

**layers**

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# Chapter 1

## layers

### 1.1 layers.doc

```
BeginUpdate ()
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ThinLayerInfo ()
UnlockLayer ()
UnlockLayerInfo ()
UnlockLayers ()
UpfrontLayer ()
WhichLayer ()
```

### 1.2 layers.library/BeginUpdate

NAME

---

BeginUpdate -- Prepare to repair damaged layer.

#### SYNOPSIS

```
result = BeginUpdate( l )
d0                      a0
```

```
LONG BeginUpdate( struct Layer *);
```

#### FUNCTION

Convert damage list to ClipRect list and swap in for programmer to redraw through. This routine simulates the ROM library environment. The idea is to only render in the "damaged" areas, saving time over redrawing all of the layer. The layer is locked against changes made by the layer library.

#### INPUTS

l - pointer to a layer

#### RESULTS

result - TRUE if damage list converted to ClipRect list successfully.  
FALSE if list conversion aborted. (probably out of memory)

#### BUGS

If BeginUpdate returns FALSE, programmer must abort the attempt to refresh this layer and instead call EndUpdate( l, FALSE ) to restore original ClipRect and damage list.

#### SEE ALSO

EndUpdate, graphics/layers.h, graphics/clip.h

## 1.3 layers.library/BehindLayer

#### NAME

BehindLayer -- Put layer behind other layers.

#### SYNOPSIS

```
result = BehindLayer( dummy, l )
d0                      a0      a1
```

```
LONG BehindLayer( LONG, struct Layer *);
```

#### FUNCTION

Move this layer to the most behind position swapping bits in and out of the display with other layers. If other layers are REFRESH then collect their damage lists and set the LAYERREFRESH bit in the Flags fields of those layers that may be revealed. If this layer is a backdrop layer then put this layer behind all other backdrop layers. If this layer is NOT a backdrop layer then put in front of the top backdrop layer and behind all other layers.

Note: this operation may generate refresh events in other layers associated with this layer's Layer\_Info structure.

#### INPUTS

dummy - unused

l - pointer to a layer

#### RESULTS

result - TRUE if operation successful  
 FALSE if operation unsuccessful (probably out of memory)

#### BUGS

#### SEE ALSO

graphics/layers.h, graphics/clip.h

## 1.4 layers.library/CreateBehindHookLayer

#### NAME

(V36)

CreateBehindHookLayer -- Create a new layer behind all existing layers,  
 using supplied callback BackFill hook.

#### SYNOPSIS

```
result = CreateBehindHookLayer(li,bm,x0,y0,x1,y1,flags,hook,[,bm2])
d0          a0 a1 d0 d1 d2 d3 d4      a3  [ a2 ]
```

```
struct Layer *CreateBehindHookLayer(struct Layer_Info *, struct BitMap *,
    LONG, LONG, LONG, LONG, LONG, struct Hook *, ... );
```

#### FUNCTION

Create a new Layer of position and size (x0,y0)->(x1,y1)

Make this layer of type found in flags.

Install Layer->BackFill callback Hook.

If SuperBitMap, use bm2 as pointer to real SuperBitMap,  
 and copy contents of Superbitmap into display layer.

If this layer is a backdrop layer then place it behind all  
 other layers including other backdrop layers. If this is  
 not a backdrop layer then place it behind all nonbackdrop  
 layers.

Note: when using SUPERBITMAP, you should also set LAYERSMART flag.

#### INPUTS

li - pointer to LayerInfo structure

bm - pointer to common BitMap used by all Layers

x0,y0 - upper left hand corner of layer

x1,y1 - lower right hand corner of layer

flags - various types of layers supported as bit sets.  
 (for bit definitions, see graphics/layers.h )

hook - Layer->BackFill callback Hook (see InstallLayerHook())

If hook is LAYERS\_BACKFILL, the default backfill is  
 used for the layer. (Same as pre-2.0)

As of V39:

If hook is LAYERS\_NOBACKFILL, the layer will not be  
 backfilled (NO-OP).

bm2 - pointer to optional Super BitMap

## RESULTS

result - pointer to Layer structure if successful  
NULL if not successful

## BUGS

## SEE ALSO

InstallLayerHook, DeleteLayer, graphics/layers.h, graphics/clip.h,  
graphics/gfx.h, utility/hooks.h

## 1.5 layers.library/CreateBehindLayer

## NAME

CreateBehindLayer -- Create a new layer behind all existing layers.

## SYNOPSIS

```
result = CreateBehindLayer(li,bm,x0,y0,x1,y1,flags [,bm2])  
d0          a0 a1 d0 d1 d2 d3   d4 [ a2 ]
```

```
struct Layer *CreateBehindLayer(struct Layer_Info *, struct BitMap *,  
    LONG, LONG, LONG, LONG, LONG, ... );
```

## FUNCTION

Create a new Layer of position and size (x0,y0)->(x1,y1)

Make this layer of type found in flags.

