

IMCAP 3.1
IBM-PC Screen Capture Utilities
Version 3.1, May 1986
by
ImageSet Corp.

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Summary

ImageSet Corp. provides IBM-PC screen-dump utilities to assist in preparing orders for ImageSet processing. The utilities are used to capture screen information, to review captured images and to specify the desired options for each repro galley or film being ordered. There are three utilities on a 5 1/4" single-sided double-density diskette. The diskette is labelled "IMCAP 3.1 Image Capture Utility for the IBM-PC".

The first utility, "Image Capture" (IMCAP), is a special driver program which loads along with an application program to "capture" screen images on disk (via the SHIFT-PRTS key).

The second utility, "Image Manager" (IMMGR) is a menu-driven application program which allows review of the captured screens, selection of colors, selection of repro galley options, and preview of the repro galley with the sections applied.

The third utility, "Image Show" (IMSHOW) is a batch orientated application program which allows rapid review of captured screens.

What is Supported

The following hardware and modes are supported:

- [1] IBM-PC Color/Graphics Adapter (all modes).
- [2] IBM-PC Enhanced Graphics Adapter (all modes).
- [3] IBM-PC Monochrome Adapter.
- [4] Hercules Graphics Card for the IBM-PC (character and graphics modes).
- [5] AT&T 6300 (all IBM compatible modes plus super-high resolution black & white graphics mode).
- [6] Most other compatible machines which provide emulation of any of the above hardware and/or modes.

What ImageSet Does

From screen images captured on the IBM-PC with these utilities ImageSet digitally reproduces the images for prepress production in one of the following forms:

- [1] Black and white on repro paper, no half-tone areas (gray tints).
- [2] Process color separation on film.
- [3] Gray-tone conversion on film.

Not all supported video modes can be produced in all forms. TABLE 1 outlines the output forms available each supported screen mode.

TABLE 1

Screen Modes Supported by IMCAP

Mode Number	Description of Mode	B & W Repro	Color Sep. & Gray Tone
-------------	---------------------	----------------	---------------------------

00	40 x 25 Black & White Character	Yes	No
01	40 x 25 16-Color Character	Yes	Yes
02	80 x 25 Black & White Character	Yes	No
03	80 x 25 16-Color Character	Yes	Yes
04	320 x 200 4-Color Graphics	Yes	Yes
05	320 x 200 Black & White Graphics	Yes	No
06	640 x 200 Black & White Graphics	Yes	No
07	80 x 25 Monochrome Character	Yes	No
08*	720 x 348 Monochrome Graphics (Hercules)		Yes No
09*	640 x 400 Black & White Graphics (AT&T)		Yes No
13	320 x 200 16-Color Graphics	No	Yes
14	640 x 200 16-Color Graphics	No	Yes
15+	640 x 350 Monochrome Graphics	No	No
16	640 x 350 16-Color Graphics	No	Yes

*does not correspond with any IBM ROM BIOS video mode number.
+images may be captured and reviewed but no production facility is currently available.

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How to Capture Screen Images

- [1] Boot your IBM-PC with PC-DOS (release 2.0 or greater is required).
- [2] Insert the ImageSet Utility Diskette in any drive.
- [3] To capture screen images on all supported hardware except the Hercules Graphics Card in graphics mode enter the command:

```
imcap
```

To capture images on the Hercules Graphics Card in graphics mode enter the command:

```
imcap /h
```

You will see a copyright message and the message "LOADED" displayed on your screen.

- [4] Remove the ImageSet Utility Diskette.

- [5] Start your application program.
- [6] Use the application in the normal way to display the exact screen that you wish to capture. Press SHIFT-PRTS to capture it. IMCAP will write a file with a unique name on the current drive. Repeat this step for each screen that you wish ImageSet to process.

NOTE: If your application implements its own print-screen function via the SHIFT-PRTS key combination it will be disabled when the IMCAP driver has been loaded. You will still be able to capture your screens by the above procedure.

If you do not want to override your application's print-screen function in this way you may alternatively use the ALT-PRTS combination for IMCAP. See the section entitled "What is Really Going On" for details about how to do this.

