Graphics Muse
http://www.graphics-muse.org

Graphics Reference Series

NetPBM / PBMPlus

Originally begun by Jef Poskanzer in the early 1990's, PBMPlus pulled together a series of Unix based command line tools for image processing. A few years later, NetPBM continued this heritage by gathering similar tools and algorithms from around the Internet and porting them into the PBMPlus environment.

Last released in 1994, this collection of image processing tools continues to be a highly used resource for both the desktop graphics and Web authoring communities.

Available from

FTP Sites:
ftp.x.org/contrib/utilities/
ikaros.fysik4.kth.se/pub/netpbm
ftp.informatik.uni-oldenburg.de/
peipa.essex.ac.uk/ipa/src/manip
ftp.rahul.net/pub/davidsen/source
ftp.cs.ubc.ca/ftp/archive/netpbm
wuarchive.wustl.edu/graphics/graphics/packages/NetPBM

WWW Sites:
www.graphics-muse.org/source/netpbm

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NetPBM tools work by processing images in an intermediate format. The are 4 intermediate formats, each of which supports a particular type of image format:

PBM	Portable BitMaps; 1 bit per pixel images
PGM	Portable GrayMaps; 256 level grayscale images
PPM	Portable PixMaps; full color images
PNM	Portable AnyMap; context-dependent handlers which can deal with any of the other formats plus external formats with multiple types

Each of these is backwards compatible, meaning that PGM support PGM and PBM formats, PPM supports PPM, PGM, and PBM formats and PNM supports all of these.

Images not in one of these formats must first be converted into one of them. The usual pipeline looks something like this:

1. convert to intermediate format
2. process interrmediate format
3. convert to output format

All of the tools can read image data from the standard input, which makes stringing the tools together via command line pipes a simple process.

Build Requirements

Most of the popular Linux distributions will have NetPBM already installed so building from the source may not be necessary. Other platforms may require users to build the package. Most modern Unix systems have proper imake templates installed, so you're best bet is to build using the Imake configuration files. This should entail editing only the Pbmplus.tmpl and pbmplus.h files, followed by "xmkmf; make Makefiles; make depend; make".

TIFF library
If you already have the TIFF image library (libtiff.so or libtiff.a) installed you may be able to build NetPBM using it, but if not you'll want to edit the Pbmplus.tmpl file to configure the build process to build the included TIFF library. If you want an updated version of the TIFF library you may be able to get it from the following FTP sites:

uunet.uu.net/graphics
ucbvax.berkeley.edu/pub/tiff/
metalab.unc.edu/pub/Linux/libs/graphics/

Note: File names change periodically, so you may need to search for the right files in these directories. It's also possible that not all listed repositories still carry these packages.

Read/Write Support

PBM handles the following black&white formats:

Sun icon file	reading	writing
X10 and X11 bitmap file	reading	writing
MacPaint	reading	writing
CMU window manager format	reading	writing
MGR format	reading	writing
Group 3 FAX	reading	writing
GEM .img format	reading	writing
Bennet Yee's "face" format	reading	writing
Atari Degas .pi3 format	reading	writing
Andrew Toolkit raster object reading	writing	
Xerox doodle brushes	reading	
ASCII graphics		writing
HP LaserJet format	writing	
GraphOn graphics	writing	
BBN BitGraph graphics	writing	
Printronix format		writing
Gemini 10x printer format	writing	
Epson printer format	writing	
Unix plot(5) file		writing
Zinc Interface Library icon	writing	

PGM handles the following grayscale formats:

Usenix FaceSaver(tm) file	reading	writing
FITS	reading	writing
Lisp Machine bit-array-file	reading	writing
raw grayscale bytes (e.g. the Molecular Dynamics and Leica CSLM formats)	reading	
Biorad CSLM images	reading	
HIPS	reading	
PostScript "image" data	reading	

PPM handles the following color formats:

GIF	reading	writing
IFF ILBM	reading	writing
PICT	reading	writing
Atari Degas .pi1 format	reading	writing
XPM (X Window System ASCII pixmaps)	reading	writing
PC Paintbrush .pcx format	reading	writing
TrueVision Targa file	reading	writing
HP PaintJet format	reading	writing
Abekas YUV format	reading	writing
MTV/PRT ray-tracer output	reading	
QRT ray-tracer output	reading	
Img-whatnot file	reading	
Xim file	reading	
Atari uncompressed Spectrum	reading	
Atari compressed Spectrum	reading	
NCSA Interactive Color Raster		writing
X11 "puzzle" file		writing
Motif UIL icon file		writing
DEC sixel format		writing
AutoCAD slide format	reading	writing
AutoCAD DXB format		writing

PNM handles the following multi-type formats:

Sun raster file	reading	writing
TIFF	reading	writing
X11 window dump file	reading	writing
X10 window dump file	reading	
PostScript		writing
Zeiss CSLM images (the old format)	reading	

Tool Classifications

The rest of this reference guide lists the available programs by the following classifications:

Programming Libraries
PxM format types
Image Conversion
Effects
Color Handling
Geometry Handling
Scanners

To find the appropriate tool, first choose a PxM format type. Tthen look through that section to find a tool that meets your requirements. The columns on the end show which type of tool this is. The columns are identified using the following table:

Image Conversion or Generation	*i*
Effects	*e*
Color Handling	*c*
Geometry Handling	*g*
Scanners	*s*

Programming libraries

libpbm	functions to support portable bitmap programs
libpgm	functions to support portable graymap programs
libpnm	functions to support portable anymap programs
libppm	functions to support portable pixmap programs

The PxM format libraries support reading and writing of the specific formats, as well as some promotion of formats (from PBM to PGM, for example). See the man pages for details on using these libraries.

PxM format types:

PBM

atktopbm	convert Andrew Toolkit raster object to portable bitmap	i				
brushtopbm	convert a doodle brush file into a portable bitmap	i				
cmuwm-topbm	convert a CMU window manager bitmap into a portable bitmap	i				
g3topbm	convert a Group 3 fax file into a portable bitmap	i				
gemtopbm	convert a GEM .img file into a portable bitmap	i				
icontopbm	convert a Sun icon into a portable bitmap	i				
macptopbm	convert a MacPaint file into a portable bitmap	i				
mgrtopbm	convert a MGR bitmap into a portable bitmap	i				
pbmclean	flip isolated pixels in portable bitmap				g	
pbmlife	apply Conway's rules of Life to a portable bitmap		e	c		
pbmmake	create a blank bitmap of a specified size	i			g	
pbmmask	create a mask bitmap from a regular bitmap		e			
pbmpscale	enlarge a portable bitmap with edge smoothing		e		g	
pbmreduce	read a portable bitmap and reduce it N times			c	g	s
pbmtext	render text into a bitmap		e			
pbmto10x	convert a portable bitmap into Gemini 10X printer graphics	i				
pbmto4425	Display PBM images on an AT&T 4425 terminal	i				
pbmtoascii	convert a portable bitmap into ASCII graphics	i				
pbmtoatk	convert portable bitmap to Andrew Toolkit raster object	i				
pbmtobg	convert a portable bitmap into BitGraph graphics (program name is actually pbmtobbnbg)	i				
pbmtoc-muwm	convert a portable bitmap into a CMU window manager bitmap	i				
pbmtoepsi	convert a portable bitmap into an encapsulated PostScript style preview bitmap	i				
pbmtoepson	convert a portable bitmap into Epson printer graphics	i				
pbmtog3	convert a portable bitmap into a Group 3 fax file	i				
pbmtogem	convert a portable bitmap into a GEM .img file	i				
pbmtogo	convert a portable bitmap into compressed GraphOn graphics	i				
pbmtoicon	convert a portable bitmap into a Sun icon	i				
pbmtolj	convert a portable bitmap into HP LaserJet format	i				
pbmtoln03	convert protable bitmap to DEC LN03+ Sixel output	i				
pbmtolps	convert portable bitmap to PostScript	i				
pbmtomacp	convert a portable bitmap into a MacPaint file	i				
pbmtomgr	convert a portable bitmap into a MGR bitmap	i				