If SuperBitMap, use bm2 as pointer to real SuperBitMap,  
and copy contents of Superbitmap into display layer.

If this layer is a backdrop layer then place it behind all  
other layers including other backdrop layers. If this is  
not a backdrop layer then place it behind all nonbackdrop  
layers.

Note: when using SUPERBITMAP, you should also set LAYERSMART flag.

## INPUTS

li - pointer to LayerInfo structure

bm - pointer to common BitMap used by all Layers

x0,y0 - upper left hand corner of layer

x1,y1 - lower right hand corner of layer

flags - various types of layers supported as bit sets.  
(for bit definitions, see graphics/layers.h )

bm2 - pointer to optional Super BitMap

## RESULTS

result - pointer to Layer structure if successful  
NULL if not successful

## BUGS

## SEE ALSO

DeleteLayer, graphics/layers.h, graphics/clip.h, graphics/gfx.h

---

## 1.6 layers.library/CreateUpfrontHookLayer

NAME (V36)

CreateUpfrontHookLayer -- Create a new layer on top of existing layers,  
using supplied callback BackFill hook.

SYNOPSIS

```
result = CreateUpfrontHookLayer(li,bm,x0,y0,x1,y1,flags,hook,[,bm2])
d0          a0 a1 d0 d1 d2 d3   d4  a3   [ a2 ]
```

```
struct Layer *CreateUpfrontHookLayer(struct Layer_Info *, struct BitMap *,
    LONG, LONG, LONG, LONG, LONG, struct Hook *, ... );
```

FUNCTION

Create a new Layer of position and size (x0,y0)->(x1,y1)  
and place it on top of all other layers.  
Make this layer of type found in flags  
Install Layer->BackFill callback hook.  
if SuperBitMap, use bm2 as pointer to real SuperBitMap.  
and copy contents of Superbitmap into display layer.

Note: when using SUPERBITMAP, you should also set LAYERSMART flag.

INPUTS

li - pointer to LayerInfo structure  
bm - pointer to common BitMap used by all Layers  
x0,y0 - upper left hand corner of layer  
x1,y1 - lower right hand corner of layer  
flags - various types of layers supported as bit sets.  
hook - Layer->BackFill callback Hook (see InstallLayerHook())

If hook is LAYERS\_BACKFILL, the default backfill is  
used for the layer. (Same as pre-2.0)

As of V39:

If hook is LAYERS\_NOBACKFILL, the layer will not be  
backfilled (NO-OP).

bm2 - pointer to optional Super BitMap

RESULTS

result - pointer to Layer structure if successful  
NULL if not successful

BUGS

SEE ALSO

InstallLayerHook, DeleteLayer, graphics/layers.h, graphics/clip.h,  
graphics/gfx.h, utility/hooks.h

## 1.7 layers.library/CreateUpfrontLayer

NAME

CreateUpfrontLayer -- Create a new layer on top of existing layers.

## SYNOPSIS

```
result = CreateUpfrontLayer(li,bm,x0,y0,x1,y1,flags [,bm2])
d0          a0 a1 d0 d1 d2 d3  d4  [ a2 ]
```

```
struct Layer *CreateUpfrontLayer(struct Layer_Info *, struct BitMap *,
    LONG, LONG, LONG, LONG, LONG, ... );
```

## FUNCTION

Create a new Layer of position and size (x0,y0)->(x1,y1) and place it on top of all other layers. Make this layer of type found in flags if SuperBitMap, use bm2 as pointer to real SuperBitMap. and copy contents of Superbitmap into display layer.

Note: when using SUPERBITMAP, you should also set LAYERSMART flag.

## INPUTS

li - pointer to LayerInfo structure  
 bm - pointer to common BitMap used by all Layers  
 x0,y0 - upper left hand corner of layer  
 x1,y1 - lower right hand corner of layer  
 flags - various types of layers supported as bit sets.  
 bm2 - pointer to optional Super BitMap

## RESULTS

result - pointer to Layer structure if successful  
 NULL if not successful

## BUGS

## SEE ALSO

DeleteLayer, graphics/layers.h, graphics/clip.h, graphics/gfx.h

## 1.8 layers.library/DeleteLayer

## NAME

DeleteLayer -- delete layer from layer list.

## SYNOPSIS

```
result = DeleteLayer( dummy, l )
d0          a0,    a1
```

```
LONG DeleteLayer( LONG, struct Layer *);
```

## FUNCTION

Remove this layer from the list of layers. Release memory associated with it. Restore other layers that may have been obscured by it. Trigger refresh in those that may need it. If this is a superbitmap layer make sure SuperBitMap is current. The SuperBitMap is not removed from the system but is available for program use even though the rest of the layer information has been deallocated.

