



GOC Keywords

1

```
@alias(<protoMsg>) <messageDef>;
<ret> = @call [, <flags>+] [{<cast>}]
    <obj>::[{<cast2>}] <msg>(<params>*);

@callsuper();
@callsuper <obj>::<class>::<msg>(<params>*) [<flags>,];
@chunk <type> <name> [ = <init> ];
@chunkArray <stype> <aname> [ = {<init>} ];
@class <cname>, <super> [, master [, variant]];
@classdecl <cname> [, <cflags>];
@default
@define <macro> <definition>
@deflib <libname>
@dispatch [noFree] <nObj>::<nMsg>::<event>;
<ret> = @dispatchCall [noFree] [{<cast>}]
    <nobj>::<nMsg>::<event>;
@elementArray <stype> <arrayname> [= {<init>}];
@end <segname>
@endc
@endif
@endlib
@exportMessages <expName>, <num>;
@extern method <class> <message>;
@extern [chunk|object|visMoniker] <name>;
gcNList(<manufID>, <ltype>) = [<oname>, ]* <oname>
(@genChildren, @genParent) shortcuts for @call and @send
@gstring <sname> = { <gstringDef> };
@header <type> [ = <init> ];
@if <condition>
#ifdef <flag>
#ifdef <flag>
#importMessage <expName>, <messageDef>;
#include [ <<headerfile>> | "<headerfile>" ]
@instance <insType> <iname> [ = <default> ];
@instance @activeList <iname> [ = <default> ];
@instance @composite <iname> [ = <linkName> ];
@instance @kbdAccelerator <iname>
    [ = @specificUI <default> ];
@instance @link <iname> [ = <default> ];
@instance @visMoniker <iname> [ = <default> ];
@message <retType> <mname>([@stack] <param>*);
@method [ <hname>, ] <cname>, <mname>;
@object <class> <name> <flags>* = {
    <fieldName> = <init>;*
    <varName> [ = <init> ];
}
@optimize
@prototype <messageDef>;
<event> = @record <obj>::<msg>(<params>*);
@reloc <iname>, [ (<count>, <struct>), ] <ptrType>;
@reloc <vname>, <fn>, [ (<count>, <struct>), ] <ptrType>;
@reserveMessages <num>;
@send [, <flags>+] <obj>::<msg>(<params>*);
@start <segname> [ , <flags> ];
@vardata <type> <vname>;
@vardataAlias (<origName>) <newType> <newName>;
(@visChildren, @visParent) shortcuts for @call and @send
```

2



ArcClass

@class ArcClass, GrObjClass

Instance Data

word	AI_arcCloseType
WWFixed	AI_startAngle
WWFixed	AI_endAngle
PointWWFixed	AI_startPoint
PointWWFixed	AI_endPoint
PointWWFixed	AI_midPoint
WWFixed	AI_radius

Messages

MSG_ARC_SET_START_ANGLE
MSG_ARC_SET_END_ANGLE
MSG_ARC_SET_ARC_CLOSE_TYPE
MSG_ARC_UNDO_REPLACE_ARC_GEOMETRY_INSTANCE_DATA
MSG_ARC_REPLACE_ARC_GEOMETRY_INSTANCE_DATA

3



BitmapGuardianClass

@class BitmapGuardianClass, GrObjVisGuardianClass

Instance Data

BitmapGuardianFlags	BGI_flags
ClassStruct	*BGI_toolClass

Types and Flags

ByteFlags	BitmapGuardianFlags	
	BGF_POINTER_ACTIVE	0x02
	BGF_REAL_ESTATE_RESIZE	0x01

Messages

MSG_BG_SET_TOOL_CLASS
MSG_BG_SET_BITMAP_POINTER_ACTIVE_STATUS
MSG_BG_REAL_ESTATE_HANDLE_HIT_DETECTION
MSG_BG_ACTIVATE_REAL_ESTATE_RESIZE
MSG_BG_JUMP_START_REAL_ESTATE_RESIZE
MSG_BG_PTR_REAL_ESTATE_RESIZE
MSG_BG_END_REAL_ESTATE_RESIZE
MSG_BG_CREATE_VIS_BITMAP
MSG_BG_GET_TOOL_CLASS



ColorSelectorClass

```
@class ColorSelectorClass, GenControlClass
```

Instance Data

```
ColorQuad          CSI_color = {0, 0, 0, 0}
byte               CSI_colorIndeterminate
SystemDrawMask     CSI_drawMask = SDM_0
byte              CSI_drawMaskIndeterminate
GraphicPattern     CSI_pattern = {0, 0}
byte              CSI_patternIndeterminate
ColorModifiedStates CSI_states = 0
ColorToolboxPreferences
                  CSI_toolboxPrefs = CTP_IS_POPUP
```

Variable Data

```
optr ATTR_COLOR_SELECTOR_DISABLE_OBJECT
```

Structures

```
WordFlags          CSFeatures
                  CSF_FILLED_LIST    0x10
                  CSF_INDEX          0x08
                  CSF_RGB             0x04
                  CSF_DRAW_MASK      0x02
                  CSF_PATTERN        0x01
WordFlags          CStoolboxFeatures
                  CSTF_INDEX         0x04
                  CSTF_DRAW_MASK     0x02
                  CSTF_PATTERN       0x01
CS_DEFAULT_FEATURES(CSF_FILLED_LIST | CSF_INDEX | \
                  CSF_RGB | CSF_DRAW_MASK | \
                  CSF_PATTERN)
CS_DEFAULT_TOOLBOX_FEATURES(CSTF_INDEX | \
                  CSTF_DRAW_MASK | CSTF_PATTERN)
ByteFlags          ColorModifiedStates
                  CMS_COLOR_CHANGED  0x04
                  CMS_DRAW_MASK_CHANGED 0x02
                  CMS_PATTERN_CHANGED 0x01
ByteEnum           ColoredObjectOrientation
                  COO_AREA_ORIENTED  0
                  COO_TEXT_ORIENTED  1
                  COO_LINE_ORIENTED  2
typedef ByteFlags ColorToolboxPreferences
                  CTP_INDEX_ORIENTATION 0x30
                  CTP_DRAW_MASK_ORIENTATION 0x0c
                  CTP_PATTERN_ORIENTATION 0x02
                  CTP_IS_POPUP         0x01
                  CTP_INDEX_ORIENTATION_OFFSET 4
                  CTP_DRAW_MASK_ORIENTATION_OFFSET 2
                  CTP_PATTERN_ORIENTATION_OFFSET 1
```

Messages

```
Boolean MSG_COLOR_SELECTOR_GET_COLOR(
                  ColorQuad *retValue)
void MSG_COLOR_SELECTOR_SET_COLOR(
                  ColorQuad colorQuad,
                  Boolean indeterminateFlag)
```

```

void MSG_COLOR_SELECTOR_UPDATE_COLOR(
    ColorQuad    colorQuad,
    Boolean      indeterminateFlag)
void MSG_COLOR_SELECTOR_APPLY_COLOR(
    ColorQuad    colorQuad)
void MSG_COLOR_SELECTOR_UPDATE_FILLED_STATUS(
    SystemDrawMask drawMask,
    Boolean      indeterminateFlag,
    word        updateToolboxFlag)
Boolean MSG_COLOR_SELECTOR_GET_FILLED_MONIKER(
    optr        *retValue)
Boolean MSG_COLOR_SELECTOR_GET_UNFILLED_MONIKER(
    optr        *retValue)
Boolean MSG_COLOR_SELECTOR_GET_DRAW_MASK(
    SystemDrawMask *retValue))
void MSG_COLOR_SELECTOR_SET_DRAW_MASK(
    SetDrawMask   drawMask,
    Boolean      indeterminateFlag)
void MSG_COLOR_SELECTOR_APPLY_DRAW_MASK(
    SystemDrawMask drawMask)
Boolean MSG_COLOR_SELECTOR_GET_PATTERN(
    GraphicPattern *retValue)
void MSG_COLOR_SELECTOR_SET_PATTERN(
    GraphicPattern pattern,
    Boolean      indeterminateFlag)
void MSG_COLOR_SELECTOR_UPDATE_PATTERN(
    GraphicPattern pattern,
    Boolean      indeterminateFlag)
void MSG_COLOR_SELECTOR_APPLY_PATTERN(
    GraphicPattern pattern)
void MSG_META_COLORED_OBJECT_SET_COLOR(
    ColorQuad    colorQuad)
void MSG_META_COLORED_OBJECT_SET_DRAW_MASK(
    SystemDrawMask drawMask)
void MSG_META_COLORED_OBJECT_SET_PATTERN(
    GraphicPattern pattern)

