XIL Molecules

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This appendix lists in a shorthand form the molecules that are available in the current release of the XIL Imaging Library. As an example of the shorthand used, one of the CellB decompression molecules is listed like this:

decompress_CellB → **colorconvert** → **[scale8nearest]** →

SPARC

[display_ioSUNWgs | display_ioxlib]

x86

[display_ioxlib]

This notation indicates that part of the molecule is platform independent, and part of it is platform dependent. The platform independent portion, only the top line in this example, is performed on all systems. The platform dependent portion can be performed only on the identified system. This example shows that the molecule uses different display functions, depending on whether the application is run on SPARC or on x86 screen hardware. Generally, molecules that don't display an image are entirely platform independent, and those that display an image use platform-dependent display functions.

The generic portion of the molecule performs the following operations:

- Decompresses a compressed image stored in a CellB compressed image sequence (`xil_decompress()`).
- Converts the color space of the decompressed image, in this case from YC_bC_r to RGB (`xil_color_convert()`).

- Optionally, scales the RGB image, which must contain `XIL_BYTE` data, using nearest-neighbor interpolation (`xil_scale()`). The square brackets around **scale8nearest** indicate that this function is optional. There is actually one molecule that performs the scale and a corresponding molecule that doesn't.

The platform-dependent portions of the molecule do the following:

- **SPARC:** The molecule optionally displays the image on a 24-bit display. The vertical bar indicates the molecule can perform the job of either of two functions: a display function that uses calls to the Direct Graphics Access library to display an image on local GS frame-buffer screen or a display function that uses Xlib calls to display an image on any 24-bit frame buffer.
- **x86:** The molecule optionally uses Xlib calls to display an image on any 24-bit frame buffer.

Key to the Names Used in the Molecule Definitions

Table A-1 provides a key to the meaning of the function names used to describe the XIL molecules.

Table A-1 Key to Names Used in Molecule Definitions

Name	**Meaning**
colorconvert	A call to `xil_color_convert()`, used to convert the color space of an image
convert1to8	A call `xil_cast()` with an `XIL_BIT` source image and an `XIL_BYTE` destination
convolve8	A call to `xil_convolve()` with a source and destination image of type `XIL_BYTE`
convolve16	A call to `xil_convolve()` with a source and destination image of type `XIL_SHORT`
copy8	A call to `xil_copy()` with a source and destination image of type `XIL_BYTE`
decompress_Cell	A call to `xil_decompress()` that decompresses an image from a Cell compressed image sequence (CIS)
decompress_CellB	A call to `xil_decompress()` that decompresses an image from a CellB CIS

Table A-1 Key to Names Used in Molecule Definitions

Name	Meaning
decompress_faxG4	A call to `xil_decompress()` that decompresses an image from a faxG4 CIS
decompress_H261	A call to `xil_decompress()` that decompresses an image from an H.261 CIS
decompress_Jpeg	A call to `xil_decompress()` that decompresses an image from a JPEG CIS
decompress_Mpeg1	A call to `xil_decompress()` that decompresses an image from an MPEG-1 CIS
display_ioxlib	A display function that is called implicitly when the destination image for an operation is a display image and no faster display function is available. The display function uses Xlib calls to do its job.
display_ioSUNWgs	A display function that is called implicitly when the destination image for an operation is a display image created from a window on a local GS frame buffer. This is an accelerated display routine. Available only on local GS frame-buffer screens.
display_ioSUNWgx	A display function that is called implicitly when the destination image for an operation is a display image created from a window on a local GX frame buffer. This is an accelerated display routine. Available only on local GX frame-buffer screens.
error_diffusion8_1	A call to `xil_error_diffusion()` with an `XIL_BYTE` source image and an `XIL_BIT` destination
lookup1_8	A call to `xil_lookup()` with an `XIL_BIT` source image and an `XIL_BYTE` destination
lookup8_8	A call to `xil_lookup()` with a source and destination image of type `XIL_BYTE`
nearestcolor8_8	A call to `xil_nearest_color()` with a source and destination image of type `XIL_BYTE`
ordereddither8_1	A call to `xil_ordered_dither()` with an `XIL_BYTE` source image and an `XIL_BIT` destination
ordereddither8_8	A call to `xil_ordered_dither()` with a source and destination image of type `XIL_BYTE`

Table A-1 Key to Names Used in Molecule Definitions

Name	Meaning
rescale8	A call to `xil_rescale()` with a source and destination image of type `XIL_BYTE`
scale1nearest	A call to `xil_scale()` with a source and destination image of type `XIL_BIT` and an interpolation type of `nearest`.
scale8nearest	A call to `xil_scale()` with a source and destination image of type `XIL_BYTE` and an interpolation type of `nearest`.
setvalue8	A call to `xil_set_value()` with a destination image of type `XIL_BYTE`
translate8nearest	A call to `xil_translate()` with a source and destination image of type `XIL_BYTE` and an interpolation type of `nearest`.

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Molecule Descriptions

The molecule descriptions in this section summarize what molecules are available in the current release of the library. For complete information on how to execute a molecule, see either Chapter 14, “Cell Codec” (Cell decompression molecules) or Chapter 21, “Acceleration in XIL Programs” (all other molecules).

Cell Decompression

decompress_Cell → **colorconvert** → **rescale8** → **[scale8nearest]** → **ordereddither8_1**

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decompress_Cell → **nearestcolor8_8** → **[scale8nearest]** →

SPARC
[[copy8] → **display_ioSUNWgx]**

---

decompress_Cell → **[scale8nearest]** → **ordereddither8_8**

CellB Decompression

decompress_CellB → **[rescale8]** → **[scale8nearest]** → **ordereddither8_8** →

SPARC
[display_ioSUNWgx]

---

decompress_CellB → **colorconvert** → **[scale8nearest]** →

SPARC
[display_ioSUNWgs | display_ioxlib]

x86
[display_ioxlib]

JPEG Baseline Sequential Decompression

decompress_Jpeg → [colorconvert] → [rescale8] → errordiffusion8_1 → [scale1nearest]

---

decompress_Jpeg → [rescale8] → ordereddither8_8 →

SPARC
[[scale8nearest] → [copy8] → display_ioSUNWgx]

---

decompress_Jpeg → colorconvert

H.261 Decompression

decompress_H261 → [rescale8] → ordereddither8_8 →

SPARC
[[scale8nearest] → [copy8] → display_ioSUNWgx]

---

decompress_H261 → colorconvert

MPEG-1 Decompression

decompress_Mpeg1 → [rescale8] → ordereddither8_8→

SPARC
[[scale8nearest] → [copy8] → display_ioSUNWgx]

---

decompress_Mpeg1 → colorconvert

FaxG4 Decompression

decompress_faxG4 → transpose1

Image Filtering

convolve8 → convolve8

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convolve16 → convolve16

SPARC *Other*

copy8 → display_ioSUNWgx

convert1to8 → display_ioSUNWgx

lookup1_8 → display_ioSUNWgx

lookup8_8 → display_ioSUNWgx

rescale8 → display_ioSUNWgx

setvalue8 → display_ioSUNWgx

translate8nearest → display_ioSUNWgx