## INPUTS

dummy - unused

l - pointer to a layer

#### RESULTS

result - TRUE if this layer successfully deleted from the system  
FALSE if layer not deleted. (probably out of memory )

#### BUGS

#### SEE ALSO

graphics/layers.h, graphics/clip.h

## 1.9 layers.library/DisposeLayerInfo

#### NAME

DisposeLayerInfo -- Return all memory for LayerInfo to memory pool

#### SYNOPSIS

```
DisposeLayerInfo( li )
                 a0
```

```
void DisposeLayerInfo( struct Layer_Info *);
```

#### FUNCTION

return LayerInfo and any other memory attached to this LayerInfo to memory allocator.

Note: if you wish to delete the layers associated with this Layer\_Info structure, remember to call DeleteLayer() for each of the layers before calling DisposeLayerInfo().

#### INPUTS

li - pointer to LayerInfo structure

#### EXAMPLE

```
-- delete the layers associated this Layer_Info structure --
```

```
DeleteLayer(li, simple_layer);
DeleteLayer(li, smart_layer);
```

```
-- see documentation on DeleteLayer about deleting SuperBitmap layers --
my_super_bitmap_ptr = super_layer->SuperBitmap;
DeleteLayer(li, super_layer);
```

```
-- now dispose of the Layer_Info structure itself --
DisposeLayerInfo(li);
```

#### BUGS

#### SEE ALSO

DeleteLayer, graphics/layers.h

---

## 1.10 layers.library/DoHookClipRects

### NAME

DoHookClipRects - Do the given hook for each of the ClipRects (V39)

### SYNOPSIS

```
DoHookClipRects(hook, rport, rect)
                a0   a1   a2
```

```
void DoHookClipRects(struct Hook *, struct RastPort *, struct Rectangle *);
```

### FUNCTION

This function will call the given hook for each cliprect in the layer that can be rendered into. This is how the backfill hook in Layers is implemented. This means that hidden simple-refresh cliprects will be ignored. It will call the SuperBitMap cliprects, smart refresh off-screen cliprects, and all on screen cliprects. If the rect parameter is not NULL, the cliprects are bounded to the rectangle given.

### INPUTS

hook - pointer to layer callback Hook which will be called with object == (struct RastPort \*) result->RastPort and message == [ (Layer \*) layer, (struct Rectangle) bounds, (LONG) offsetx, (LONG) offsety ]

This hook should fill the Rectangle in the RastPort with the BackFill pattern appropriate for offset x/y.

If hook is LAYERS\_BACKFILL, the default backfill is used for the layer.

If hook is LAYERS\_NOBACKFILL, the layer will not be backfilled (NO-OP).

rport- A pointer to the RastPort that is to be operated on. This function will lock the layer if the RastPort is layered...  
If the rport is non-layered your hook will be called with the rectangle as passed, the RastPort, and a NULL layer...

rect - The bounding rectangle that should be used on the layer. This rectangle "clips" the cliprects to the bound given. If this is NULL, no bounding will take place.  
\*MUST\* not be NULL if the RastPort is non-layered!

### NOTES

The RastPort you are passed back is the same one passed to the function. You should \*not\* use "layered" rendering functions on this RastPort. Generally, you will wish to do BitMap operations such as BltBitMap(). The callback is a raw, low-level rendering call-back. If you need to call a rendering operation with a RastPort, make sure you use a copy of the RastPort and NULL the Layer pointer.

### SEE ALSO

graphics/clip.h utility/hooks.h

## 1.11 layers.library/EndUpdate

### NAME

EndUpdate -- remove damage list and restore state of layer to normal.

### SYNOPSIS

```
EndUpdate( l, flag )
           a0 d0
```

```
void EndUpdate( struct Layer *, UWORD);
```

### FUNCTION

After the programmer has redrawn his picture he calls this routine to restore the ClipRects to point to his standard layer tiling. The layer is then unlocked for access by the layer library.

Note: use flag = FALSE if you are only making a partial update.

You may use the other region functions (graphics functions such as OrRectRegion, AndRectRegion, and XorRectRegion ) to clip adjust the DamageList to reflect a partial update.

### INPUTS

l - pointer to a layer

flag - use TRUE if update was completed. The damage list is cleared.  
use FALSE if update not complete. The damage list is retained.