```

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DictControlClass

```
@class DictControlClass, GenControlClass
```

Instance Data

```

word        DCI_status
@default GCI_output = (TO_APP_TARGET)
@default GII_visibility = GIV_DIALOG
@default GI_states = (@default | GS_ENABLED)

```

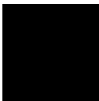
Types and Flags

```

WordFlags DictFeatures
    DF_DICT    0x01
#define DICT_GCM_FEATURES DF_DICT

WordFlags DictToolboxFeatures
    DTF_DICT    0x01
#define DICT_GCM_TOOLBOX_FEATURES DTF_DICT

```



EditTextGuardianClass

```
@class EditTextGuardianClass, TextGuardianClass
```

EditUserDictionaryControlClass

```
@class EditUserDictionaryControlClass, GenControlClass
```

Instance Data

```
MemHandle    EUDCI_userDictList
MemHandle    EUDCI_icBuff
    @default GII_attrs = (@default | GIA_MODAL)
    @default GII_type = GIT_COMMAND
    @default GII_visibility = GIV_DIALOG
```

Types and Flags

```
WordFlags    EditUserDictionaryFeatures
    EUDF_EDIT_USER_DICTIONARY    0x01
WordFlags    EditUserDictionaryToolboxFeatures
    EUDTF_EDIT_USER_DICTIONARY    0x01
EUDC_DEFAULT_FEATURES    (EUDF_EDIT_USER_DICTIONARY)
EUDC_DEFAULT_TOOLBOX_FEATURES
    (EUDTF_EDIT_USER_DICTIONARY)
```

Messages

```
void MSG_EUDC_GET_USER_DICTIONARY_LIST_MONIKER()
void
    MSG_EUDC_DELETE_SELECTED_WORD_FROM_USER_DICTIONARY()
void MSG_EUDC_ADD_NEW_WORD_TO_USER_DICTIONARY()
void MSG_EUDC_UPDATE_SELECTED_WORD()
void MSG_EUDC_CLOSE_EDIT_BOX()
void MSG_META_EDIT_USER_DICTIONARY_COMPLETED()
```

ExportControlClass

```
@class ExportControlClass, ImportExportClass
```

Instance Data

```
ExportControlAttrs      ECI_attrs
ImpexDataClasses        ECI_dataClasses
optr                    ECI_destination
word                    ECI_message
```

Variable Data

```
optr ATTR_EXPORT_CONTROL_APP_UI
```

Types and Flags

```
WordFlags      ExportControlAttrs
    ECA_IGNORE_INPUT      0x8000
ByteFlags      ExportControlFeatures
    EXPORTCF_EXPORT_TRIGGER      0x0008
    EXPORTCF_FORMAT_OPTIONS      0x0004
    EXPORTCF_BASIC      0x0002
    EXPORTCF_GLYPH      0x0001
EXPORTC_DEFAULT_FEATURES (EXPORTCF_GLYPH |
    EXPORTCF_BASIC | EXPORTCF_FORMAT_OPTIONS |
    EXPORTCF_EXPORT_TRIGGER)
ByteFlags      ExportControlToolboxFeatures
    EXPORTCTF_DIALOG_BOX      0x01
EXPORTC_DEFAULT_TOOLBOX_FEATURES (EXPORTCTF_DIALOG_BOX)
```

Messages

```
void MSG_EXPORT_CONTROL_SET_DATA_CLASSES(
    ImpexDataClasses dataClass)
ImpexDataClasses MSG_EXPORT_CONTROL_GET_DATA_CLASSES()
void MSG_EXPORT_CONTROL_SET_ACTION(
    optr destOD, word ECImsg)
void MSG_EXPORT_CONTROL_SET_MSG(word ECImsg)
void MSG_EXPORT_CONTROL_GET_ACTION(
    ObjectState *retValue)
void MSG_EXPORT_CONTROL_SET_ATTRS(
    ExportControlAttrs attrs)
ExportControlAttrs MSG_EXPORT_CONTROL_GET_ATTRS()
word MSG_EXPORT_CONTROL_GET_FILE_SELECTOR_OFFSET(
    ExportControlFeatures features)
word MSG_EXPORT_CONTROL_GET_FORMAT_LIST_OFFSET(
    ExportControlFeatures features)
word MSG_EXPORT_CONTROL_GET_FILE_NAME_OFFSET(
    ExportControlFeatures features)
word MSG_EXPORT_CONTROL_GET_FORMAT_UI_PARENT_OFFSET(
    ExportControlFeatures features)
word MSG_EXPORT_CONTROL_GET_APP_UI_PARENT_OFFSET(
    ExportControlFeatures features)
word MSG_EXPORT_CONTROL_GET_EXPORT_TRIGGER_OFFSET(
    ExportControlFeatures features)
void MSG_EXPORT_CONTROL_EXPORT_COMPLETE(
    ImpexTranslationParams *itParams)
```

FloatFormatClass

```
@class FloatFormatClass, GenControlClass
```

Instance Data

```
word          formatInfoStrucHan = 0;
@default GCI_output = (TO_APP_TARGET)
```

Structures

```
typedef struct {
    VMFileHandle    NFFC_vmFileHan
    VMBlockHandle   NFFC_vmBlkHan
    FormatIdType     NFFC_format
    word            NFFC_count
} NotifyFloatFormatChange
```

Messages

```
void MSG_FLOAT_CTRL_REQUEST_MONIKER(
    MemHandle formatInfoStrucHan)
void MSG_FLOAT_CTRL_UPDATE_UI(
    MemHandle formatInfoStrucHan)
void MSG_FLOAT_CTRL_FORMAT_SELECTED(
    MemHandle formatInfoStrucHan)
void MSG_FLOAT_CTRL_USER_DEF_INVOKE(
    MemHandle formatInfoStrucHan)
void MSG_FLOAT_CTRL_USER_DEF_OK(
    MemHandle formatInfoStrucHan)
void MSG_FLOAT_CTRL_FORMAT_DELETE(
    MemHandle formatInfoStrucHan)
void MSG_FLOAT_CTRL_REPLACE_NUM_FORMAT(
    MemHandle formatInfoStrucHan)
void MSG_FLOAT_CTRL_FORMAT_APPLY(
    MemHandle formatInfoStrucHan)
void MSG_FCF_FORMAT_CHANGE(MemHandle formatInfoStrucHan)
void MSG_FCT_FORMAT_CHANGE(MemHandle formatInfoStrucHan)
```