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What You Hear

While each screen is being captured (in step 6 above) you will hear a low-pitched buzz from the speaker. This indicates that IMCAP is in control and doing its job. When you hear this sound PLEASE DO NOT TOUCH THE PC. The sound will stop when the screen has been successfully captured. At that point you may continue using your application program to set up the next screen.

If you hear a rising series of high pitched tones it means that a DOS error has occurred. This is usually due to a "disk full" condition. To determine the cause of the error do the following:

- [1] Exit from your application program without re-booting PC-DOS.

[2] Insert the ImageSet Utility
Diskette.

[3] Enter the command "imcap".

IMCAP will say "Already Resident" and report
the cause of the last error.

If you hear a pulsating tone (like a busy
signal) you have interrupted DOS while it was
processing a request from your application.
As soon as the application's request is com-
pleted the capture will commence at which
time you will hear the familiar buzzing
sound.

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What You Get

For each SHIFT-PRTS that you do, IMCAP
creates a file with a unique file name in the
form "SCREENxx.CAP" where xx is replaced by a
number from 00 to 99. IMCAP will never
overwrite an existing file. Actually, you
can have complete control over the names and
location of the files created (see the
section entitled "What is Really Going On
below").

For output on film (process color separation
or gray tone conversion) these ".CAP" files
are sent to ImageSet along with a completed

"transmittal form" provided by ImageSet for this production service. Be sure to use the Image Manager or Image Show utilities to review the images that you have captured in the files before sending them for production.

For black and white output on repro paper, these ".CAP" files may not be sent to ImageSet to be processed "as is". You must use the Image Manager utility program to review the captured images, make selections of various production parameters and create ".SET" files which can then be sent to ImageSet for processing. The Image Manager utility is described in a later section.

What is Really Going On

The first time you run IMCAP it is loaded and made resident in low memory. Each time you run it after that (until the next time you boot) the command only serves to change or re-assert the command line arguments and to report the current status of the resident driver. The whole command line for IMCAP is

as follows (square brackets indicate optional items, vertical bar indicates a choice or one item or the other):

```
imcap [ /h[<page>] | /i[<mode>] ] [ /b | /q ]  
      [ /a ] [ <path> ]
```

where

/i (without <mode>) enables the capture of all IBM supported color/graphics, enhanced graphics and monochrome modes as well as the Hercules Graphics Card monochrome character mode and the AT&T super high-resolution graphics mode (the default when the program is first loaded).

WARNING

When operating in this mode IMCAP relies on the ROM BIOS to tell it the color palette, video mode, cursor position, and cursor mode when it attempts to capture the image. If the application does not set these entities via the ROM BIOS then random results will occur. This is not disastrous in the case of the cursor information since you may repair it by means of the Image Manager. Similarly, the color palette in mode number 04 (see TABLE 1) can be reselected with Image Manager. The color palette

associated with the enhanced graphics adapter, however, cannot be recovered. If the ROM BIOS is

not used to set the video mode, chaos will ensue. In this latter case use the <mode> operand as described below.

/i<mode> Use this form when capturing screens from applications like LOTUS 123 which do not always set the video mode via the ROM BIOS. Specify the <mode> operand (immediately following the *"/i"* with no intervening spaces) as the two-digit mode number (see TABLE 1) which represents the video mode for the screens to be captured. All captures that you make via SHIFT-PRTSC after entering this command line assume that the selected mode is active. If a different mode is active you will capture garbage. You should always use Image Manager or Image Show to verify that you have captured the screen that you want.

This technique may also be used for capturing screens from non-DOS or protected applications when all other attempts at using IMCAP fail. Refer to the section entitled "Capturing Screens from Non-DOS or Protected Applications".

/h<page> Enables the capture of graphics mode images on the Hercules Graphics Card.

The */h* without <page> or */h0* on the command line causes page 0 of the Hercules Graphics Card to be captured.

A /h1 causes page one of the Hercules Graphics Card to be captured.