### EXAMPLE

```
-- begin update for first part of two-part refresh --
BeginUpdate(my_layer);

-- do some refresh, but not all --
my_partial_refresh_routine(my_layer);

-- end update, false (not completely done refreshing yet) --
EndUpdate(my_layer, FALSE);

-- begin update for last part of refresh --
BeginUpdate(my_layer);

-- do rest of refresh --
my_complete_refresh_routine(my_layer);

-- end update, true (completely done refreshing now) --
EndUpdate(my_layer, TRUE);
```

### BUGS

### SEE ALSO

BeginUpdate, graphics/layers.h, graphics/clip.h

## 1.12 layers.library/FattenLayerInfo

### NAME

FattenLayerInfo -- convert 1.0 LayerInfo to 1.1 LayerInfo  
OBSOLETE OBSOLETE OBSOLETE OBSOLETE OBSOLETE

### SYNOPSIS

OBSOLETE OBSOLETE OBSOLETE OBSOLETE OBSOLETE  
FattenLayerInfo( li )  
                  a0

LONG FattenLayerInfo( struct Layer\_Info \* );  
OBSOLETE OBSOLETE OBSOLETE OBSOLETE OBSOLETE

### FUNCTION

V1.1 software and any later releases need to have more info in the Layer\_Info structure. To do this in a 1.0 supportable manner requires allocation and deallocation of the memory whenever most layer library functions are called. To prevent unnecessary allocation/deallocation FattenLayerInfo will preallocate the necessary data structures and fake out the layer library into thinking it has a LayerInfo gotten from NewLayerInfo. NewLayerInfo is the approved method for getting this structure. When a program needs to give up the LayerInfo structure it must call ThinLayerInfo before freeing the memory. ThinLayerInfo is not necessary if New/DisposeLayerInfo are used however.

### INPUTS

li - pointer to LayerInfo structure

### BUGS

### SEE ALSO

NewLayerInfo, ThinLayerInfo, DisposeLayerInfo, graphics/layers.h

## 1.13 layers.library/InitLayers

### NAME

InitLayers -- Initialize Layer\_Info structure  
OBSOLETE OBSOLETE OBSOLETE OBSOLETE OBSOLETE

### SYNOPSIS

OBSOLETE OBSOLETE OBSOLETE OBSOLETE OBSOLETE  
InitLayers( li )  
                  a0

void InitLayers( struct Layer\_Info \* );  
OBSOLETE OBSOLETE OBSOLETE OBSOLETE OBSOLETE

### FUNCTION

Initialize Layer\_Info structure in preparation to use other layer operations on this list of layers. Make the Layers unlocked (open), available to layer operations.

## INPUTS

li - pointer to LayerInfo structure

## BUGS

## SEE ALSO

NewLayerInfo, DisposeLayerInfo, graphics/layers.h

## 1.14 layers.library/InstallClipRegion

## NAME

InstallClipRegion -- Install clip region in layer

## SYNOPSIS

```
oldclipregion = InstallClipRegion( l, region )
d0                a0  a1
```

```
struct Region *InstallClipRegion( struct Layer *, struct Region *);
```

## FUNCTION

Installs a transparent Clip region in the layer. All subsequent graphics calls will be clipped to this region. You MUST remember to call InstallClipRegion(l,NULL) before calling DeleteLayer(l) or the Intuition function CloseWindow() if you have installed a non-NULL ClipRegion in l.

## INPUTS

l - pointer to a layer  
region - pointer to a region

## RESULTS

oldclipregion - The pointer to the previous ClipRegion that was installed. Returns NULL if no previous ClipRegion installed.

Note: If the system runs out of memory while computing the resulting ClipRects the LAYERS\_CLIPRECTS\_LOST bit will be set in l->Flags.

## BUGS

If the system runs out of memory during normal layer operations, the ClipRect list may get swept away and not restored. As soon as there is enough memory and the layer library gets called again the ClipRect list will be rebuilt.

## SEE ALSO

BeginUpdate EndUpdate,  
graphics/layers.h, graphics/clip.h, graphics/regions.h

## 1.15 layers.library/InstallLayerHook

## NAME

InstallLayerHook -- safely install a new Layer->BackFill hook. (V36)

## SYNOPSIS

```
oldhook = InstallLayerHook( layer, hook )
d0          a0          a1
```

```
struct Hook *InstallLayerHook( struct Layer *, struct Hook *);
```

## FUNCTION

Installs a new Layer->Backfill Hook, waiting until it is safe to do so. Locks the layer while substituting the new Hook and removing the old one. If a new Hook is not provided, will install the default layer BackFill Hook.

## INPUTS

layer - pointer to the layer in which to install the Backfill Hook.  
hook - pointer to layer callback Hook which will be called  
with object == (struct RastPort \*) result->RastPort  
and message == [ (Layer \*) layer, (struct Rectangle) bounds,  
(LONG) offsetx, (LONG) offsety ]

This hook should fill the Rectangle in the RastPort with the BackFill pattern appropriate for offset x/y.