Routines

```
VMBlockHandle FloatFormatInit(word userDefVMFileHan)
word FloatFormatGetFormatParamsWithListEntry(
    FormatInfoStruc *formatInfoStruc)
void FloatFormatInitFormatList(
    FormatInfoStruc *formatInfoStruc)
void FloatFormatProcessFormatSelected(
    FormatInfoStruc *formatInfoStruc)
void FloatFormatInvokeUserDefDB(
    FormatInfoStruc *formatInfoStruc)
word FloatFormatUserDefOK(
    FormatInfoStruc *formatInfoStruc)
word *FloatFormatGetFormatTokenWithName(
    FormatInfoStruc *formatInfoStruc)
void FloatFormatGetFormatParamsWithToken(
    FormatInfoStruc *formatInfoStruc,
    FormatParams *buffer)
FormatIdType FloatFormatDelete(
    FormatInfoStruc *formatInfoStruc)
void FloatFormatIsFormatTheSame(
    FormatInfoStruc *formatInfoStruc,
    FormatParams *formatParams)
word FloatFormatAddFormat(
```

```
FormatInfoStruc *formatInfoStruc,  
FormatParams *formatParams,  
word formatToken)
```

GenApplicationClass

```
@class GenApplicationClass, GenClass
```

Instance Data

```
AppInstanceReference GAI_appRef = {"", "", NullHandle, {0}}  
word GAI_appMode = 0  
AppLaunchFlags GAI_launchFlags = 0  
ApplicationOptFlags GAI_optFlags = 0  
word GAI_appFeatures = 0  
Handle GAI_specificUI = 0  
ApplicationStates GAI_states = AS_FOCUSABLE |  
AS_MODELABLE  
AppAttachFlags GAI_attachFlags = 0  
UIInterfaceLevel GAI_appLevel = UIIL_ADVANCED  
ChunkHandle GAI_iacpConnects = 0  
@default GI_states = @default & ~GS_USABLE  
@default GI_attrs = @default | GA_TARGETTABLE
```

Variable Data

```
optr ATTR_GEN_APPLICATION_PRINT_CONTROL;  
@reloc ATTR_GEN_APPLICATION_PRINT_CONTROL, 0, optr  
ChunkHandle TEMP_GEN_APPLICATION_NO_LONGER_USED;  
optr ATTR_GEN_APPLICATION_KBD_OBJ;  
MemHandle TEMP_GEN_APPLICATION_SAVED_ALB;  
void TEMP_GEN_APPLICATION_ABORT_QUIT;  
optr ATTR_GEN_APPLICATION_SAVE_OPTIONS_TRIGGER;  
@reloc ATTR_GEN_APPLICATION_SAVE_OPTIONS_TRIGGER,  
0, optr;
```

Hints

```
void HINT_APP_IS_ENTERTAINING  
void HINT_APP_IS_EDUCATIONAL  
void HINT_APP_IS_PRODUCTIVITY_ORIENTED
```

Types and Flags

```
ByteEnum AppMeasurementType  
AMT_US 0  
AMT_METRIC 1  
AMT_DEFAULT 0xff  
WordFlags ApplicationStates  
AS_TRANSPARENT 0x4000  
AS_HAS_FULL_SCREEN_EXCL 0x2000  
AS_SINGLE_INSTANCE 0x1000  
AS_QUIT_DETACHING 0x0800  
AS_AVOID_TRANSPARENT_DETACH 0x0400  
AS_TRANSPARENT_DETACHING 0x0200  
AS_REAL_DETACHING 0x0100  
AS_QUITTING 0x0080  
AS_DETACHING 0x0040  
AS_FOCUSABLE 0x0020  
AS_MODELABLE 0x0010  
AS_NOT_USER_INTERACTABLE 0x0008  
AS_RECEIVED_APP_OBJECT_DETACH 0x0004
```

```

AS_ATTACHED_TO_STATE_FILE    0x0002
AS_ATTACHING                 0x0001
typedef AppOptFlags ApplicationOptFlags
typedef ByteFlags AppOptFlags
AOF_MULTIPLE_INIT_FILE_CATEGORIES 0x80
typedef ByteEnum GenAppUsabilityCommand
    GAUC_USABILITY          0
    GAUC_RECALC_CONTROLLER  1
    GAUC_REPARENT           2
    GAUC_POPUP              3
    GAUC_TOOLBAR            4
    GAUC_RESTART            5
typedef ByteFlags GenAppUsabilityTupleFlags
    GAUTF_END_OF_LIST       0x20
    GAUTF_OFF_IF_BIT_ON     0x10
    GAUTF_COMMAND           0x0f
typedef enum {
    TO_PRINT_CONTROL=_FIRST_GenApplicationClass
} GenApplicationTravelOption

```

Structures

```

typedef struct {
    GenAppUsabilityTupleFlags    GAUT_flags
    optr                        GAUT_object
} GenAppUsabilityTuple
typedef struct {
    UIInterfaceLevel            AFI_uiInterfaceLevel;
    word                        AFI_appFeatures;
} AppFeaturesInfo;
typedef struct {
    CharFlags                    CFASS_charFlags;
    ShiftState                   CFASS_shiftState;
} CharFlagsAndShiftState;
typedef struct {
    ToggleState                  TSASC_toggleState;
    byte                         TSASC_scanCode;
} ToggleStateAndScanCode;
typedef struct {
    CustomDialogType            ND_dialogType;
    byte                         ND_unused1;
    word                         ND_unused2;
    optr                        ND_dialog;
} NewDialog;

```

Macros

```

GET_MEASUREMENT_TYPE(m) ((byte) (m))
GET_APP_MEASUREMENT_TYPE(m) ((byte) ((m)>>8))
GET_UI_INTERFACE_LEVEL(val) \
    ((val).AFI_uiInterfaceLevel)
GET_APP_FEATURES(val) ((val).AFI_appFeatures)

```

Messages

```

void MSG_GEN_APPLICATION_MARK_BUSY()
void MSG_GEN_APPLICATION_MARK_NOT_BUSY()
void MSG_GEN_APPLICATION_HOLD_UP_INPUT()
void MSG_GEN_APPLICATION_RESUME_INPUT()
void MSG_GEN_APPLICATION_IGNORE_INPUT()

```

```

void MSG_GEN_APPLICATION_ACCEPT_INPUT()
Handle MSG_GEN_APPLICATION_QUERY_UI()
ApplicationStates MSG_GEN_APPLICATION_GET_STATE()
optr MSG_GEN_APPLICATION_FIND_MONIKER(
    MemHandle destBlock,
    word searchFlags,
    DisplayType displayType)
void MSG_GEN_APPLICATION_SET_TASK_ENTRY_MONIKER(
    optr entryMoniker)
void MSG_GEN_APPLICATION_GET_DISPLAY_SCHEME(
    DisplayScheme *displayScheme)
void MSG_GEN_APPLICATION_SET_APP_MODE_MESSAGE(
    Message modeMessage)
Message MSG_GEN_APPLICATION_GET_APP_MODE_MESSAGE()
Handle MSG_GEN_APPLICATION_GET_APP_INSTANCE_REFERENCE()
void MSG_GEN_APPLICATION_SET_APP_INSTANCE_REFERENCE(
    Handle appInstance)
void MSG_GEN_APPLICATION_SEND_APP_INSTANCE_REFERENCE\
    _TO_FIELD()
void MSG_GEN_APPLICATION_INITIATE_UI_QUIT()
void MSG_GEN_APPLICATION_INSTALL_TOKEN()
void MSG_GEN_APPLICATION_TOGGLE_CURSOR()
AppLaunchFlags MSG_GEN_APPLICATION_GET_LAUNCH_FLAGS()
void MSG_GEN_APPLICATION_SET_APP_LEVEL(
    word level)
AppFeaturesInfo MSG_GEN_APPLICATION_GET_APP_FEATURES()
void MSG_GEN_APPLICATION_SET_APP_FEATURES(
    word features)
void MSG_GEN_APPLICATION_DETACH_PENDING()
optr MSG_GEN_APPLICATION_BUILD_STANDARD_DIALOG(
    char *customTriggers,
    char *arg2, char *arg1,
    char *string,
    CustomDialogBoxFlags dialogFlags)
void MSG_GEN_APPLICATION_DO_STANDARD_DIALOG(@stack
    word dialogMethod,optr dialogOD,
    char *helpContext,
    char *customTriggers,
    char *arg2, char *arg1,
    char *string,
    CustomDialogBoxFlags dialogFlags)
void MSG_GEN_APPLICATION_MARK_APP_COMPLETELY_BUSY()
void MSG_GEN_APPLICATION_MARK_APP_NOT_COMPLETELY_BUSY()
void MSG_GEN_APPLICATION_OPEN_COMPLETE()
void MSG_GEN_APPLICATION_SET_NOT_USER_INTERACTABLE()
void MSG_GEN_APPLICATION_SET_USER_INTERACTABLE()
void MSG_GEN_APPLICATION_SET_ATTACHED_TO_STATE_FILE()
void
MSG_GEN_APPLICATION_SET_NOT_ATTACHED_TO_STATE_FILE()
void MSG_GEN_APPLICATION_SET_NOT_QUITTING()
void MSG_GEN_APPLICATION_NOTIFY_MODAL_WIN_CHANGE()
word MSG_GEN_APPLICATION_GET_MEASUREMENT_TYPE()
void MSG_GEN_APPLICATION_SET_MEASUREMENT_TYPE(
    byte measurementType)
Boolean MSG_GEN_APPLICATION_TEST_FOR_CANCEL_MNEMONIC(
    word character,