Or /h? allows either page to be captured: When SHIFT-PRTS is pressed the operator is asked to locate the correct image by pressing the SPACE BAR to swap between the two pages. When the correct display is obtained, Enter is pressed to make the capture.

- /b Enables the "noisy" mode of IMCAP which will cause it to emit a slow clicking sound at all times. This is primarily used for trouble shooting but is available to users who need to be reminded that IMCAP is resident.
- /q Disables "noisy" mode which is turned on by "/b" above.
- /a Causes screens to be captured by the ALT-PRTS key combination instead of the SHIFT-PRTS combination. This may only be specified on the initial invocation of IMCAP the first time it is actually loaded into memory. It may only be disabled (i.e. reverted to SHIFT-PRTS) by re-booting the PC and reloading IMCAP without the "/a" argument specified. When "/a" has been specified all references to SHIFT-PRTS in this document should be taken as ALT-PRTS.
- <path> Specifies where the captured files will go and what their names will be according to the following rules:

[1] If <path> ends with a colon (:) or a backslash (\) then it tells the drive and/or directory where the SCREENxx.CAP files are to be written. The xx will be replaced by digits which make the file names unique in the given directory.

[2] If <path> does not end with a colon (:) or backslash (\) then it tells the drive, path and file name for the next image to be captured. It may not contain an extension since ".CAP" will always be automatically appended. Names created thusly are made unique by replacing the rightmost characters with digits and sequentially incrementing them. If the rightmost characters of the name are already numeric then they will be incremented.

REMEMBER: IMCAP always creates a unique name and never overwrites an existing file, in fact, it will never use a file name if any file by that name exists regardless of its extension.

Whenever IMCAP is run it always reports the last DOS error that occurred (if any), the current capture mode (IBM or Hercules), the key combination being used for capture, and the next file name to be used.

How To Use Image Manager

Image Manager is only used for Black & White Repro Paper output. It will only work for captured screen mode numbers which can be produced on this type of medium (see TABLE 1).

After having captured your screen images (in ".CAP" files) you must use Image Manager to review them and to select the production options for each image. The reviewed images must be written into files with the ".SET" extension. If you have a large number of ".CAP" files all requiring the same production options ImageSet can set the options for you. Please call to make special arrangements for this service.

ImageSet will produce one or more repro galleys from each ".SET" file that you send. In addition to containing the screen image itself, a ".SET" file also contains all other information which we need to produce the galley. This information consists of size, color selection, registration-mark & cut-line insertion, borders, cursor inclusion & positioning, etc. All of these items can be selected and changed by use of the Image Manager Utility provided on the ImageSet Utility Diskette.

If you want more than one repro galley produced from the same ".CAP" file (different sizes, color selection, cursor position, etc.) you must make and send multiple ".SET" files to ImageSet. Copies can be made with the PC-DOS "copy" command or by use of the load/save functions within Image Manager. The exception to this rule is the Automatic Color Splitting feature (described later) that is available for mode number 04 (320 x 200 4-Color Graphics mode, see TABLE 1).

Image Manager (IMMGR) is a menu-driven application program which allows you to load, modify and re-save your captured screen image (".CAP" or ".SET") files. To start Image Manager insert the ImageSet Utility Diskette and enter the command:

immgr

The program is very simple to use. Menu items are chosen by use of single keystrokes. Briefly, you load a file by use of function <1>, view the captured image via function <3>, modify the production parameters with functions <5> through <E>, preview the repro galley through function <4> and save the changes under function <2>.

Following is a short summary of each function.

<1> Load Image File

You work on one file at a time by using this function to "load" it into memory. You are asked to provide the file name. Type the drive specifier, directory path and file name. The extension ".SET" is assumed if such a file exists otherwise the extension ".CAP" is assumed. You may type the extension but it must be either ".CAP" or ".SET". Remember that unless you tell it otherwise, IMCAP names the image files "SCREENxx.CAP" where xx is a number from 00 to 99 and puts them on the current drive.

