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Virtual CD System Supplementary Manual Ver. 1.0

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Virtual CD System Supplementary Manual Ver. 1.0

(There is no page 2 in the original Japanese document.)

1.0 Supplementary Information on the Emulator

1.1 New Options for VCDEMU.EXE

The new options included in **VCDEMU.EXE**and their uses are discussed below.

`-ib:`

Sets the size of the input buffer. An integer between 2 and 8 can be specified. For example, the following sets a size of 8 KB (4 KB x 2):

```
-ib 2
```

The default size is 32 KB (specified by a value of 8).

`-vb:`

Specifies the size of the transfer buffer. An integer between 14 and 37 can be specified. This option specifies the number of buffers that are each equivalent to 1 sector in size. For example, when the following is specified,

```
-vb 14
```

14 transfer buffers are allocated. The default is 37 transfer buffers. However, fewer buffers may be allocated depending upon the available memory in the system.

After startup, the input buffer size and the number of transfer buffers allocated are displayed on the lower right area of the screen as follows.

Buffer: 02/07

The numerator indicates the input buffer size (in 4 KB units) and the denominator the number of transfer buffers. The number displayed for transfer buffers is an integer value divided by 2.

1.2 The Number of Tracks and Indexes that Can Be Emulated

When there are an unusually large number of tracks or indexes within a track, the two options described earlier (`-ib` and `-vb`) can be used to conserve memory and ensure successful emulations. This is done by decreasing the amount of buffering or adjusting the balance between the input buffer and transfer buffer.

The appropriate settings will vary depending upon the amount of free space available in the conventional memory of the PC compatible being used, the length of the file name, and so on. The table below is an example of settings when 585 KB of free space is available in conventional memory.

Total No. of Indexes	-ib Setting	-vb Setting
2000	Setting not required	Setting not required
3000	Setting not required	Setting not required
4000	Setting not required	Setting not required
4500	4	Setting not required
5000	2	14

If the above options are not set at startup, the program can emulate approximately 4,000 tracks and indexes (i.e., the total number of tracks x number of indexes). With the minimum setting of `-ib 2 -vb 14`, the total number is about 5,000. When the default settings are used, approximately 40 indexes per each track with a maximum of 99 tracks can be emulated, or a disc image with up to 50 indexes can be emulated when the buffer setting is at a minimum.

The disc builder program **VCDBUILD.EXE** on the Virtual CD can create disc images for approximately 10,000 tracks·indexes (maximum 99 tracks x 99 indexes). However, the number of tracks·indexes that can be emulated using the emulation program **VCDEMU.EXE** is limited to approximately 5,000.

1.3 Scan Play Function

CD-DA tracks can be played back in fast forward or in reverse while in real-time emulation mode. Playback can be controlled from the SEGA SATURN's Audio CD control screen. Take note that normal scan play is not possible in the direct DOS access mode.

2.0 Supplementary Description of Scripts

2.1 Cancellation of VCDPRE.EXE Restrictions

(1) The keywords in a script statement are no longer case sensitive. For example, `Disc` can now be `DISC`, `disc`, `diSc` and so on. Parameter statements, however, remain case sensitive and therefore the disc type `CDROM` or `SEMIXA` must be specified in upper case in the `Session` lines.

(2) All keywords may now be used.

(3) `PVD` and `SVD` do not need to be defined since data is automatically added by the system for the two keywords `LPath` and `MPath`.

(4) The relative position parameter defined in the `Extent` line may be omitted.

(5) An empty line need not be specified in the `LeadIn` definition . The lead-in area is not output to the disc image that is created.

2.2 Restrictions and Other Notes

(1) The disc types that can be defined in a `Session` line are now limited to `CDROM` and `SEMIXA`; `CDI` and `ROMXA` cannot be defined.

(2) The only track type definable in a `LeadIn` line is now `MODE1`.

(3) The track type that can be defined in a `LeadOut` line is limited to that used in the final track. Therefore, if the final track is a CD-DA track, the lead-out area must also be a CD-DA track.

(4) Specify a empty line in the `LeadOut` definition. When omitted, the size of the lead-out area output to the disc image becomes 0. While the emulator will function with a lead-out area of 0, *a size of 300 or more blocks is recommended to ensure proper operation*.

(5) Specify a `PostGap` line as needed at the end of the data track. If omitted, the post gap size becomes 0.

(6) For the ISO9660 file name + version number defined in a `File` line:

- When the version number is omitted after the semicolon in `filename.extension;versionnumber`, a version number of `;1` is added as the default.
- When `;0` is stated as the version number, `;0` is omitted and the file name is set without a version number.

(7) Channel-interleaving between MPEG files and multi-DOS files is achieved by a two pass method. This method involves building an ISO11172 stream by multiplexing the MPEG video stream and MPEG audio stream, and then using this ISO11172 stream as a source file to channel-interleave again with the multi-DOS file.