```

```
CharFlagsAndShiftState  flags,
word                    state)
void MSG_GEN_APPLICATION_INK_QUERY_REPLY(
    InkReturnValue      inkReturnValue,
    GStateHandle        inkGState)
ChunkHandle MSG_GEN_APPLICATION_GET_GCN_LIST_OF_LISTS()
(GEN_VISIBILITY_OUTPUT)
MSG_GEN_APPLICATION_VISIBILITY_NOTIFICATION()
void MSG_GEN_APPLICATION_BRING_WINDOW_TO_TOP(
    optr window)
void MSG_GEN_APPLICATION_LOWER_WINDOW_TO_BOTTOM(
    optr window)
AppAttachFlags MSG_GEN_APPLICATION_GET_ATTACH_FLAGS()
void MSG_GEN_APPLICATION_BUILD_DIALOG_FROM_TEMPLATE(
    NewDialog           *retValue,
    optr                template)
```

GenBooleanClass

```
@class GenBooleanClass, GenClass
```

Instance Data

```
word          GBI_identifier
```

Messages

```
word MSG_GEN_BOOLEAN_GET_IDENTIFIER()  
void MSG_GEN_BOOLEAN_SET_IDENTIFIER(word identifier)
```

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GenBooleanGroupClass

```
@class GenBooleanGroupClass, GenClass
```

Instance Data

```
word          GBGI_selectedBooleans = 0  
word          GBGI_indeterminateBooleans = 0  
word          GBGI_modifiedBooleans = 0  
optr          GBGI_destination  
Message       GBGI_applyMsg = 0
```

Variable Data

```
Message ATTR_GEN_BOOLEAN_GROUP_STATUS_MSG  
Message ATTR_GEN_BOOLEAN_GROUP_STATUS_MSG;  
optr ATTR_GEN_BOOLEAN_GROUP_LINK  
@reloc ATTR_GEN_BOOLEAN_GROUP_LINK, 0, optr  
void ATTR_GEN_BOOLEAN_GROUP_INIT_FILE_BOOLEAN
```

Hints

```
void HINT_BOOLEAN_GROUP_SCROLLABLE  
void HINT_BOOLEAN_GROUP_MINIMIZE_SIZE  
void HINT_BOOLEAN_GROUP_CHECKBOX_STYLE  
void HINT_BOOLEAN_GROUP_TOOLBOX_STYLE
```

Messages

```
void MSG_GEN_BOOLEAN_GROUP_SET_GROUP_STATE(  
    word selectedBooleans,  
    word indeterminateBooleans)  
void MSG_GEN_BOOLEAN_GROUP_SET_GROUP_MODIFIED_STATE(  
    word setBooleans,  
    word clearBooleans)  
word MSG_GEN_BOOLEAN_GROUP_GET_SELECTED_BOOLEANS()  
word MSG_GEN_BOOLEAN_GROUP_GET_INDETERMINATE_BOOLEANS()  
word MSG_GEN_BOOLEAN_GROUP_GET_MODIFIED_BOOLEANS()  
void MSG_GEN_BOOLEAN_GROUP_SEND_STATUS_MSG(  
    word changedBooleans)  
optr MSG_GEN_BOOLEAN_GROUP_GET_BOOLEAN_OPTR(  
    word identifier)  
void MSG_GEN_BOOLEAN_GROUP_SET_BOOLEAN_STATE(  
    word identifier,  
    Boolean state)  
void  
MSG_GEN_BOOLEAN_GROUP_SET_BOOLEAN_INDETERMINATE_STATE(  
    word identifier,  
    Boolean indeterminateState)  
void MSG_GEN_BOOLEAN_GROUP_SET_BOOLEAN_MODIFIED_STATE(  
    word identifier,  
    Boolean modifiedState)
```



```
Boolean MSG_GEN_BOOLEAN_GROUP_IS_BOOLEAN_SELECTED(  
    word identifier)  
Boolean MSG_GEN_BOOLEAN_GROUP_IS_BOOLEAN_INDETERMINATE(  
    word identifier)  
Boolean MSG_GEN_BOOLEAN_GROUP_IS_BOOLEAN_MODIFIED(  
    word identifier)  
optr MSG_GEN_BOOLEAN_GROUP_GET_DESTINATION()  
void MSG_GEN_BOOLEAN_GROUP_SET_DESTINATION(optr dest)  
Message MSG_GEN_BOOLEAN_GROUP_GET_APPLY_MSG()  
void MSG_GEN_BOOLEAN_GROUP_SET_APPLY_MSG(  
    Message message)  
void MSG_GEN_BOOLEAN_GROUP_MAKE_BOOLEAN_VISIBLE(  
    word identifier)  
word MSG_GEN_BOOLEAN_GROUP_SCAN_BOOLEANS(  
    byte flags,  
    word initialBoolean,  
    word scanAmount = bp)  
void MSG_GEN_BOOLEAN_GROUP_REDRAW_BOOLEANS(word offset)  
@prototype void GEN_BOOLEAN_GROUP_APPLY_MSG(  
    word selectedBooleans,  
    word indeterminateBooleans,  
    word modifiedBooleans)  
@prototype void GEN_BOOLEAN_GROUP_STATUS_MSG(  
    word selectedBooleans,  
    word indeterminateBooleans,  
    word changedBooleans)
```

GenClass

```
@class GenClass, VisClass, master, variant
```

Instance Data

```
@link          GI_link
@composite     GI_comp = GI_link
@visMoniker    GI_visMoniker
@kbdAccelerator  GI_kbdAccelerator
GenAttrs      GI_attrs = 0
GenStates     GI_states =
                (GS_USABLE|GS_ENABLED)
```