pbmtopgm	convert portable bitmap to portable graymap by averaging areas	i				
pbmtopi3	convert a portable bitmap into an Atari Degas .pi3 file	i				
pbmtopk	convert a portable bitmap into a packed (PK) format font	i				
pbmtoplot	convert a portable bitmap into a Unix plot(5) file	i				
pbmtoptx	convert a portable bitmap into Printronix printer graphics	i				
pbmtox10bm	convert a portable bitmap into an X10 bitmap	i				
pbmtoxbm	convert a portable bitmap into an X11 bitmap	i				
pbmtoybm	convert a portable bitmap into a Bennet Yee "face" file	i				
pbmtozinc	convert a portable bitmap into a Zinc bitmap	i				
pbmupc	create a Universal Product Code bitmap	i				
pgmtopbm	convert a portable graymap into a portable bitmap	i				
pi3topbm	convert an Atari Degas .pi3 file into a portable bitmap	i				
pktopbm	convert packed (PK) format font into portable bitmap(s)	i				
xbmtopbm	convert an X11 or X10 bitmap into a portable bitmap	i				
ybmtopbm	convert a Bennet Yee "face" file into a portable bitmap	i				

PGM

asciitopgm	convert ASCII graphics into a portable graymap	i				
bioradtopgm	convert a Biorad confocal file into a portable graymap	i				
fstopgm	convert a Usenix FaceSaver(tm) file into a portable graymap	i				
hipstopgm	convert a HIPS file into a portable graymap	i				
lispmtopgm	convert a Lisp Machine bitmap file into pgm format	i				
pbmtopgm	convert portable bitmap to portable graymap by averaging areas	i				
pgmbentley	Bentleyize a portable graymap		e			
pgmcrater	create cratered terrain by fractal forgery	i	e		g	
pgmedge	edge detect a portable graymap		e	c		
pgmenhance	edge enhance a portable graymap		e			
pgmhist	print a histogram of the values in a portable graymap			c		
pgmkernel	generate a convolution kernel		e			
pgmnoise	create a graymap made up of white noise	i	e	c		
pgmnorm	normalize the contrast in a portable graymap			c		
pgmoil	turn a portable graymap into an oil painting	i	e			
pgmramp	generate a grayscale ramp	i	e			
pgmtexture	calculate textural features on a portable graymap		e			
pgmtofs	convert portable graymap to Usenix FaceSaver(tm) format	i				
pgmtolispm	convert a portable graymap into Lisp Machine format	i				
pgmtopbm	convert a portable graymap into a portable bitmap	i				
pgmtoppm	colorize a portable graymap into a portable pixmap		e	c		
pnmhistmap	draw a histogram for a PGM or PPM file			c		
ppmtopgm	convert a portable pixmap into a portable graymap	i				
psidtopgm	convert PostScript "image" data into a portable graymap	i				
rawtopgm	convert raw grayscale bytes into a portable graymap	i				
spottopgm	convert SPOT satellite images to Portable Greymap format	i				