If hook is LAYERS\_BACKFILL, the default backfill is used for the layer. (Same as pre-2.0)

As of V39:

If hook is LAYERS\_NOBACKFILL, the layer will not be backfilled (NO-OP).

## RESULTS

oldhook - pointer to the Layer->BackFill Hook that was previously active. Returns NULL if it was the default hook.  
In V39, it could return 1 if there was no hook.

## EXAMPLE

The following hook is a very simple example that does rather little but gives the basis idea of what is going on.

```
*
* This is the code called by the layer hook...
* Note that some other setup is required for this to work, including
* the definition of the PrivateData structure (pd_...) and the
* definition of the BitMapPattern structure (bmp_...)
*
CoolHook: xdef CoolHook
    movem.l d2-d7/a3-a6,-(sp) ; Save these...
    move.l h_SubEntry(a0),a4 ; (my private data #1 here)
    move.l h_Data(a0),a5 ; Put data into address reg
*
* Now, we do the rendering...
* Note that the layer may not be important... But it is here...
*
    move.l (a1)+,a0 ; Get the layer...
```

```

*
* a1 now points at the rectangle...
*
    move.l  pd_GfxBase(a4),a6 ; Point at GfxBase
    move.l  bmp_Pattern(a5),d0 ; Get PatternBitMap
    beq SimpleCase ; None? Simple (0) case
*
* Now do the complex case of a pattern...
*
    move.l  a1,a3 ; Pointer to rectangle
    addq.l  #8,a1 ; Get past rectangle
    move.l  (a1)+,d2 ; X Offset (For pattern)
    move.l  (a1)+,d3 ; Y Offset
;
; Whatever complex blitting you would do in the complex case
; goes here
;
*
* No bitmap, so just do the simple (0) minterm case...
*
SimpleCase: moveq.l #0,d2 ; Clear d2
            move.w  ra_MinX(a1),d2 ; Get X pos
*
            moveq.l #0,d3
            move.w  ra_MinY(a1),d3 ; Get Y pos
*
            moveq.l #0,d4
            move.w  ra_MaxX(a1),d4
            sub.l  d2,d4
            addq.l  #1,d4 ; Get X size
*
            moveq.l #0,d5
            move.w  ra_MaxY(a1),d5
            sub.l  d3,d5
            addq.l  #1,d5 ; Get Y size
*
            move.l  d2,d0 ; X Source
            move.l  d3,d1 ; Y Source
            moveq.l #0,d6 ; NULL minterm
            moveq.l #-1,d7 ; FF mask
*
            move.l  rp_BitMap(a2),a1 ; Get bitmap
            move.l  a1,a0
            CALLSYS BltBitMap ; Do the backfill-0
*
HookDone: movem.l (sp)+,d2-d7/a3-a6 ; Restore
            rts

```

#### NOTES

The RastPort you are passed back is the same one passed to the function. You should *not* use "layered" rendering functions on this RastPort. Generally, you will wish to do BitMap operations such as BltBitMap(). The callback is a raw, low-level rendering call-back. If you need to call a rendering operation with a RastPort, make sure you use a copy of the RastPort and NULL the Layer pointer.

BUGS

SEE ALSO

graphics/clip.h utility/hooks.h

## 1.16 layers.library/InstallLayerInfoHook

NAME

InstallLayerInfoHook - Install a backfill hook for non-layer (V39)

SYNOPSIS

```
oldhook=InstallLayerInfoHook(li,hook)
d0                                a0 a1
```

```
struct Hook *InstallLayerInfoHook(struct Layer_Info *,struct Hook *);
```

FUNCTION

This function will install a backfill hook for the Layer\_Info structure passed. This backfill hook will be used to clear the background area where no layer exists. The hook function is passed the RastPort and the bounds just like the layer backfill hook. Note that this hook could be called for any layer.

INPUTS

li - pointer to LayerInfo structure

hook - pointer to layer callback Hook which will be called with object == (struct RastPort \*) result->RastPort and message == [ (ULONG) undefined, (struct Rectangle) bounds ]

This hook should fill the Rectangle in the RastPort with the BackFill pattern appropriate for rectangle given.

If hook is LAYERS\_BACKFILL, the default backfill is used. (Same as pre-2.0)

If hook is LAYERS\_NOBACKFILL, there will be no backfill. (NO-OP).

RESULTS

oldhook - Returns the backfill hook that was in the Layer\_Info. Returns LAYERS\_BACKFILL if the default was installed. Returns LAYERS\_NOBACKFILL if there was a NO-OP hook. Returns -1 if there was some failure.

EXAMPLE

See the example in InstallLayerHook. Note that both the Layer pointer and the OffsetX/Y values are not available in the LayerInfo backfill hook.