Steps for Execution

1) Multiplex the MPEG video stream and MPEG audio stream to create a script (script 1) that outputs the ISO11172 stream as a DOS file.
2) Run **VCDBUILD**using script 1.
3) Create a script (script 2) that channel-interleaves the resulting ISO11172 stream and the multi-DOS file.
4) Run **VCDBUILD**using script 2.

(8) When an ISO file includes a `MpegMultiplex` line, a `SectorRate` line **must be** defined immediately after the `File` line.

(9) Any positive integer value between 1 and 65535 can either be specified for the sector rate parameter defined in the `SectorRate` line or omitted. When omitted, the parameter becomes 150.

```
<SectorRateLine>::= SectorRate<sector rate>[CR] | SectorRate [CR]
```

(10) The bit rate defined in the `BitRate` line has a decimal point. When the rate is an integer, append a ".0" to the integer.

(11) The new file source types `AUDIO` and `MPEG_VIDEO` can be defined in the `SourceType` line.

When storing audio data other than ADPCM in the 2324 byte user data area in the form 2 sector, state `AUDIO` as the file source type. When using a `FileSource` command to define an MPEG video stream, state `MPEG_VIDEO` as the file source type. This statement identifies the file source as an MPEG video stream and adds 16 words of "0" data immediately after the `sequence_end_code` stated at the end of the MPEG video stream. This statement is necessary to properly replay an MPEG video stream on the SEGA SATURN.

```
FileSource          Input filename
SourceType          MPEG_VIDEO
EndFileSource
```

In addition, when the MPEG video stream is defined using the `MpegStream` command, specifying the parameter `VIDEO` will perform the equivalent process.

```
MpegStream   Source filename   VIDEO
```


(12) Use the `CodingInformation` command to set subheader coding information. The Virtual CD system cannot set the coding information by identifying the file source. However, if `VIDEO` is specified as the data type in the `MpegStream` line during `MpegMultiplex`, the coding information is set to `0FH`. When `AUDIO` is specified, `7FH` is set.

No particular coding information is defined for a game CD. There also are no settings defined for `AUDIO` and `MPEG_VIDEO` (described in item 11). Please refer to section 4.3.2.4 in the specification document *CD-ROM XA II.4*. for the settings when the `AUDIO` sector source is ADPCM or the `VIDEO` sector source is ASM or EVM.

(13) The `MpegFlush` command has been added as a new command keyword. An `MpegFlush` line adds 16 KB of "0" data immediately prior to the `sequence_end_code` recorded at the end of the MPEG video stream.

```
<MpegFlush line> ::= MpegFlush [CR]
<File source definition line>::=<SubHeader line>|<Offset
   line>|<BitRate line>|<UnitSize line>|<GapSize line>|<RealTime
   line>|<BeginTimeF line>|<EndTimeF line>|<DataType line>|<AutoEOR
   line>|<CodingInformation line>|<SourceType line>|<SubSource
   line>|<SubEmpty line>|<MpegFlush line>
```

(14) When the type of the data specified in the `MpegStream` line in the MPEG stream definition is `DATA`, FORM1/FORM2 must be specified in a `DataType` line.

```
<MPEG stream>::=<MpegStream line> <BitRate line> <DataType line>
   <MpegFlush line> <EndMpegStream line>|<MpegStream line> <BitRate
   line> <DataType line><MpegFlush line> <EndMpegStream line> <MPEG
   stream>
```

(15) Relative positions specified as `minute:second:frame` can also be specified by FAD.

```
<relative position>::=<minute>:<second>:<frame>|<FAD>
<FAD>::=<numerical string>
```

(16) A hyphen "-" can also be used in addition to a forward slash "/" as a delimiter when specifying **VCDPRE.EXE** and **VCDBUILD.EXE** options. New options have also been added.

Format:

```
VCDPRE     Startupfile [/i /c /d /f /a]
or
VCDPRE     Startupfile [-i -c -d -f -a]
```

Added Option:

```
/a or -a   Specifies options i, c, d and f as a batch
```

Format:

```
VCDBUILD   Startupfile [/i /c /d /f /a /n /s]
or
VCDBUILD   Startupfile [-i -c -d -f -a -n -s]
```

Added Options:

```
/n or -n   ECC not generated
/s or -s   Execution history not displayed
```

2.3 Example of a Script Statement

The following examples show how to configure a disc by using a script. Previously released manuals describe the correct syntax of output file names used in parameters. When this example refers to "output file name", for example, it simply means that an output file is specified.

Items in angle brackets (< >) followed by opt indicate items that may be omitted. If items appear in brackets ({ | }) separated by |, then one of the items must be chosen. Everything after a semicolon (;) is a comment.