If you type a name containing one or more wildcard characters ("Global Filename Characters * and ?") you will get a directory

listing of all files which match the string; no file will be loaded and you will be asked to enter another name.

When a file has been successfully loaded, the video mode description (see TABLE 1) and the

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production parameters will be displayed. All further operations until the next Load Image File pertain to the file currently loaded in memory.

<2> Save Image File

After you have reviewed the image and possibly made changes to the parameters you must write the image into a ".SET" file. You are asked to provide the file name. You may use the same name that you loaded the file from or may choose any other name. Using the same name overwrites the old version of the file. The default extension is ".SET"; you may enter it but it must be ".SET".

After using this function the image still remains in memory and you may make further changes and save it again into the same or a different file.

<3> Display Captured Screen

Use this function to look at the image you have captured. This is not a repro galley preview; it shows you the image exactly as you have captured it without applying any of the color selection parameters. After viewing it press the <ESC> key to return to the menu.

When viewing an image captured in mode number

04 (320 x 200 4-Color Graphics, see TABLE 1) the palette and background colors will be set to those which were in effect when the image was captured. This is not completely reliable, especially when working on a PC compatible system, since IMCAP must "steal" these values from the ROM BIOS's RAM data area which may not always be located in the same place on all systems. If these are wrong or if you wish to change them you may do so while viewing the captured image by pressing the F9 and F10 function keys to

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rotate through the palettes and background colors, respectively. These settings are like any other parameter in that the file must be saved in order to make them permanent.

<4> Preview Typeset Galley

You can use this function to preview the output galley exactly as it will be produced. It takes into account all of the options and color selections that you have made. Certain attributes of the repro galley, however, cannot be previewed: on monitor sizes other than full size cannot be shown; cut lines, borders and registration marks cannot be shown. Also, for screen dumps from the IBM monochrome adapter a negative image (black characters on a white background) is not shown as negative. (This is due to the "underline inconsistency" of the IBM monochrome adapter.) Also, for the monochrome display, characters which will be in boldface are shown intensified on the preview screen.

REMEMBER: You will otherwise get exactly

what you see. A white graphic on a black screen will be produced as white on a black field.

When you have finished viewing the image press the <ESC> key to return to the menu.

<5> Color Select

This is the most important parameter. Depending on the video mode number there may be from 2 to 16 different colors comprising the image. Use this parameter to select (set to YES) each color you want to appear as black. All other colors (set to NO) will be left white. 2-color modes only ask you to select the background color; the foreground is automatically taken as the opposite. Use

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the galley preview function (<4>) to verify that you will get what you want.

If you select (set to YES) all of the colors for a multiple-color image, obviously, you will get a completely black repro galley. The single exception to this rule is in the case of a mode number 04 (320 x 200 4-Color Graphics, see TABLE 1) image. Selecting all four colors for this mode enables the Automatic Color Splitting feature. In this case ImageSet will produce four repro galleys from the one ".SET" file, one for each color. THIS IS THE ONLY CASE IN WHICH MORE THAN ONE REPRO GALLEY WILL BE PRODUCED FROM A SINGLE ".SET" FILE.

WARNING: IF YOU SKIP THIS STEP, YOUR IMAGE MAY COME OUT SOLID BLACK.

<6> Galley Size

This feature is no longer applicable. Size designations (small, medium or large) are ignored.

On orders of more than five images, ImageSet will set screens to size. Screen images are set to the width dimension only and must be specified in millimeters e.g. to the width of 80 mm.

The height varies depending on the mode of the image captured.

REFER TO TABLE 3 FOR THE DEFAULT SIZES OF THE VARIOUS MODES AND THEIR WIDTH TO HEIGHT RATIOS.

REMEMBER: The repro galley size is not reflected in the preview screen obtained by menu function <4>.

<7> Cut Line Select

This option controls cut lines and registration marks (you can't have one without the other). You may request that cut lines and registration marks be placed around the image. An example of these are shown in one of the attached figures. YES for this parameter causes cut lines and registration marks to be set in each corner of the repro galley. NO causes neither to be appear.