NOTES

When the hook is first installed, it is *\*NOT\** called. It is up to the application to know if it is safe to fill in the area. Since the hook will be called when a layer is deleted, the easiest way to have layers call this hook is to create and delete a backdrop

layer that is the size of the area.

Also, note that currently the first long word of the hook message contains an undefined value. This value may look like a layer pointer. It is *\*not\** a layer pointer.

The RastPort you are passed back is the same one passed to the function. You should *\*not\** use "layered" rendering functions on this RastPort. Generally, you will wish to do BitMap operations such as BltBitMap(). The callback is a raw, low-level rendering call-back. If you need to call a rendering operation with a RastPort, make sure you use a copy of the RastPort and NULL the Layer pointer.

SEE ALSO  
InstallLayerHook

## 1.17 layers.library/LockLayer

### NAME

LockLayer -- Lock layer to make changes to ClipRects.

### SYNOPSIS

```
LockLayer( dummy, l )
           a0     a1
```

```
void LockLayer( LONG, struct Layer *);
```

### FUNCTION

Make this layer unavailable for other tasks to use.

If another task is already using this layer then wait for it to complete and then reserve the layer for your own use.

(this function does the same thing as graphics.library/LockLayerRom)

Note: if you wish to lock MORE THAN ONE layer at a time, you must call LockLayerInfo() before locking those layers and then call UnlockLayerInfo() when you have finished. This is to prevent system "deadlocks".

Further Note: while you hold the lock on a layer, Intuition will block on operations such as windowsizing, dragging, menus, and depth arranging windows in this layer's screen. It is recommended that YOU do not make Intuition function calls while the layer is locked.

### INPUTS

dummy - unused  
l - pointer to a layer

### BUGS

### SEE ALSO

UnlockLayer, LockLayerInfo, UnlockLayerInfo,  
graphics.library/LockLayerRom, graphics.layers.h, graphics/clip.h

---

## 1.18 layers.library/LockLayerInfo

### NAME

LockLayerInfo -- Lock the LayerInfo structure.

### SYNOPSIS

```
LockLayerInfo( li )
               a0
```

```
void LockLayerInfo( struct Layer_Info *);
```

### FUNCTION

Before doing an operation that requires the LayerInfo structure, make sure that no other task is also using the LayerInfo structure. LockLayerInfo() returns when the LayerInfo belongs to this task. There should be an UnlockLayerInfo for every LockLayerInfo.

Note: All layer routines presently LockLayerInfo() when they start up and UnlockLayerInfo() as they exit. Programmers will need to use these Lock/Unlock routines if they wish to do something with the LayerStructure that is not supported by the layer library.

### INPUTS

li - pointer to Layer\_Info structure

### BUGS

### SEE ALSO

UnlockLayerInfo, graphics/layers.h

## 1.19 layers.library/LockLayers

### NAME

LockLayers -- lock all layers from graphics output.

### SYNOPSIS

```
LockLayers( li )
            a0
```

```
void LockLayers( struct Layer_Info *);
```

### FUNCTION

First calls LockLayerInfo()  
Make all layers in this layer list locked.

### INPUTS

li - pointer to Layer\_Info structure

### BUGS

### SEE ALSO

LockLayer, LockLayerInfo, graphics/layers.h

---

## 1.20 layers.library/MoveLayer

### NAME

MoveLayer -- Move layer to new position in BitMap.

### SYNOPSIS

```
result = MoveLayer( dummy, l, dx, dy )
d0                a0      a1 d0 d1
```

```
LONG MoveLayer( LONG, struct Layer *, LONG, LONG);
```

### FUNCTION

Move this layer to new position in shared BitMap.  
If any refresh layers become revealed, collect damage and set REFRESH bit in layer Flags.

### INPUTS

dummy - unused  
l - pointer to a nonbackdrop layer  
dx - delta to add to current x position  
dy - delta to add to current y position

### RETURNS

result - TRUE if operation successful  
FALSE if failed (out of memory)

### BUGS

May not handle (dx,dy) which attempts to move the layer outside the layer's RastPort->BitMap bounds .

### SEE ALSO

graphics/layers.h, graphics/clip.h

## 1.21 layers.library/MoveLayerInFrontOf

### NAME

MoveLayerInFrontOf -- Put layer in front of another layer.

### SYNOPSIS

```
result = MoveLayerInFrontOf( layertomove, targetlayer )
                                a0                a1
```

```
LONG MoveLayerInFrontOf( struct Layer *, struct Layer *);
```

### FUNCTION

Move this layer in front of target layer, swapping bits in and out of the display with other layers.  
If this is a refresh layer then collect damage list and set the LAYERREFRESH bit in layer->Flags if redraw required.

Note: this operation may generate refresh events in other layers associated with this layer's Layer\_Info structure.