(1) Sample Script for a CD-ROM (MODE1 + CD-DA) Disc

```
Disc          output filename
Session       CDROM <output filename>opt
LeadIn        MODE1
EndLeadIn
;
<SystemArea MSDOS filename>opt
;
Track   MODE1
   Volume     ISO9660     output filename
   PrimaryVolume    0:2:16
        <PVD definition line>opt          ;......(1)
   EndPrimaryVolume
   <SupplementaryVolume   relative time>opt
        <SVD definition line>opt          ;......(2)
   <EndSupplementaryVolume>opt
   <BootRecord      relative time>opt
        <Boot record definition line>opt  ;......(3)
   <EndBootRecord>opt
   EndVolume
;
   File ISO9660 filename  <output filename>opt
        <file definition line>opt         ;......(4)
   FileSource input filename
        <file source definition line>opt  ;......(5)
   EndFileSource
   EndFile
   ;
   ;    File ~ EndFile
   ;
   PostGap 75
EndTrack
;
Track   CDDA
   Pause      150
   FileSource input filename
        <file source definition line>opt  ;......(5)
   EndFileSource
EndTrack
;
;  Track ~ EndTrack
;
;

LeadOut       CDDA
Empty         300
EndLeadOut
EndSession
EndDisc
```


(2) Sample Script for a CD-ROM XA (MODE1+MODE2+CD-DA) Disc

```
Disc          output filename
Session       SEMIXA      <output filename>opt
LeadIn        MODE1
EndLeadIn
;
<SystemArea MSDOS filename>opt
;
Track   MODE1
   Volume     ISO9660     output filename
   PrimaryVolume          0:2:16
        <PVD definition line>opt            ;......(1)
   EndPrimaryVolume
   <SupplementaryVolume  relative time>opt
        <SVD definition line>opt            ;......(2)
   <EndSupplementaryVolume>opt
   <BootRecord      relative time>opt
        <Boot record definition line>opt    ;......(3)
   <EndBootRecord>opt
   EndVolume
;
   FileISO9660 filename  <output filename>opt
        <file definition line>opt           ;......(4)
   FileSource Input filename
        <file source definition line>opt    ;......(5)
   EndFileSource
   EndFile
   ;
   ;    File ~ EndFile
   ;
   PostGap 75
EndTrack
;
Track   MODE2
   PreGap          150
   File       ISO9660 filename <output filename>opt
;Example of channel-interleaving using SectorRate line
   SectorRate   <positive integer>opt ; Required when defining MPEG
   Channel      channel number
   MpegMultiplex    <output filename>opt
        <RealTime>opt     ; When DATA is specified in MpegStream line
        MpegStream  Source filename {AUDIO|VIDEO|DATA}
        BitRate     Bit rate    <sequence number>opt
        <DataType   {FORM1|FORM2}>opt ; When DATA is specified in
        <MpegFlush>opt                              MpegStream line
        EndMpegStream
        MpegStream  source filename {AUDIO|VIDEO|DATA}
             :
        EndMpegStream
   EndMpegMultiplex
   Endchannel
   Channel   channel number
   MpegMultiplex    <output filename>opt
        <RealTime>opt     ; When DATA is specified in MpegStream line
        MpegStream  Source filename {AUDIO|VIDEO|DATA}
        BitRate     Bit rate    <sequence number>opt
        <DataType   {FORM1|FORM2}>opt ; When DATA is specified in
        <MpegFlush>opt                              MpegStream line
        EndMpegStream
```

```
   EndMpegMultiplex
   EndChannel
   EndFile
   File       ISO9660 filename  <output filename>opt
:Example of channel-interleaving using UnitSize line, GapSize line
   Channel          channel number
        FileSource  input filename
        UnitSize    unit size
        GapSize     gap size
         :
        EndFileSource
   EndChannel
   Channel          channel number
        FileSource  input filename
        UnitSize    unit size
        GapSize     gap size
         :
        EndFileSource
   EndChannel
   EndFile
   Extent           <relative time>opt
        FileInterleave    unit size   gap size
        File  ISO9660 filename  <output filename>opt
        FileSource  input filename
        EndFileSource
        EndFile
        EndFileInterleave
        FileInterleave    unit size   gap size
        File  ISO9660 filename  <output filename>opt
        FileSource  input filename
        EndFileSource
        EndFile
        EndFileInterleave
   EndExtent
   Directory        directory name
   <Directory attribute definition>opt
        Directory   directory name
        File  ISO9660 filename  <output filename>opt
        FileSource  input filename
        EndFileSource
        EndFile
        EndDirectory
   EndDirectory
PostGap 75
EndTrack
;
Track         CDDA
   Pause      150
   FileSource input filename
        <file source definition line>opt    ;......(5)
   EndFileSource
EndTrack
;
;  Track ~ EndTrack
;
LeadOut CDDA
Empty   300
EndLeadOut
EndSession
EndDisc
```