Variable Data

```
GenFilePath    ATTR_GEN_PATH_DATA
void           TEMP_GEN_PATH_SAVED_DISK_HANDLE
void           ATTR_GEN_PROPERTY
void           ATTR_GEN_NOT_PROPERTY
DestinationClassArgs ATTR_GEN_DESTINATION_CLASS
    @reloc ATTR_GEN_DESTINATION_CLASS, 0, optr
char[]         ATTR_GEN_INIT_FILE_KEY
char[]         ATTR_GEN_INIT_FILE_CATEGORY
void           ATTR_GEN_INIT_FILE_PROPAGATE_TO_CHILDREN
ChunkHandle    ATTR_GEN_FEATURE_LINK
MemHandle      ATTR_GEN_WINDOW_CUSTOM_LAYER_ID
    @reloc ATTR_GEN_WINDOW_CUSTOM_LAYER_ID, 0, handle
Point          ATTR_GEN_POSITION
sword          ATTR_GEN_POSITION_X
sword          ATTR_GEN_POSITION_Y
void           ATTR_GEN_SEND_APPLY_MSG_ON_APPLY_EVEN_IF_NOT_MODIFIED
void           ATTR_GEN_SEND_APPLY_MSG_ON_APPLY_EVEN_IF_NOT_ENABLED
dword          ATTR_GEN_VISIBILITY_DATA
word           ATTR_GEN_VISIBILITY_MESSAGE
optr           ATTR_GEN_VISIBILITY_DESTINATION
    @reloc ATTR_GEN_VISIBILITY_DESTINATION, 0, optr
WinPriority     ATTR_GEN_WINDOW_CUSTOM_WINDOW_PRIORITY
LayerPriority   ATTR_GEN_WINDOW_CUSTOM_LAYER_PRIORITY
MemHandle      ATTR_GEN_WINDOW_CUSTOM_PARENT
void           ATTR_GEN_WINDOW_CUSTOM_WINDOW
GenDefaultMonikerType ATTR_GEN_DEFAULT_MONIKER
char[]         ATTR_GEN_HELP_FILE
byte           ATTR_GEN_HELP_TYPE
void           ATTR_GEN_HELP_FILE_FROM_INIT_FILE
optr           ATTR_GEN_FOCUS_HELP
optr           ATTR_GEN_FOCUS_HELP_LIB
    @reloc ATTR_GEN_FOCUS_HELP_LIB, 0, optr
char[]         ATTR_GEN_HELP_CONTEXT
optr           ATTR_GEN_OUTPUT_TRAVEL_START
    @reloc ATTR_GEN_OUTPUT_TRAVEL_START, 0, optr
void           ATTR_GEN_USES_HIERARCHICAL_INIT_FILE_CATEGORY
void           ATTR_GEN_WINDOW_ACCEPT_INK_EVEN_IF_NOT_FOCUSED
KeyboardOverride ATTR_GEN_WINDOW_KBD_OVERRIDE;
Point          ATTR_GEN_WINDOW_KBD_POSITION;
```

Hints

```
void HINT_DUMMY
void HINT_FREQUENTLY_USED
void HINT_INFREQUENTLY_USED
void HINT_AN_ADVANCED_FEATURE
void HINT_DEFAULT_DEFAULT_ACTION
void HINT_ENSURE_TEMPORARY_DEFAULT
void HINT_SAME_CATEGORY_AS_PARENT
void HINT_SYS_MENU
void HINT_USE_TEXT_MONIKER
void HINT_USE_ICONIC_MONIKER
void HINT_DEFAULT_FOCUS
void HINT_DEFAULT_TARGET
void HINT_DEFAULT_MODEL
void HINT_PREVENT_DEFAULT_OVERRIDES
void HINT_PRESERVE_FOCUS
void HINT_DO_NOT_PRESERVE_FOCUS
void HINT_GENERAL_CONSUMER_MODE
void HINT_NEVER_ADOPT_MENUS
void HINT_ALWAYS_ADOPT_MENUS
void HINT_ALLOW_CHILDREN_TO_WRAP
void HINT_BOTTOM_JUSTIFY_CHILDREN
void HINT_CENTER_CHILDREN_HORIZONTALLY
void HINT_CENTER_CHILDREN_ON_MONIKERS
void HINT_CENTER_CHILDREN_VERTICALLY
void HINT_CENTER_MONIKER
SpecSizeSpec HINT_CUSTOM_CHILD_SPACING
void HINT_DONT_ALLOW_CHILDREN_TO_WRAP
void HINT_DONT_FULL_JUSTIFY_CHILDREN
void HINT_DONT_INCLUDE_ENDS_IN_CHILD_SPACING
void HINT_DO_NOT_USE_MONIKER
void HINT_DRAW_IN_BOX
void HINT_EXPAND_HEIGHT_TO_FIT_PARENT
void HINT_EXPAND_WIDTH_TO_FIT_PARENT
CompSizeHintArgs HINT_FIXED_SIZE
void HINT_FULL_JUSTIFY_CHILDREN_HORIZONTALLY
void HINT_FULL_JUSTIFY_CHILDREN_VERTICALLY
void HINT_INCLUDE_ENDS_IN_CHILD_SPACING
CompSizeHintArgs HINT_INITIAL_SIZE
void HINT_LEFT_JUSTIFY_CHILDREN
void HINT_LEFT_JUSTIFY_MONIKERS
void HINT_MAKE_REPLY_BAR
CompSizeHintArgs HINT_MAXIMUM_SIZE
CompSizeHintArgs HINT_MINIMUM_SIZE
void HINT_NO_TALLER_THAN_CHILDREN_REQUIRE
void HINT_NO_WIDER_THAN_CHILDREN_REQUIRE
void HINT_ORIENT_CHILDREN_HORIZONTALLY
void HINT_ORIENT_CHILDREN_VERTICALLY
void HINT_PLACE_MONIKER_ABOVE
void HINT_ALIGN_LEFT_MONIKER_EDGE_WITH_CHILD
void HINT_PLACE_MONIKER_TO_LEFT
void HINT_PLACE_MONIKER_TO_RIGHT
void HINT_RIGHT_JUSTIFY_CHILDREN
void HINT_TOP_JUSTIFY_CHILDREN
word HINT_WRAP_AFTER_CHILD_COUNT
void HINT_DIVIDE_WIDTH_EQUALLY
void HINT_DIVIDE_HEIGHT_EQUALLY
```

```

void HINT_NO_BORDERS_ON_MONIKERS
word HINT_GADGET_TEXT_COLOR
void HINT_POPS_UP_TO_RIGHT
void HINT_POPS_UP_BELOW
void HINT_SEEK_MENU_BAR
void HINT_AVOID_MENU_BAR
void HINT_NAVIGATION_ID
void HINT_NAVIGATION_NEXT_ID
void HINT_DISMISS_WHEN_DISABLED
void HINT_SEEK_X_SCROLLER_AREA
void HINT_SEEK_Y_SCROLLER_AREA
void HINT_SEEK_LEFT_OF_VIEW
void HINT_SEEK_TOP_OF_VIEW
void HINT_SEEK_RIGHT_OF_VIEW
void HINT_SEEK_BOTTOM_OF_VIEW
void HINT_USE_INITIAL_BOUNDS_WHEN_RESTORED
void HINT_KEEP_INITIALLY_ONSCREEN
void HINT_DONT_KEEP_INITIALLY_ONSCREEN
void HINT_KEEP_PARTIALLY_ONSCREEN
void HINT_KEEP_ENTIRELY_ONSCREEN
void HINT_KEEP_ENTIRELY_ONSCREEN_WITH_MARGIN
void HINT_DONT_KEEP_PARTIALLY_ONSCREEN
SpecWinSizePair
    HINT_POSITION_WINDOW_AT_RATIO_OF_PARENT
void HINT_STAGGER_WINDOW
void HINT_CENTER_WINDOW
void HINT_TILE_WINDOW
void HINT_POSITION_WINDOW_AT_MOUSE
void HINT_EXTEND_WINDOW_TO_BOTTOM_RIGHT
void HINT_EXTEND_WINDOW_NEAR_BOTTOM_RIGHT
void HINT_SIZE_WINDOW_AS_DESIRED
SpecWinSizePair HINT_SIZE_WINDOW_AS_RATIO_OF_PARENT
SpecWinSizePair HINT_SIZE_WINDOW_AS_RATIO_OF_FIELD
SpecWinSizePair HINT_POSITION_ICON_AS_RATIO_OF_FIELD
void HINT_TOOLBOX
void HINT_SAME_ORIENTATION_AS_PARENT
void HINT_SEEK_REPLY_BAR
void HINT_SHOW_SHORTCUT
void HINT_DRAW_SHORTCUT_BELOW
void HINT_CAN_CLIP_MONIKER_WIDTH
void HINT_CAN_CLIP_MONIKER_HEIGHT
void HINT_SHOW_ENTIRE_MONIKER
optr HINT_ALIGN_LEFT_EDGE_WITH_OBJECT
    @reloc HINT_ALIGN_LEFT_EDGE_WITH_OBJECT, 0, optr
optr HINT_ALIGN_TOP_EDGE_WITH_OBJECT
    @reloc HINT_ALIGN_TOP_EDGE_WITH_OBJECT, 0, optr
optr HINT_ALIGN_RIGHT_EDGE_WITH_OBJECT
    @reloc HINT_ALIGN_RIGHT_EDGE_WITH_OBJECT, 0, optr
optr HINT_ALIGN_BOTTOM_EDGE_WITH_OBJECT
    @reloc HINT_ALIGN_BOTTOM_EDGE_WITH_OBJECT, 0, optr
void HINT_DONT_SHOW_SHORTCUT
void HINT_MINIMIZE_CHILD_SPACING
BackgroundColors HINT_GADGET_BACKGROUND_COLORS
void HINT_ORIENT_CHILDREN_ALONG_LONGER_DIMENSION
void HINT_PLACE_MONIKER_ALONG_LARGER_DIMENSION
void HINT_WRAP_AFTER_CHILD_COUNT_IF_VERTICAL_SCREEN
void HINT_NOT_MOVABLE