PNM

sane pnm	SANE PNM image reader pseudo-backend	i				s
anytopnm	attempt to convert an unknown type of image file to a portable anymap	i				
fitstopnm	convert a FITS file into a portable anymap	i				
giftopnm	convert a GIF file into a portable anymap	i				
pngtopnm	convert a Portable Network Graphics file into a portable anymap	i				
pnmalias	antialias a portable anyumap.			c		
pnmarith	perform arithmetic on two portable anymaps		e			
pnmcat	concatenate portable anymaps	i			g	
pnmcomp	composite two portable anymap files together	i	e			
pnmconvol	general MxN convolution on a portable anymap		e	c		
pnmcrop	crop a portable anymap				g	
pnmcut	cut a rectangle out of a portable anymap				g	
pnmdepth	change the maxval in a portable anymap		e	c		
pnmenlarge	read a portable anymap and enlarge it N times		e		g	
pnmfile	describe a portable anymap	-	-	-	-	-
pnmflip	perform one or more flip operations on a portable anymap				g	
pnmgamma	perform gamma correction on a portable anymap			c		
pnmhisteq	histogram equalise a portable anymap		e	c		
pnmhistmap	draw a histogram for a PGM or PPM file	i		c		
pnmindex	build a visual index of a bunch of anymaps	i		c		
pnminvert	invert a portable anymap		e	c		
pnmmargin	add a border to a portable anymap		e	c	g	
pnmnlfilt	npn-linear filters: smooth, alpha trim mean, optimal estimation smoothing, edge enhancement.		e	c		
pnmnoraw	force a portable anymap into plain format	i				
pnmpad	add borders to portable anymap		e	c	g	
pnmpaste	paste a rectangle into a portable anymap		e	c	g	
pnmrotate	rotate a portable anymap by some angle				g	
pnmscale	scale a portable anymap				g	
pnmshear	shear a portable anymap by some angle				g	
pnmsmooth	smooth out an image		e	c		
pnmtile	replicate a portable anymap into a specified size	i			g	
pnmtoddif	Convert a portable anymap to DDIF format	i				
pnmtofits	convert a portable anymap into FITS format	i				
pnmtopng	convert a portable anymap into a Portable Network Graphics file	i				
pnmtops	convert portable anymap to PostScript	i				
pnmtorast	convert a portable pixmap into a Sun rasterfile	i				
pnmtosgi	convert a portable anymap to a SGI image file	i				
pnmtosir	convert a portable anymap into a Solitaire format	i				
pnmtotiff	convert a a portable anymap into a TIFF file	i				
pnmtoxwd	convert a portable anymap into an X11 window dump	i				
pstopnm	convert a PostScript file into a portable anymap	i				
rasttopnm	convert a Sun rasterfile into a portable anymap	i				
sgitopnm	convert a SGI image file to a portable anymap	i				

sirtopnm	convert a Solitaire file into a portable anymap	i				
tifftopnm	convert a TIFF file into a portable anymap	i				
xwdtopnm	convert a X11 or X10 window dump file into a portable anymap	i				
zeisstopnm	convert a Zeiss confocal file into a portable anymap	i				