(1) PVD Definition Line

```
<SystemIdentifier              A identifier>opt
<VolumeIdentifier              D identifier>opt
<LogicalBlockSize              Number of blocks>opt
<OptionalLPath>opt
<OptionalMPath>opt
<VolumeSetIdentifier           D identifier>opt
<PublisherIdentifier           A identifier>opt
<DataPreparerIdentifier        A identifier>opt
<ApplicationIdentifier         A identifier>opt
<CopyrightFileIdentifier       D+ identifier>opt
<AbstractFileIdentifier        D+ identifier>opt
<BibliographicFileIdentifier   D+ identifier>opt
<VolumeCreationDate            Date>opt
<VolumeModificationDate        Date>opt
<VolumeExpirationDate          Date>opt
<VolumeEffectiveDate           Date>opt
<ApplicationUse                MS-DOS filename>opt
```

(2) SVD Definition Lines

```
<SystemIdentifier              A identifier>opt
<VolumeIdentifier              D identifier>opt
<LogicalBlockSize              Number of blocks>opt
<EscapeSequences               Kanji code>opt
<OptionalLPath>opt
<OptionalMPath>opt
<VolumeSetIdentifier           D identifier>opt
<PublisherIdentifier           A identifier>opt
<DataPreparerIdentifier        A identifier>opt
<ApplicationIdentifier         A identifier>opt
<CopyrightFileIdentifier       D+ identifier>opt
<AbstractFileIdentifier        D+ identifier>opt
<BibliographicFileIdentifier   D+ identifier>opt
<VolumeCreationDate            Date>opt
<VolumeModificationDate        Date>opt
<VolumeExpirationDate          Date>opt
<VolumeEffectiveDate           Date>opt
<ApplicationUse                MS-DOS filename>opt
```

(3) Boot Record Definition Lines

```
<BootSystemIdentifier          A identifier>opt
<BootIdentifier                A identifier>opt
```

(4) File Definition Lines

```
<BeginTimeS              relative time>opt
<EndTimeS                relative time>opt
<Attributes              {HIDDEN|NOHIDDEN}{RECORD|NOTRECORD}>opt
<RecordingDate           Date>opt
<MinLength               {No. of bytes|No. of sectors}>opt
<Trigger                 relative time>opt
<Eors                    relative time>opt
<Pack>opt
<SectorRate              {Positive integer}>opt
<FileNo                  File No.>opt            ;1~255
<BeginTimeE              {relative time|+}>opt
<EndTimeE                {relative time|-}>opt
<SameName                Directory name filename>opt
<SysOwnerID              Numeric string>opt
<SysReadAttributes       {OWNER|NOTOWNER}{GROUP|
                         NOTGROUP}{WORLD|NOTWORLD}>opt
<SysExecuteAttributes    {OWNER|NOTOWNER}{GROUP|
                         NOTGROUP}{WORLD|NOTWORLD}> opt
```

(5) File Source Definition Lines

```
<SubHeader>opt
<Offset input position   Input length>opt
<BitRate                 Bit rate<sequence no.>opt     >opt
<UnitSize                Unit size>opt
<GapSize                 Gap size>opt
<RealTime>opt
<BeginTimeF              {relative time|+}>opt
<EndTimeF                {relative time|-}>opt
<DataType                {FORM1|FORM2}>opt
<AutoEOR>opt
<CodingInformation       Coding information>opt
<SourceType              {MONO_A|MONO_B|MONO_C|STEREO_A|
                         STEREO_B|STEREO_C|CDDA|AUDIO|
                         ISO11172|MPEG_VIDEO|VIDEO| DATA}>opt
                                   ;Valid only when MODE2 is
                                   specified in the Track line
<SubSource               Filename>opt
<SubEmpty                Number of blocks>opt
```


2.4 The Effects of the Pack Line on Channel-Interleaving

When channel-interleaving is used, each sector within the same ISO file can be identified by a channel number. Use the `BeginTimeF` line, `EndTimeF` line, `Realloca-tion` line, `UnitSize` line, `GapSize` line and `Pack` line to control the positioning of the channels. The effects of the `Pack` line are described below.

The `Pack` line is used to increase the efficiency of disc space usage. Dummy data may be generated in the beginning, middle or end of the ISO file depending upon the specifications of the `BeginTimeF`, `UnitSize` and `GapSize` lines. The `Pack` line can be specified to generate an ISO file without these dummy data areas.

(1) When a `Pack` line is not specified

The following describes how channels are positioned when a `Pack` line is not specified. The example shows how channels are positioned when specifications are as follows (with no `Pack` line).

- Channel 1 file source definition:
  - BeginTimeF 00:00:05
  - UnitSize 2
  - GapSize 3

- Channel 2 file source definition:
  - BeginTimeF 00:00:07
  - UnitSize 2
  - GapSize 3

The following results when the file sizes are 8 sectors.

Example: `XXXXX1122X1122X1122X1122`
X: dummy (gap) sector
numbers: channel numbers

(2) When a `Pack` line is specified

When a `Pack` line is specified in the above example, the following results:

Example: `1122112211221122`

An ISO file that was 24 sectors when a `Pack` line was not specified is thus compressed into 16 sectors when a `Pack` line is specified. Note, however, that the following problems will occur.