```



```

void HINT_SEEK_TITLE_BAR_LEFT
void HINT_SEEK_TITLE_BAR_RIGHT
void HINT_WINDOW_NO_CONSTRAINTS
SpecSizeSpec HINT_CUSTOM_CHILD_SPACING_IF_LIMITED_SPACE
void HINT_WINDOW_NO_TITLE_BAR
void HINT_WINDOW_NO_SYS_MENU
SystemAttrs HINT_IF_SYSTEM_ATTRS
void HINT_ENDIF
void HINT_ELSE

```

Types and Flags

```

typedef enum /* word */ {
    TO_GEN_PARENT=_FIRST_GenClass,
    TO_FOCUS,
    TO_TARGET,
    TO_MODEL,
    TO_APP_FOCUS,
    TO_APP_TARGET,
    TO_APP_MODEL,
    TO_SYS_FOCUS,
    TO_SYS_TARGET,
    TO_SYS_MODEL
} GenTravelOption
typedef enum {
    BRPT_OUTPUT_OPTR
} BranchReplaceParamType
typedef enum {
    GUQT_UI_FOR_APPLICATION
    GUQT_UI_FOR_SCREEN
    GUQT_UI_FOR_FIELD
    GUQT_UI_FOR_MISC
    GUQT_FIELD
    GUQT_SCREEN
    GUQT_DELAYED_OPERATION
} GenUpwardQueryType
ByteFlags    NotifyEnabledFlags
    NEF_STATE_CHANGING    0x80
ByteEnum     RequestedViewArea
    RVA_NO_AREA_CHOICE    0
    RVA_X_SCROLLER_AREA   1
    RVA_Y_SCROLLER_AREA   2
    RVA_LEFT_AREA          3
    RVA_TOP_AREA           4
    RVA_RIGHT_AREA         5
    RVA_BOTTOM_AREA        6
WordFlags    GenFindObjectWithMonikerFlags
    GFTMF_EXACT_MATCH      0x8000
    GFTMF_SKIP_THIS_NODE   0x4000
typedef enum {
    GDMT_LEVEL_0
    GDMT_LEVEL_1
    GDMT_LEVEL_2
    GDMT_LEVEL_3
    GDMT_HELP
    GDMT_HELP_PRIMARY
} GenDefaultMonikerType
WordFlags    SystemAttrs

```

```

SA_NOT                0x8000
SA_TINY               0x4000
SA_HORIZONTALLY_TINY 0x2000
SA_VERTICALLY_TINY   0x1000
SA_COLOR              0x0800
SA_PEN_BASED         0x0400
SA_KEYBOARD_ONLY     0x0200
SA_NO_KEYBOARD       0x0100
ByteEnum GCMIcon
    GCMI_NONE        0
    GCMI_EXIT        1
    GCMI_HELP        2
ByteFlags GeneralConsumerModeFlags
    GCMF_LEFT_ICON   0x38
    GCMF_RIGHT_ICON  0x07
ByteEnum GenUILevel
    GUIL_DEFAULT     0
    GUIL_GCM         1
    GUIL_NOVICE      2
    GUIL_ADVANCED    3
ByteFlags GenAttrs
    GA_SIGNAL_INTERACTION_COMPLETE 0x80
    GA_INITIATES_BUSY_STATE        0x40
    GA_INITIATES_INPUT_HOLD_UP     0x20
    GA_INITIATES_INPUT_IGNORE      0x10
    GA_READ_ONLY                   0x08
    GA_KBD_SEARCH_PATH              0x04
    GA_TARGETABLE                   0x02
    GA_NOTIFY_VISIBILITY            0x01
ByteFlags GenStates
    GS_USABLE        0x80
    GS_ENABLED       0x40
typedef ByteEnum DefaultActionMode
    DAM_ACTIVATE_INTERACTION_DEFAULT 0
    DAM_NAVIGATE_TO_NEXT_FIELD       1
    DAM_APPL_VERIFY                   2
    DAM_APPL_CUSTOM                   3
DAM_TAKES_DEFAULT      DAM_NAVIGATE_TO_NEXT_FIELD
DAM_APPL_HANDLES       DAM_APPL_VERIFY
ByteFlags GadgetAttrs
    GA_DELAYED          0x80
    GA_DISPLAY_ONLY     0x40
    GA_IN_ADD_MODE      0x20
    GA_SEND_USER_CHANGES 0x10
    GA_SEND_REDUNDANT_CHANGES 0x08
    GA_DEFAULT_ACTIONS   0x06
    GA_USER_ACTION_DETERMINES_MESSAGE 0x01
GA_DEFAULT_ACTIONS_OFFSET 1
ByteFlags GadgetActionFlags
    GAF_ACTUAL_CHANGE    0x04
    GAF_USER_CHANGE      0x02
    GAF_DEFAULT_ACTION_REQUEST 0x01
ByteFlags GadgetChangeFlags
    GCF_NO_USER_CHANGE    0x04
    GCF_SUPPRESS_APPLY    0x02
    GCF_SUPPRESS_DRAW     0x01

```



Structures

```

typedef struct {
    word        SSA_width
    word        SSA_height
    word        SSA_count
    VisUpdateMode SSA_updateMode
} SetSizeArgs
typedef struct {
    word        GSA_width
    word        GSA_height
    word        GSA_unused
    word        GSA_count
} GetSizeArgs
typedef struct {
    word        GRP_ax
    word        GRP_bp
    word        GRP_cx
    word        GRP_dx
} GenReturnParams
typedef struct {
    optr        GGFI_optr
    word        GGFI_window
    word        GGFI_unused
} GenGupFieldInfo
typedef struct {
    optr        GGSI_optr
    word        GGSI_window
    word        GGSI_unused
} GenGupScreenInfo
typedef struct {
    byte        GFVRP_hViewArea
    byte        GFVRP_vViewArea
    ChunkHandle GFVRP_hRange
    ChunkHandle GFVRP_vRange
} GenFindViewRangesParams
typedef struct {
    char        GOP_category[INI_CATEGORY_BUFFER_SIZE]
    char        GOP_key[INI_CATEGORY_BUFFER_SIZE]
} GenOptionsParams
typedef struct {
    DiskHandle   GFP_disk
    PathName     GFP_path
} GenFilePath
typedef struct {
    ClassStruct  *DCA_class
} DestinationClassArgs
typedef struct {
    SpecWidth    CSHA_width
    SpecHeight   CSHA_height
    sword        CSHA_count
} CompSizeHintArgs
typedef struct {
    SpecWidth    GSHA_width
    SpecHeight   GSHA_height
} GadgetSizeHintArgs
typedef struct {
    word         HE_type