### INPUTS

layertomove - pointer to layer which should be moved  
targetlayer - pointer to target layer in front of which to move layer

#### RESULTS

result = TRUE      if operation successful  
          FALSE      if operation unsuccessful (probably out of memory)

#### BUGS

#### SEE ALSO

graphics/layers.h

## 1.22 layers.library/MoveSizeLayer

#### NAME

(V36)

MoveSizeLayer -- Position/Size layer

#### SYNOPSIS

```
result = MoveSizeLayer( layer, dx, dy, dw, dh )
d0                            a0        d0  d1  d2  d3
```

```
LONG MoveSizeLayer( struct Layer *, LONG, LONG, LONG, LONG);
```

#### FUNCTION

Change upperleft and lower right position of Layer.

#### INPUTS

dummy - unused  
l - pointer to a nonbackdrop layer  
dx,dy - change upper left corner by (dx,dy)  
dw,dy - change size by (dw,dh)

#### RETURNS

result - TRUE if operation successful  
          FALSE if failed (due to out of memory)  
          FALSE if failed (due to illegal layer->bounds)

#### BUGS

#### SEE ALSO

graphics/layers.h, graphics/clip.h

## 1.23 layers.library/NewLayerInfo

#### NAME

NewLayerInfo -- Allocate and Initialize full Layer\_Info structure.

#### SYNOPSIS

```
result = NewLayerInfo()
d0
```

```
struct Layer_Info *NewLayerInfo( void );
```

---

**FUNCTION**

Allocate memory required for full Layer\_Info structure.  
Initialize Layer\_Info structure in preparation to use  
other layer operations on this list of layers.  
Make the Layer\_Info unlocked (open).

**INPUTS**

None

**RESULT**

result- pointer to Layer\_Info structure if successful  
NULL if not enough memory

**BUGS****SEE ALSO**

graphics/layers.h

## 1.24 layers.library/ScrollLayer

**NAME**

ScrollLayer -- Scroll around in a superbitmap, translate coordinates  
in non-superbitmap layer.

**SYNOPSIS**

```
ScrollLayer( dummy, l, dx, dy )  
            a0      a1 d0 d1
```

```
void ScrollLayer( LONG, struct Layer *, LONG, LONG);
```

**FUNCTION**

For a SuperBitMap Layer:

Update the SuperBitMap from the layer display, then copy bits  
between Layer and SuperBitMap to reposition layer over different  
portion of SuperBitMap.

For nonSuperBitMap layers, all (x,y) pairs are adjusted by  
the scroll(x,y) value in the layer. To cause (0,0) to actually  
be drawn at (3,10) use ScrollLayer(-3,-10). This can be useful  
along with InstallClipRegion to simulate Intuition GZZWindows  
without the overhead of an extra layer.

**INPUTS**

dummy - unused  
l - pointer to a layer  
dx - delta to add to current x scroll value  
dy - delta to add to current y scroll value

**BUGS**

May not handle (dx,dy) which attempts to move the layer outside the  
layer's SuperBitMap bounds.

**SEE ALSO**

graphics/layers.h

---

## 1.25 layers.library/SizeLayer

### NAME

SizeLayer -- Change the size of this nonbackdrop layer.

### SYNOPSIS

```
result = SizeLayer( dummy, l, dx, dy )
d0          a0      a1 d0 d1
```

```
LONG SizeLayer( LONG, struct Layer *, LONG, LONG);
```

### FUNCTION

Change the size of this layer by (dx,dy). The lower right hand corner is extended to make room for the larger layer. If there is SuperBitMap for this layer then copy pixels into or out of the layer depending on whether the layer increases or decreases in size. Collect damage list for those layers that may need to be refreshed if damage occurred.

### INPUTS

dummy - unused  
 l - pointer to a nonbackdrop layer  
 dx - delta to add to current x size  
 dy - delta to add to current y size

### RESULTS

result - TRUE if operation successful  
 FALSE if failed (out of memory)

### BUGS

### SEE ALSO

graphics/layers.h, graphics/clip.h

## 1.26 layers.library/SwapBitsRastPortClipRectayers.library/SwapBitsRastPortClipRect

### NAME

SwapBitsRastPortClipRect -- Swap bits between common bitmap and obscured ClipRect

### SYNOPSIS

```
SwapBitsRastPortClipRect( rp, cr )
                          a0 a1
```

```
void SwapBitsRastPortClipRect( struct RastPort *, struct ClipRect *);
```

### FUNCTION

Support routine useful for those that need to do some operations not done by the layer library. Allows programmer to swap the contents of a small BitMap with a subsection of the display. This is accomplished without using extra memory. The bits in the display RastPort are exchanged with the bits in the ClipRect's BitMap.

Note: the ClipRect structures which the layer library allocates are actually a little bigger than those described in the graphics/clip.h include file. So be warned that it is not a good idea to have instances of cliprects in your code.