- The file will no longer start at the time specified in the `BeginTimeF` line.
- The file will end before the time specified in the `EndTimeF` line.
- When a `MinLength` line is specified in the file definition line, the file area will become that specified size.

(3) To Fill in Gaps

When a `Pack` line is specified, the `BeginTimeF` and `EndTimeF` line specifications are ignored. However, there may be occasions when the gaps produced by the absence of a `Pack` line specification may be used intentionally. In such cases, use the channel that specifies the `Reallocation` line. The example below shows a channel that specifies a `Reallocation` line (channel number 3, 7 sectors of data) that was added to the previous example where a `Pack` line was not specified.

- In the channel 3 file source definitions:
  - BeginTimeF 00:00:01
  - UnitSize 1
  - GapSize 0

Example: `X333311223112231122311 22`

2.5 Specifying Relative Time

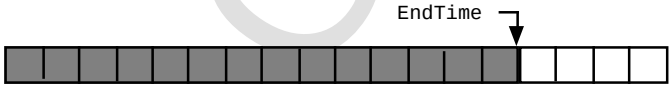
Positions on a disc can be specified in scripts using three types of relative positions.

- Relative session time
- Relative extent time
- Relative file time

Each has a beginning (`BeginTime`) and ending (`EndTime`) specification. The relationships of the specified position and the actual position where data is located are shown below.

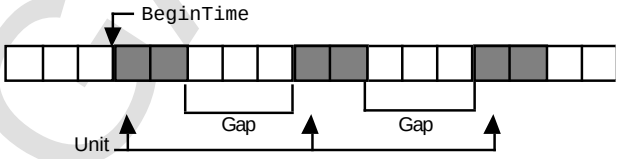
(1) When `BeginTime` is specified

(2) When `EndTime` is specified

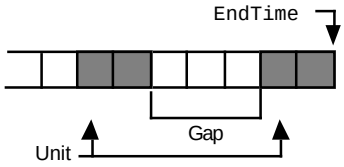


*The start position is set so that the file ends at `EndTime`.

(3) When `BeginTime`, `UnitSize` and `GapSize` are specified



(4) When `EndTime`, `UnitSize` and `GapSize` are specified



*The file ends at `EndTime`.

(5) Relative Session Time (`BeginTimeS`, `EndTimeS`)
This specifies the position of ISO files that are not file-interleaved. This specification is ignored if included in the definition of a file-interleaved ISO file. The specified time starts the session at `00:00:00` and is expressed as (`minutes:seconds:frames`).

(6) Relative Extent Time (`BeginTimeE`, `EndTimeE`)
This specifies the position of file-interleaved ISO files. It is used to indicate the positional relationship between files that are interleaved. An error results if it is specified anywhere other than the expansion file defined in the `Extent` line. The specified time starts the extent at `00:00:00` and is expressed as (`minutes:seconds:frames`). To specify a position within a session, specify the positions of all interleaved files in the parameter of the `Extent` line.

(7) Relative File Time (`BeginTimeF`, `EndTimeF`)
This specifies the position of the file source within the ISO file. An error results if it is specified anywhere other than in a file source definition. The specified time starts the file at `00:00:00` and is expressed as (`minutes:seconds:frames`).

When defining a channel-interleaved ISO file, the position of the channel within the ISO file can be determined by specifying `BeginTimeF` or `EndTimeF` in the file source definition that configures the channel. This defines the relative positions between channels. The start of the file source that configures the channel becomes the starting position for the channel, and the end of the file source becomes the end position of the channel.

2.6 The Relationship Between Sector Rates and Bit Rates

While the sector rate is defined by <SectorRate> in the file definition line and the bit rate is defined in the <BitRate> of the MPEG stream. Their relationship was not explained in the previous versions of the manual. The relationship between the two is discussed below.

Any integer value can be defined as the sector rate, but there are two typical values: 75 sectors/second and 150 sectors/second. The bit rates that can be defined for these two values (CD rate) are as follows.

- CD rate (75) = 75 x 2324 x 8 = 1,394,400 (bps)
- CD rate (150) = 150 x 2324 x 8 = 2,788,800 (bps)

This bit rate is the maximum value of the sum of bit rates that can be stated between <File> and <EndFile>. If this bit rate sum is exceeded, the stream cannot be multiplexed.

When the disc format is based on CD-ROM XA, the data length per sector that can be used in MPEG multiplexing differs from the type of data as follows:

- MPEG video 2296 bytes
- MPEG audio 2279 bytes
- Data (FORM1) 2048 bytes
- Data (FORM2) 2324 bytes

Accordingly, the following conversion is required between the bit rate defined in the keyword <BitRate> and the CD rate. If the current MPEG video bit rate is BR(MV), then the MPEG audio bit rate is BR(MA), the data (FORM1) bit rate is BR(F1) and the data (FORM2) bit rate is BR(F2). The relationship is as follows when the four streams are multiplexed.

$$\text{CD rate} \geq \frac{BR(MV)\times 2324}{2296} + \frac{BR(MA)\times 2324}{2279} + \frac{BR(F1)\times 2324}{2048} + \frac{BR(F2)\times 2324}{2324}$$

$$= \left(\frac{BR(MV)}{2296} + \frac{BR(MA)}{2279} + \frac{BR(F1)}{2048} \right) \times 2324 + BR(F2)$$

This relationship must always be maintained when the data is multiplexed. It is verified during execution and an error is returned if the relationship does not hold. Note also that a maximum of 10 streams can be MPEG multiplexed.