```

```

        word            HE_size
    } HintEntry
typedef struct {
    byte            BC_unselectedColor1
    byte            BC_unselectedColor2
    byte            BC_selectedColor1
    byte            BC_selectedColor2
} BackgroundColors

Macros
GET_MM_AND_TYPE(M,T)    ((M) | ((T) << 8))
GET_CHAR_AND_SHIFT(C,S) ((C) | (((word) (S)) << 8))
GET_VIEW_AREAS(H,V)    ((H) | (((word) (V)) << 8))
ObjDerefGen(obj)        ObjDeref2(obj)

```

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```

Messages
@exportMessages GenSpecMessages,
    DEFAULT_EXPORTED_MESSAGES_3
@exportMessages GenAppMessages,
    DEFAULT_EXPORTED_MESSAGES_5
void MSG_GEN_SET_ENABLED(VisUpdateMode updateMode)
void MSG_GEN_SET_NOT_ENABLED(VisUpdateMode updateMode)
Boolean MSG_GEN_GET_ENABLED()
void MSG_GEN_SET_USABLE(VisUpdateMode updateMode)
void MSG_GEN_SET_NOT_USABLE(VisUpdateMode updateMode)
Boolean MSG_GEN_GET_USABLE()
Boolean MSG_GEN_CHECK_IF_FULLY_ENABLED()
Boolean MSG_GEN_CHECK_IF_FULLY_USABLE()
void MSG_GEN_SET_ATTRS(
    GenAttrs attrsToSet,
    GenAttrs attrsToClear)
GenAttrs MSG_GEN_GET_ATTRIBUTES()
ChunkHandle MSG_GEN_GET_VIS_MONIKER()
void MSG_GEN_USE_VIS_MONIKER(
    ChunkHandle moniker,
    VisUpdateMode updateMode)
ChunkHandle MSG_GEN_REPLACE_VIS_MONIKER(@stack
    VisUpdateMode updateMode,
    word height, word width,
    word length,
    VisMonikerDataType dataType,
    VisMonikerSourceType sourceType,
    dword source)
ChunkHandle MSG_GEN_REPLACE_VIS_MONIKER_OPTR(
    optr source,
    VisUpdateMode updateMode)
ChunkHandle MSG_GEN_REPLACE_VIS_MONIKER_TEXT(
    char *source,
    VisUpdateMode updateMode)
ChunkHandle MSG_GEN_CREATE_VIS_MONIKER(@stack
    CreateVisMonikerFlags flags,
    word height, word width,
    word length,
    VisMonikerDataType dataType,
    VisMonikerSourceType sourceType,
    dword source)
void MSG_GEN_DRAW_MONIKER(
    DrawMonikerFlags monikerFlags,

```

```

        word textHeight,
        GStateHandle gState,
        word yMaximum, word xMaximum,
        word yInset, word xInset)
XYValueAsDWord MSG_GEN_GET_MONIKER_POS(
    DrawMonikerFlags monikerFlags,
    word textHeight,
    GStateHandle gState, word yMaximum,
    word xMaximum, word yInset,
    word xInset)
SizeAsDWord MSG_GEN_GET_MONIKER_SIZE(
    word textHeight,
    GStateHandle gState)
optr MSG_GEN_FIND_MONIKER( Boolean useAppMonikerList ,
    VisMonikerSearchFlags searchFlags,
    MemHandle destBlock)
void MSG_GEN_RELOC_MONIKER_LIST(
    optr monikerList,
    Boolean relocFlag)
void MSG_GEN_SET_KBD_ACCELERATOR(
    KeyboardShortcut accelerator,
    VisUpdateMode updateMode)
KeyboardShortcut MSG_GEN_GET_KBD_ACCELERATOR()
void MSG_GEN_CHANGE_ACCELERATOR(
    KeyboardShortcut bitsToClear,
    KeyboardShortcut bitsToSet)
void MSG_GEN_ADD_CHILD(
    optr child, CompChildFlags flags)
void MSG_GEN_REMOVE_CHILD(
    optr child, CompChildFlags flags)
void MSG_GEN_ADD_CHILD_UPWARD_LINK_ONLY(optr child)
void MSG_GEN_MOVE_CHILD(
    optr child, CompChildFlags flags)
word MSG_GEN_FIND_CHILD(optr child)
optr MSG_GEN_FIND_CHILD_AT_POSITION(word position)
optr MSG_GEN_FIND_PARENT()
word MSG_GEN_COUNT_CHILDREN()
void MSG_GEN_CALL_PARENT(EventHandle event )
void MSG_GEN_SEND_TO_PARENT(EventHandle event)
void MSG_GEN_SEND_TO_CHILDREN(EventHandle event)
void MSG_GEN_GUP_CALL_OBJECT_OF_CLASS(EventHandle event)
void MSG_GEN_GUP_SEND_TO_OBJECT_OF_CLASS(
    EventHandle event)
Boolean MSG_GEN_GUP_TEST_FOR_OBJECT_OF_CLASS(
    ClassStruct *class)
optr MSG_GEN_GUP_FIND_OBJECT_OF_CLASS(
    ClassStruct *class)
void MSG_GEN_CALL_APPLICATION(EventHandle event)
void MSG_GEN_SEND_TO_PROCESS(EventHandle event)
void MSG_GEN_CALL_SYSTEM(EventHandle event)
void MSG_GEN_OUTPUT_ACTION(EventHandle event, optr dest)
optr MSG_GEN_COPY_TREE(
    MemHandle destBlock,
    ChunkHandle parentChunk,
    CompChildFlags flags)
void MSG_GEN_DESTROY(
    VisUpdateMode updateMode,

```

```

        CompChildFlags flags)
void MSG_GEN_BRANCH_REPLACE_PARAMS(
    BranchReplaceParamType type,
    dword replaceParam,
    dword searchParam)
void MSG_GEN_BRANCH_REPLACE_OUTPUT_OPTR_CONSTANT(
    optr replacementOptr,
    word searchConstant)
void MSG_GEN_BRING_TO_TOP()
void MSG_GEN_LOWER_TO_BOTTOM()
void MSG_GEN_SET_WIN_POSITION(
    WinPositionType modeAndType,
    SpecWinSizeSpec xPosSpec,
    SpecWinSizeSpec yPosSpec)
void MSG_GEN_SET_WIN_SIZE(
    WinPositionType modeAndType,
    SpecWinSizeSpec xSizeSpec,
    SpecWinSizeSpec ySizeSpec)
void MSG_GEN_RESET_TO_INITIAL_SIZE(
    VisUpdateMode updateMode)
void MSG_GEN_SET_WIN_CONSTRAIN(
    VisUpdateMode updateMode,
    WinConstrainType constrainType)
void MSG_GEN_SET_INITIAL_SIZE(@stack
    VisUpdateMode updateMode,
    word count,
    SpecHeight height, SpecWidth width)
void MSG_GEN_SET_MINIMUM_SIZE(@stack
    VisUpdateMode updateMode,
    word count,
    SpecHeight height, SpecWidth width)
void MSG_GEN_SET_MAXIMUM_SIZE(@stack
    VisUpdateMode updateMode,
    word count,
    SpecHeight height, SpecWidth width)
void MSG_GEN_SET_FIXED_SIZE(@stack
    VisUpdateMode updateMode,
    word count,
    SpecHeight height, SpecWidth width)
void MSG_GEN_GET_INITIAL_SIZE(GetSizeArgs *initSize)
void MSG_GEN_GET_MINIMUM_SIZE(GetSizeArgs *minSize )
void MSG_GEN_GET_MAXIMUM_SIZE(GetSizeArgs *maxSize)
void MSG_GEN_GET_FIXED_SIZE(GetSizeArgs *fixedSize)
void MSG_GEN_UPDATE_VISUAL(VisUpdateMode updateMode)
void MSG_GEN_APPLY()
void MSG_GEN_RESET()
Boolean MSG_GEN_PRE_APPLY()
void MSG_GEN_POST_APPLY()
void MSG_GEN_MAKE_APPLYABLE()
void MSG_GEN_MAKE_NOT_APPLYABLE()
void MSG_GEN_ACTIVATE()
Boolean MSG_GEN_ACTIVATE_INTERACTION_DEFAULT()
void MSG_GEN_NAVIGATE_TO_NEXT_FIELD()
void MSG_GEN_NAVIGATE_TO_PREVIOUS_FIELD()
Boolean MSG_GEN_NAVIGATION_QUERY(
    NavigationQueryParams *retValue,
    optr queryOrigin,

```