You will most likely want these when specifying color splits to facilitate registration at printing time. All images

for a given video mode number (see TABLE 1) are centered within the same sized cut line area for these purposes regardless of which other options (especially borders) are selected. For the Automatic Color Splitting facility (described under function <5> above) the cut lines and registration marks will be generated in all four repro galleys.

REMEMBER: Cut lines and registration marks are not shown in the preview screen obtained by menu function <4>.

<8> Border Select

You may choose one of six kinds of borders around the galley or no border. Refer to TABLE 3 and the attached "Border Selections" page for examples of the available types of borders. In the case of the Automatic Color Splitting facility for mode number 04 (320 x 200 4-Color Graphics, see TABLE 1) the selected border (if any) is placed only in the galley for the background color.

<9> Galley Title

You may enter a string of up to 40 characters to be set as text in the header of the output

repro galley. The header always contains the ImageSet job title and the ".SET" file name. If you provide a galley title it will be concatenated on to those.

In the case of the Automatic Color Splitting facility available for mode number 04 (320 x 200 4-Color Graphics, see TABLE 1) the color for each repro galley along with its process

ink color equivalents will also appear in the title.

<A> Cursor Select
 Cursor Position
<C> Cursor Lines

These parameters are only applicable to character mode screens (see TABLE 1).

When you captured the screen image the position and size of the cursor were recorded with it. If you set Cursor Placement to NO the cursor will not appear in the galley. If you set Cursor Placement to YES then the cursor will appear as shown by the row, column and lines parameters. You may change these parameters to move the cursor anywhere on the screen or to change its size.

<D> Blinking Select
<E> Intensity Select

These parameters are only applicable to character mode screens (see TABLE 1).

You may elect to do one of four things with screen characters which have the blinking attribute and/or the high-intensity attribute:

- [1] Exclude them completely. In this case the positions in which the characters appear will appear as blank spaces. For color modes, they will be subject to inclusion

or exclusion under control of the Color Selection parameter for their background color.

- [2] Include them. The characters will appear just as ordinary unblinking characters. For color modes, they will still be subject to inclusion or exclusion under control of the Color Selection parameters.
- [3] Include them as boldface characters. The characters are placed in the galley with the appearance of being slightly darker than the normal characters.

This option is quite effective for the color/graphics text modes. However, it is NOT RECOMMENDED FOR USE WITH MONOCHROME since the preview function (<4> on the main menu) for monochrome cannot accurately depict what the final output will look like.

For color modes, the characters will still be subject to inclusion or exclusion under control of the Color Selection parameters.

- [4] Include Only these characters. All other characters, regardless of their color will be excluded. This is most commonly used when you are planning to make a separate printing pass to insert the blinking and/or intensified characters in your final work. For color modes, the characters will still be subject to inclusion or exclusion under control of the Color Selection parameters.

When a character has both the blink and intensity attributes an attempt is made to do something logical by combining the two parameters that you have selected. Be sure to use the preview function (<4> on the main menu) to verify that you will get what you want.

 Exit to System

This function exits from Image Manager to the PC-DOS system. If you have changed the parameters of the current image file and have not saved them you will be asked to verify that you want to exit, thus abandoning those changes.

Capturing Screens from Non-DOS or Protected Applications

Use this technique if all other attempts at using IMCAP fail. It is a relatively slow process and requires you to have two video adapters and two monitors attached to your system.

For purposes of this discussion we will refer to the monitor which displays the image you want to capture as "Monitor-1" and to the other monitor as "Monitor-2".

Set your system configuration switches so that your system boots DOS on Monitor-2. Use the DOS "mode" command to switch to Monitor-1 then run your application program and get the image you want to capture displayed on Monitor-1. With the image displayed use Ctl-Alt-Del to boot the system from you DOS disk. Do not be alarmed when Monitor-1 clears; the image will still be preserved in the video adapter's memory.

When DOS comes up on Monitor-2 load IMCAP with the following command line:

```
imcap /i<nn>
```

substituting for <nn> the two-digit mode number (see TABLE 1) that Monitor-1 was in when you booted. Press SHIFT-PRTS once to capture the image. Use the DOS "mode" command to switch to Monitor-1 then run IMMGR or IMSHOW to review the just-captured screen.