3.0 Supplementary Description of the Updated VCDUTL.EXE

3.1 Introduction

This software modifies (updates) sections of existing CD images as DOS files. Partial modification of an existing CD image is best accomplished by using the disc builder software to rebuild the CD image, though it is a time-consuming and inefficient process. This software is intended to quickly modify CD images without having to return to the disc rebuild process.

3.2 Revisions to the Main Manual

Some parts of the explanation given on page 23 of the main manual are incorrect. The underlined portions below are the revisions.

Example 5 C:/>VCDUTL∆TSTGAME∆ISOFILE.DDD∆DOSFILE.D01∆
DOSFILE.D02∆-f∆TSTGAME.PAT[ENTER]

In this example the DOS file called DOSFILE.D01 (in the ISO9660 file called ISO1FILE.DDD included in the CD image created by TSTGAME) is replaced with the DOS file called DOSFILE.D02.

Result 5 An update data file called TSTGAME.PAT is created.

:

:

Example 7 C:/>VCDEMU∆TSTGAME∆-u∆TSTGAME.PAT[ENTER]

:

The underlined portions of the text below from page 65 in the main manual have also been revised.

Example:

VCDUTL∆TSTGAME∆ISO1FILE.DDD∆DOSFILE.D01∆DOSFILE.D02
∆[f∆TSTGAME.PAT][ENTER]

VCDUTL	Runs VCDUTL.
TSTGAME	Project name used to create the CD image that is being updated
ISO1FILE.DDD	ISO file name that contains the DOS file to be updated.
DOSFILE.D01	The name of the DOS file to be updated.
DOSFILE.D02	Replacment DOS file name.

Options

-f Option

TSTGAME.PAT is the name of the update data file (may be user specified) for DOS file replacement.

When this option is specified, the CD image itself will not be updated. This update data file will be used during emulation.

If this option is not used, the CD image itself will be updated without the update data file being output.

:

:

3.3 Example of Executing a Partial Update

(1) Sample Script

```
;  test1.scr
;
Disc    ".¥test1.dsk"
Session       SEMIXA
LeadIn        MODE1
EndLeadIn
   Track            MODE1
                    Volume      ISO9660  test1.pvd  ;Not an ISO filename
                                PrimaryVolume     0:02:16
                                EndPrimaryVolume
                    EndVolume
                    PostGap 75
   EndTrack
   Track            MODE1
                    PreGap      150
                    File  ISOF_1.DAT;1      ;ISO filename
                          FileSource  "pat_7.dat"
                          EndFileSource     ↓
                    EndFile           This DOS file is replaced
                    PostGap 75        with pat_1.dat
   EndTrack
   Track            CDDA
                    Pause 150
                    File  CDDA1.DAT;1 ;ISO filename
                          FileSource  "sound1.dat"
                          EndFileSource     ↓
                    EndFile     This DOS file is CDDA, therefore, it
   EndTrack                     cannot be updated by VCDUTL.EXE Ver. 1.0.
LeadOut       CDDA
   Empty            300
EndLeadOut
EndSession
EndDisc
```


(2) Executing Partial Updates

To replace the DOS file `pat_7.dat` in the ISO file (`ISOF1.DAT;1`) that comprises the disc image (`test1.dsk`) of project file `test1` with DOS file `pat_1.dat`, enter the following. Note that the ISO file name must be specified in upper-case English.

Correct:	`VCDUTL`	`test1`	`ISOF1_1.DAT;1`	`pat_7.dat`	`pat_1.dat`
Incorrect:	`VCDUTL`	`test1`	`TEST1.PVD`	`pat_7.dat`	`pat_1.dat`

Note: **VCDUTL.EXE** does not directly update the volume descriptor set (`test1.pvd`).

When this results in a `pat_1.dat` file size that is equal to or smaller than `pat_7.dat`, the `pat_7.dat` section of the disc image is replaced by `pat_1.dat`. To execute real-time mode emulation, enter:

```
VCDEMU test1
```

When the `-f` option is added, the update data file is created without updating the disc image.

```
VCDUTL test1 ISOF1_1.DAT;1 pat_7.dat pat_1.dat -f test1.pat
```

The update information file `test1.pat` is created as a result. To run emulation, add the `-u` option and startup the VCD emulator. To execute a direct DOS access mode emulation, enter:

```
VCDEMU test1 -u test1.pat
```

When,

```
VCDEMU test1
```

is entered alone, note that the pre-existing disc image `test1.dsk` will be used in the real-time mode emulation.

