs in the `$(NITROSYSTEM_ROOT)/Build/Tests/g2d/` folder use the file system to load resources. Use these test programs as examples.

4 How to use Output Files (C Source File Format)

The previous version of g2dcvtr included a feature for outputting a C source file format, but this feature was eliminated. With G2D, the standard resource load method is used for the NITRO-SDK file system and binary format. In the previous version of G2DConv, the feature for C source file format output provided a means for loading resources with the old NITRO-SDK, which did not have a fully developed file system.

5 How to use the Label Definition Header File

If you specify the `-lbl` option, the converter generates a header file that defines the label number alias based on the label character string information in the animation data. Because the label number and the animation sequence number have a one-to-one correspondence, the alias can be used for the animation sequence number. The following naming conventions apply.

File names:

File title name_file extension_LBLDEFS.h

Aliases

File extension_File title name_Label name

The converter does not detect identical alias names. The user must deal with them to prevent issues.

Output example: Label definition file output for data.NANR

Output file: data_NANR_LBLDEFS.h

Contents:

```
//-----  
// This file was generated by g2dcvtr.exe converter.  
// Avoid editing this file.  
// data ==> Thursday, August 05, 2004.  
//-----  
#define    NANR_data_walk1      // Extended comment information is inserted as  
                                // a comment statement.  
#define    NANR_data_walk2      // Comment not set  
#define    NANR_data_run        // Comment not set  
#define    NANR_data_stop       // Comment not set  
#define    NANR_data_sleep      // Comment not set  
#define    NANR_data_atack      // Comment not set
```

6 Using the -oua Option

The `-oua` option is used to output extended user attributes. It has been available since Version 2.8 of g2dcvtr.

If `-oua` is specified, the converter looks for the extended comment string and attempts to extract attribute data. Attributes within the extended comment appear as `<XXX>`, where `XXX` is a character string that can be interpreted as a 32-bit unsigned hexadecimal integer.

The extraction algorithm process is shown below.

1. The software searches within the extended comment for a character string that starts with `@A`.
2. If the string `@A<` is found, the software searches for `<`.
3. Once the character `<` is found, the character string between `@A<` and `<` is read as a 32-bit unsigned hexadecimal number.

Be sure to note the following points:

- If the search fails to find `@A<` or `<` within the extended comment string, the attribute value will be set to zero.
- `-oua` is supported by the `.nce` files of Versions 1.04 and later, generated by NITRO-CHARACTER Versions 1.5 and later. If these conditions are not met, a warning is displayed and no attributes are output.

7 Other Features

7.1 Converting `.ncg` (Character Data) Files

`g2dcvtr` is not allowed to perform binary conversions on unpaired `.ncg` files used for OBJ character data. To be converted, each `.ncg` file must be paired with a `.nce` file (cell definition data). This restriction serves to prevent the creation of invalid data and to reduce the burden of data management.

`.ncg` and `.nce` files are associated with each other, and `.nce` data are required to correctly convert `.ncg` data that use the 1D mapping mode. Therefore, if the conversion of unpaired `.ncg` files were permitted, invalid `.ncg` files without the corresponding `.nce` files would be generated.

To indicate that the `.ncg` file is for the BG character data, use the `-bg` option when converting unpaired `.ncg` files.

`.ncg` files are always converted as files in the 2D mapping mode.

The conversion of a `.ncg` file referenced by a `.nsc` (screen data) file as an associated file is performed with the assumption that the `-bg` option is specified. Therefore, `-bg` does not need to be specified.

7.2 Replacing Incorrect Scale Parameters

When `g2dcvtr` finds an incorrect scale parameter in SRT (Scale, Rotate, and Translate) animation that is stored in the NCE or NMC file, the value is replaced with the default scale value (scale = 1.0). When `g2dcvtr` finds the scale value whose absolute value is smaller than the smallest possible value $1/4096 (\approx 0.00024)$ for the scale value format `fx32` to be expressed in the runtime library, it replaces the scale value with $1/4096$ (or with $-1/4096$).

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