PPM

bmptoppm	convert a BMP file into a portable pixmap	i				
gouldtoppm	convert Gould scanner file into a portable pixmap	i				s
hpcdtoppm v0.3	convert a Photo-CD file into a portable pixmap	i				
ilbmtoppm	convert an ILBM file into a portable pixmap	i				
imgtoppm	convert an Img-whatnot file into a portable pixmap	i				
mtvtoppm	convert output from the MTV or PRT ray tracers into a portable pixmap	i				
pcxtoppm	convert a PCX file into a portable pixmap	i				
pgmtoppm	colorize a portable graymap into a portable pixmap	i	e	c		
pi1toppm	convert an Atari Degas .pi1 into a portable pixmap	i				
picttoppm	convert a Macintosh PICT file into a portable pixmap	i				
pjtoppm	convert an HP PaintJet file to a portable pixmap	i				
pnmhistmap	draw a histogram for a PGM or PPM file	i		c		
ppm2tiff	create a TIFF file from a PPM image file	i				
ppm3d	convert two portable pixmap into a red/blue 3d glasses pixmap	i	e	c		
ppmbrighten	change an images Saturation and Value from an HSV map			c		
ppmchange	change all pixels of one color to another in a portable pixmap			c		
ppmdim	dim a portable pixmap down to total blackness		e	c		
ppmdist	simplistic grayscale assignment for machine generated, color images			c		
ppmdither	ordered dither for color images			c		
ppmflash	brighten a picture up to complete white-out			c		
ppmforge	fractal forgeries of clouds, planets, and starry skies	i	e	c		
ppmhist	print a histogram of a portable pixmap			c		
ppmmake	create a pixmap of a specified size and color	i			g	
ppmmix	blend together two portable pixmaps		e	c		
ppmnorm	normalize the contrast in a portable pixmap		e	c		
ppmntsc	make a portable pixmap look like taken from an American TV		e			
ppmpat	make a pretty pixmap	i	e			
ppmquant	quantize the colors in a portable pixmap down to a specified number			c		
ppmquantall	run ppmquant on a bunch of files all at once, so they share a common colormap			c		
ppmqvga	8 plane quantization			c		
ppmrelief	run a Laplacian relief filter on a portable pixmap		e	c		
ppmshift	shift lines of a portable pixmap left or right by a random amount		e	c		
ppmspread	displace a portable pixmap's pixels by a random amount		e			
ppmtoacad	convert portable pixmap to AutoCAD database or slide	i				
ppmtobmp	convert a portable pixmap into a BMP file	i				

ppmtogif	convert a portable pixmap into a GIF file	i				
ppmtoicr	convert a portable pixmap into NCSA ICR format	i				
ppmtoilbm	convert a portable pixmap into an ILBM file	i				
ppmtomap	extract all colors from a portable pixmap			c		
ppmtomitsu	convert a portable pixmap to a Mitsubishi S340-10 file	i				
ppmtopcx	convert a portable pixmap into a PCX file	i				
ppmtopgm	convert a portable pixmap into a portable graymap	i				
ppmtopi1	convert a portable pixmap into an Atari Degas .pi1 file	i				
ppmtopict	convert a portable pixmap into a Macintosh PICT file	i				
ppmtopj	convert a portable pixmap to an HP PaintJet file	i				
ppmtopjxl	convert a portable pixmap into an HP PaintJet XL PCL file	i				
ppmtopuzz	convert a portable pixmap into an X11 "puzzle" file	i				
ppmtorgb3	separate a portable pixmap into three portable graymaps	i		c		
ppmtosixel	convert a portable pixmap into DEC sixel format	i				
ppmtotga	convert portable pixmap into a TrueVision Targa file	i				
ppmtouil	convert a portable pixmap into a Motif UIL icon file	i				
ppmtoxpm	convert a portable pixmap into an X11 pixmap	i				
ppmtoyuv	convert a portable pixmap into an Abekas YUV file	i				
ppmtoyuvsplit	convert a portable pixmap into 3 subsampled raw YUV files	i		c		
qrttoppm	convert output from the QRT ray tracer into a portable pixmap	i				
rawtoppm	convert raw RGB bytes into a portable pixmap	i				
rgb3toppm	combine three portable graymaps into one portable pixmap	i		c		
sldtoppm	convert an AutoCAD slide file into a portable pixmap	i				
spctoppm	convert an Atari compressed Spectrum file into a portable pixmap	i				
sputoppm	convert an Atari uncompressed Spectrum file into a portable pixmap	i				
tgatoppm	convert TrueVision Targa file into a portable pixmap	i				
ximtoppm	convert an Xim file into a portable pixmap	i				
xpmtoppm	convert an X11 pixmap into a portable pixmap	i				
xvminitoppm	convert a XV "thumbnail" picture to PPM	i				
yuvsplittoppm	convert a YUV triplets (MPEG/JPEG) into ppm	i				
yuvtoppm	convert Abekas YUV bytes into a portable pixmap	i				

Related Tools found in other packages:
pnmtopng - probably at PNG web site
ppm2tiffa - probably in libtiff package
sane-pnm - probably in SANE package