4.0 Byte Swap Tool SWAP.EXE

4.1 Introduction

This software is a tool for converting data between Motorola and Intel endian formats. The CD-DA data file accepted by the Virtual CD system must be in Intel's little endian format. When the CD-DA data file is in Motorola's big endian format, convert it using this tool.

4.2 Usage

Command: SWAP

Command name: Performs byte swap

Function: Converts the byte order of the specified DOS file and creates a new DOS file.

Format: `SWAP [-option]  Oldfilename Newfilename`

Description:

`Oldfilename`: the name of the DOS file to be byte-swapped.

`Newfilename`: the DOS file created as a result of the byte-swap

`-option:` option settings

`-v:` displays the usage method

5.0 Script Keywords

Table 1: Script Keywords (1)

Keyword	Parameter	Description
AbstractFileIdentifier	Filename	Specifies the root level file of the primary volume that includes the abstract information.
ApplicationUse	Filename	Specifies MS-DOS file for the application use field data.
ApplicationIdentifier	Identifier	Specifies application identifier.
Attributes	Attributes	Specifies the directory record attributes.
AutoEOR		Records EOR (End Of Record) in Subheader of sector that contains the final byte of the file. Added automatically to MPEG source definitions, so no declaration is required.
BeginTimeE	Relative position	Start position on disc where a file is located within extent; the relative time from the start of the extent.
BeginTimeF	Relative position	Position where to start placing file source.
BeginTimeS	Relative position	Start position on disc where a file or channel-interleaved file is located; the relative time from the start of the session.
BibliographicFile Identifier	Filename	Specifies the root level file of the primary volume that includes the bibliographic information.
BitRate	Bit rate	MPEG data bit rate
	[sequence #]	Specifies the bit nth in MPEG data; default is 0.
BootIdentifier	Identifier	Specifies boot identifier of boot record.
BootRecord		Start of boot record.
	Relative position	Position on disc where boot record is recorded.
BootSystemIdentifier	Identifier	Specifies boot system identifier of boot record.
CatalogNo		Specifies the disc catalog number.
	Catalog #	ASCII numeric character string of 13 digits or fewer.
Channel	Channel #	Start of channel definition, 0~250.
Channels	# of channels	Specifies the number of channels, either 2 or 4, used for CD-DA.
CodingInformation	Coding information	States the coding information in BCD.
Copy	Switch	Specifies copy protection, either TRUE or FALSE, used for CD-DA.
CopyrightFileIdentifier	Filename	Specifies the root level file of primary volume that includes the copyright message.
DataPreparerIdentifier	Identifier	Specifies data preparer identifier.
DataType	Mode 2 form	Specifies form for mode 2 (FORM1 or FORM2)
Define		Defines variable for a given value (macro definition).
	Variable name	Macro definition character string.
	Value	Character string to be defined.

Table 2: Script Keywords (2)

Keyword	Parameter	Description
Directory	Directory name	Start of directory definition.
Disc		Start of disc definition.
	Filename	Name of file that outputs the disc image.
Empty	# of blocks	Indicates the output of null data (0x00) for lead-in and lead-out.
EndBootRecord		End of boot record.
EndChannel		End of channel definition.
EndDirectory		End of directory definition.
EndDisc		End of disc definition.
EndExtent		End of file-interleave definition.
EndFile		End of file definition.
EndFileInterleave		End of specification of files to be interleaved.
EndFileSource		End of specification of MS-DOS files contained in an ISO9660 file.
EndLeadIn		End of lead-in area definition for the session.
EndLeadOut		End of lead-out area definition for the session.
EndMpegMultiplex		End of ISO11172 stream definition.
EndMpegStream		End of MPEG stream definition.
EndPrimaryVolume		End of primary volume descriptor.
EndSession		End of session.
EndSupplementary Volume		End of supplementary volume descriptor.
EndTimeE	Relative position	End position on disc where file is located within extent; the relative time from the start of the extent.
EndTimeF	Relative position	End position of file source.
EndTimeS	Relative position	End position on disc where file or channel-interleaved file is located; the relative time from the end of the session.
EndTrack		End of track definition.
EndVolume		End of volume descriptor set definition.
Eors	Position in file	Specifies EOR (End Of Record) position.
EscapeSequences	Kanji code	Specifications of characters used in supplementary volume descriptor, directory code, and path table. Only SHIFT-JIS is valid.