Note that when mode number 04 (320 x 200 4-Color Graphics) is captured in this manner the color palette information may not be captured properly. Use function <3> in Image Manager to determine if this has occurred and to adjust to the correct colors. This technique may not be used on the EGA (mode numbers 13, 14, 15 and 16 in TABLE 1) when a non-standard color palette is in effect.

How to Use Image Show

This facility may be used for all captured screen modes listed in TABLE 1.

The utility program "Image Show (IMSHOW) is provided on the utility diskette. You may use it to review your captured image files in a manner similar to the "<3> Display Captured Screen" function in IMMGR. Insert the ImageSet Utility Diskette and enter a command line of the form:

```
imshow [/a] <file> <file> <file>...
```

Any number of file parameters may be specified. Each may be an individual ".CAP" or ".SET" file name or may contain DOS wildcard characters ("Global File Name Characters * and ?" as the DOS manual calls them) which specify a collection of ".CAP" or ".SET" files

Each file's name and screen mode is displayed with a menu which allows you to choose between "Skip" the file, "Display" the file, "Enter AUTO Mode", or "Quit". Upon choosing "Display" you will see the image exactly as captured. Press any key to continue.

You may run the utility in "Automatic" mode by specifying "/a" on the command line or by choosing the "Enter AUTO Mode" menu item. The captured images will be displayed, one after another for about 3 seconds each with no operator intervention. To stop AUTO mode, press any key.

Border Types

Borders are only available when output is on Black & White Repro Paper and therefore only for screen modes for which this medium is available (see TABLE 1).

TABLE 2 contains a list of the available border types and a brief description of each. A sample of each type is given on the following pages.

Since the borders are all formed from the same dimension rectangular pixels as the screen image itself there is a slight ceration ("jaggies") apparent on the rounded borders.

TABLE 2

Border Descriptions

- None: No border around screen.
- Narrow: A black rectangle rule (approximately 5 pixels wide) is placed around the screen extending 9 pixels from the edge of the image. Border butts up against the screen image.
- Wide: A black rectangle 15 pixels wide is placed around the screen extending approx 9 pixels from the edge of the image. Border butts up against the screen image.
- Narrow Outline: A white rectangle approximately 5 pixels wide is left around the screen and a black rectangle approximately 5 pixels wide is placed around that.
- Thin Outline: A white rectangle approximately 15 pixels wide is left around the screen and a black rectangle 1 pixel rule is placed around that.

Thin Outline Rounded: Same
as Thin Outline except that
the corners of the rectangles
are rounded instead of square.
This simulates a monitor
screen.

Wide Rounded: Same as
Wide except that the corners
of the rectangle are rounded
instead of square to simulate
a monitor screen.

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Screen Measurements

TABLE 3 shows the default sizes available in Black and White on Repro Paper and through the separation and half-toning process. Any smaller sizes are available by indicating screen width in millimeters for orders over five images.

TABLE 3 gives measurements for images captured from the IBM Color/Graphics Adapter and from the AT&T Super-Hi resolution mode (mode numbers 00-06 & 09 in TABLE 1, not including optional borders).

Also given are measurements for images captured from the IBM Monochrome adapter and the Hercules graphics card (mode numbers 07 & 08, not including optional borders).

The mode of any captured screen can be determined when processed through the IMSHOW utility.

For Process Color Separation or Gray Tone Conversions on film specify exact width of screen image required in millimeters on

transmittal form.

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TABLE 3

Image Measurements Default Sizes

Black & White Output

Mode	Approximate Width (MM)	Approximate Height	H to W Ratio
1, 4 and 5	169	119	.7
2, 3, 6, 7	166	121	.73
8	186	126	.68
9	169	121	.72

Color Separation and Gray Tones

Mode	Base Width	Height	Ratio
------	------------	--------	-------

1,4	100
13,14,16	100

70	.7
76	.76

→

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