#### INPUTS

rp - pointer to rastport  
cr - pointer to cliprect to swap bits with

#### NOTE

Because the blit operation started by this function is done asynchronously, it is imperative that a WaitBlit() be performed before releasing or using the processor to modify any of the associated structures.

#### BUGS

#### SEE ALSO

graphics/clip.h, graphics/rastport.h, graphics/clip.h

## 1.27 layers.library/ThinLayerInfo

#### NAME

ThinLayerInfo -- convert 1.1 LayerInfo to 1.0 LayerInfo.  
OBSOLETE OBSOLETE OBSOLETE OBSOLETE OBSOLETE

#### SYNOPSIS

OBSOLETE OBSOLETE OBSOLETE OBSOLETE OBSOLETE  
ThinLayerInfo( li )  
                  a0

void ThinLayerInfo( struct Layer\_Info \* );  
OBSOLETE OBSOLETE OBSOLETE OBSOLETE OBSOLETE

#### FUNCTION

return the extra memory needed that was allocated with FattenLayerInfo. This is must be done prior to freeing the Layer\_Info structure itself. V1.1 software should be using DisposeLayerInfo.

#### INPUTS

li - pointer to LayerInfo structure

#### BUGS

#### SEE ALSO

DisposeLayerInfo, FattenLayerInfo, graphics/layers.h

## 1.28 layers.library/UnlockLayer

#### NAME

UnlockLayer -- Unlock layer and allow graphics routines to use it.

---

## SYNOPSIS

```
UnlockLayer( l )
            a0
```

```
void UnlockLayer( struct Layer *);
```

## FUNCTION

When finished changing the ClipRects or whatever you were doing with this layer you must call UnlockLayer() to allow other tasks to proceed with graphic output to the layer.

## INPUTS

l - pointer to a layer

## BUGS

## SEE ALSO

graphics/layers.h, graphics/clip.h

## 1.29 layers.library/UnlockLayerInfo

## NAME

UnlockLayerInfo -- Unlock the LayerInfo structure.

## SYNOPSIS

```
UnlockLayerInfo( li )
                a0
```

```
void UnlockLayerInfo( struct Layer_Info *);
```

## FUNCTION

After the operation is complete that required a LockLayerInfo, unlock the LayerInfo structure so that other tasks may affect the layers.

## INPUTS

li - pointer to the Layer\_Info structure

## BUGS

## SEE ALSO

LockLayerInfo, graphics/layers.h

## 1.30 layers.library/UnlockLayers

## NAME

UnlockLayers -- Unlock all layers from graphics output.  
Restart graphics output to layers that have been waiting

## SYNOPSIS

```
UnlockLayers( li )
            a0
```

```
void UnlockLayers( struct Layer_Info *);
```

#### FUNCTION

Make all layers in this layer list unlocked.  
Then call UnlockLayerInfo

#### INPUTS

li - pointer to the Layer\_Info structure

#### BUGS

#### SEE ALSO

LockLayers, UnlockLayer, graphics/layers.h

## 1.31 layers.library/UpfrontLayer

#### NAME

UpfrontLayer -- Put layer in front of all other layers.

#### SYNOPSIS

```
result = UpfrontLayer( dummy, l )  
d0          a0      a1
```

```
LONG UpfrontLayer( LONG, struct Layer *);
```

#### FUNCTION

Move this layer to the most upfront position swapping bits in and out of the display with other layers.  
If this is a refresh layer then collect damage list and set the LAYERREFRESH bit in layer->Flags if redraw required.  
By clearing the BACKDROP bit in the layers Flags you may bring a Backdrop layer up to the front of all other layers.

Note: this operation may generate refresh events in other layers associated with this layer's Layer\_Info structure.

#### INPUTS

dummy - unused  
l - pointer to a nonbackdrop layer

#### RESULTS

```
result - TRUE   if operation successful  
        FALSE  if operation unsuccessful (probably out of memory)
```

#### BUGS

#### SEE ALSO

graphics/layers.h

## 1.32 layers.library/WhichLayer

---

## NAME

WhichLayer -- Which Layer is this point in?

## SYNOPSIS

```
layer = WhichLayer( li, x, y )  
d0          a0 d0 d1
```

```
struct Layer *WhichLayer(struct Layer_Info*, WORD, WORD);
```

## FUNCTION

Starting at the topmost layer check to see if this point (x,y) occurs in this layer. If it does return the pointer to this layer. Return NULL if there is no layer at this point.

## INPUTS

li = pointer to LayerInfo structure  
(x,y) = coordinate in the BitMap

## RESULTS

layer - pointer to the topmost layer that this point is in  
NULL if this point is not in a layer

## SEE ALSO

graphics/layers.h