Table 3: Script Keywords (3)

Keyword	Parameter	Description
Extent		Start of file-interleave definition.
	[Relative position]	Position on the disc where interleave results are placed.
File		Start of file definition.
	Filename	ISO9660 file name.
	[Output file]	Name of file that outputs file definition results.
FileInterleave		Start of the specification of the interleave file.
	Unit size	Unit in which to consecutively place the same files (number of sectors).
	Gap size	Sectors occupied by different types of files
FileSource	Input filename	Specification of MS-DOS files used as source to construct an ISO9660 file.
FileNo	File #	ID number of interleaved files, 1~255.
GapSize	Gap size	Specifies the number of sectors occupied by different types of files during channel interleave.
Include		Inputs script file and replaces it with this command line.
	Filename	Name of another file that has a script declaration.
LeadIn		Lead-in area definition for the session.
	Track type	MODE1
LeadOut		Lead-out area definition for the session.
	Track type	CDDA
LogicalBlockSize		Defines logical block size of volume.
	Size	512, 1024 or 2048
MinLength	# of bytes or sectors	Specifies the minimum number of bytes or sectors of the directory record.
MpegFlush		Add 16 KB of "0" data to MPEG video stream.
MpegMultiplex		Starts definition of ISO11172 stream.
	[Output filename]	File that outputs the results of multiplexing.
MpegStream		Starts definition of MPEG stream.
	Source filename	MPEG compressed data, MS-DOS file.
	Data type	AUDIO, VIDEO or DATA
Offset		Specifies the section of an input file to be input.
	Input position	Specifies the read start position within the file
	Input length	Read size
OptionalLPath		Executes write out of optional LPath table.
OptionalMPath		Executes write out of optional MPath table.

Table 4 Script Keywords (4)

Keyword	Parameter	Description
Pack		Specifies packing after channel-interleaving.
Pause	# of blocks	Specifies the number of blocks paused at the beginning of the CD-DA track.
PostGap	# of blocks	Specifies the number of blocks of PostGap information recorded at the end of MODE1 and MODE2 tracks.
Preemphasis	Switch	Specifies the preemphasis bit value of the Q subcode channel, either TRUE or FALSE, used with CD-DA.
PreGap	# of blocks	Specifies the number of blocks of PreGap data recorded at the beginning of MODE1 and MODE2 tracks.
Primary Volume		Start of primary volume descriptor.
	Relative position	Position on disc where primary volume descriptor is recorded.
PublisherIdentifier	Identifier	Specifies publisher identifier.
Reallocation		When there is already another file specified in the location where the file is to be located, the previously specified file is avoided and reallocation occurs.
RealTime		Indicates that file source is a real-time file. In MPEG source definitions, no declaration is needed when the data type specified in the MpegStream line is AUDIO or VIDEO since files are automatically real-time files.
RecordingDate	Date	Date on which directory record was created.
SameName	D+ identifier	Indicates the directory name and filename identified in the supplementary volume descriptor.
SectorRate	[Sector rate]	Specifies the number of sectors transferred per second during channel-interleaving may be a positive integer between 1 and 65535. The default value is 150.
Session		Start of session
	Disc type	CDROM or SEMIXA
	[Filename]	Name of file that outputs the disc image (can be omitted).
SourceType	File source type	Data type of file source. MONO_A, MONO_B, MONO_C, STEREO_A, STEREO_B, STEREO_C, AUDIO, CDDA, ISO11172, MPEG_VIDEO, VIDEO, or DATA
SubEmpty	# of blocks	Directs output of null data to subcode area
SubHeader		Subheader already added to file data
SubSource	Input filename	Specifies MS-DOS file where subcode is placed.
SupplementaryVolume		Start of supplementary volume descriptor.
	Relative position	Position on disc where supplementary volume descriptor is to be recorded.

Table 5: Script Keywords (5)

Keyword	Parameter	Description
SysExecuteAttributes		Specifies whether each user class recorded in the directory system information has execution authorization.
	Owner attribute	OWNER or NOTOWNER
	Group attribute	GROUP or NOTGROUP
	World attribute	WORLD or NOTWORLD
SysOwnerID	Number string	Specifies the owner ID recorded in the directory system information.
SysReadAttributes		Specifies whether each user class recorded in the directory system information has read authorization.
	Owner attribute	OWNER or NOTOWNER
	Group attribute	GROUP or NOTGROUP
	World attribute	WORLD or NOTWORLD
SystemArea		Defines the system area of the ISO9660 volume.
	Filename	Specifies the MS-DOS data file for the system area.
SystemIdentifier	Identifier name	Defines system identifier name.
Track		Start of track definition.
	Track type	CDDA, MODE0, MODE1 or MODE2
Trigger	Position in file	Specifies where trigger is applied.
UnitSize	Unit size	Specifies size of unit in which the same channel is placed consecutively (number of sectors) in channel-interleaving.
Volume		Start of volume descriptor set definition.
	Volume type	Only valid for ISO9660
	Filename	Name of output file of volume descriptor set.
VolumeCreationDate	Date	Specifies the creation date.
VolumeEffectiveDate	Date	Specifies the effective date of the volume.
VolumeExpirationDate	Date	Expiration date of the volume.
VolumeIdentifier	Identifier	Defines volume identifier .
VolumeModificationDate	Date	Specifies the date of the most recent volume modification.
VolumeSetIdentifier	Identifier	Defines volume set identifier.

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