```

        NavigationFlags navFlags)
Boolean MSG_GEN_GUP_QUERY(
    GenReturnParams *retValue,
    GenUpwardQueryType queryType)
Boolean MSG_GEN_GUP_QUERY_FOR_FIELD(
    GenGupFieldInfo *retValue,
    GenUpwardQueryType queryType)
Boolean MSG_GEN_GUP_QUERY_FOR_SCREEN(
    GenGupScreenInfo *retValue,
    GenUpwardQueryType queryType)
Boolean MSG_GEN_GUP_INTERACTION_COMMAND(
    InteractionCommand command)
Boolean MSG_GEN_FIND_KBD_ACCELERATOR(
    word charValue,
    word charFlagsAndShiftState,
    word toggleStateAndScanCode)
void MSG_GEN_SET_KBD_MKR_PATH()
Boolean MSG_GEN_PATH_SET(char *path, DiskHandle disk)
Boolean MSG_GEN_PATH_GET(char *buffer, word bufSize )
@alias (MSG_GEN_PATH_GET) MemHandle
    MSG_GEN_PATH_GET_BLOCK(
        char *buffer, word bufSize)
DiskHandle MSG_GEN_PATH_GET_DISK_HANDLE()
optr MSG_GEN_FIND_OBJECT_WITH_TEXT_MONIKER(
    char *text,
    GenFindObjectWithMonikerFlags flags)
void MSG_GEN_GUP_FINISH_QUIT(
    Boolean abortFlag,
    Boolean notifyParent)
void MSG_GEN_REMOVE(VisUpdateMode updateMode,
    CompChildFlags flags)
Boolean MSG_GEN_DESTROY_AND_FREE_BLOCK()
void MSG_GEN_SET_KBD_OVERRIDE(KeyboardOverride override)
void MSG_GEN_SET_KBD_POSITION(
    sword xCoord, sword yCoord)

@prototype void GEN_VISIBILITY_OUTPUT(
    optr obj, Boolean opening)

```

Routines

```

word * ObjDerefGen(obj)
word GenCopyChunk( MemHandle destBlock, MemHandle blk,
    ChunkHandle chnk,
    CompChildFlags flags)
void GenInsertChild(MemHandle mh, ChunkHandle chnk,
    optr childToAdd,
    optr referenceChild,
    CompChildFlags flags)
void GenSetUpwardLink(MemHandle mh, ChunkHandle chnk,
    optr parent)
void GenRemoveDownwardLink(MemHandle mh,
    ChunkHandle chnk,
    CompChildFlags flags)
void GenSpecShrink(MemHandle mh, ChunkHandle chnk)
void GenProcessGenAttrsBeforeAction(
    MemHandle mh, ChunkHandle chnk)
void GenProcessGenAttrsAfterAction(

```

```
MemHandle mh, ChunkHandle chnk)
optr GenFindObjectInTree(optr startObject,
    dword childTable)
```

GenContentClass

```
@class GenContentClass, GenClass
```

Instance Data

```
byte      GCI_attrs = 0 /* VisContentAttrs */
optr      GCI_genView
```

Hints

```
void HINT_CONTENT_KEEP_FOCUS_VISIBLE
```

Messages

```
byte MSG_GEN_CONTENT_GET_ATTRS()
void MSG_GEN_CONTENT_SET_ATTRS(
    byte attrsToSet, byte attrsToClear)
```

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GenControlClass

```
@class GenControlClass, GenInteractionClass
```

Instance Data

```
optr GCI_output
@default GI_states = (@default & ~GS_ENABLED)
```

Variable Data

```
TempGenControlInstance TEMP_GEN_CONTROL_INSTANCE
WordFlags ATTR_GEN_CONTROL_REQUIRE_UI
WordFlags ATTR_GEN_CONTROL_REQUIRE_TOOLBOX_UI
WordFlags ATTR_GEN_CONTROL_PROHIBIT_UI
WordFlags ATTR_GEN_CONTROL_PROHIBIT_TOOLBOX_UI
optr ATTR_GEN_CONTROL_APP_UI
@reloc ATTR_GEN_CONTROL_APP_UI, 0, optr
optr ATTR_GEN_CONTROL_APP_TOOLBOX_UI
@reloc ATTR_GEN_CONTROL_APP_TOOLBOX_UI, 0, optr
void TEMP_GEN_CONTROL_OPTIONS_LOADED
void ATTR_GEN_CONTROL_DO_NOT_USE_LIBRARY_NAME_FOR_HELP
```

Hints

```
GenControlUserData HINT_GEN_CONTROL_MODIFY_INITIAL_UI
GenControlUserData HINT_GEN_CONTROL_USER_MODIFIED_UI
void HINT_GEN_CONTROL_TOOLBOX_ONLY
GenControlScalableUIEntry
HINT_GEN_CONTROL_SCALABLE_UI_DATA
void
HINT_GEN_CONTROL_DESTROY_CHILDREN_WHEN_NOT_INTERACTABLE
```

Types and Flags

```
ByteFlags GenControlFeatureFlags
ByteFlags GenControlChildFlags
GCCF_NOTIFY_WHEN_ADDING 0x04
GCCF_ALWAYS_ADD 0x02
GCCF_IS_DIRECTLY_A_FEATURE 0x01
WordFlags GenControlBuildFlags
GCBF_SUSPEND_ON_APPLY 0x8000
GCBF_USE_GEN_DESTROY 0x4000
GCBF_SPECIFIC_UI 0x2000
GCBF_CUSTOM_ENABLE_DISABLE 0x1000
GCBF_ALWAYS_UPDATE 0x0800
GCBF_EXPAND_TOOL_WIDTH_TO_FIT_PARENT 0x0400
GCBF_ALWAYS_INTERACTIBLE 0x0200
GCBF_ALWAYS_ON_GCN_LIST 0x0100
GCBF_MANUALLY_REMOVE_FROM_ACTIVE_LIST 0x0080
GCBF_IS_ON_ACTIVE_LIST 0x0040
GCBF_IS_ON_START_LOAD_OPTIONS_LIST 0x0020
GCBF_NOT_REQUIRED_TO_BE_ON_SELF_LOAD_OPTIONS_LIST 0x0010
#define GCBF_DO_NOT_DESTROY_CHILDREN_WHEN_CLOSED 0x0008
typedef enum /* word */ {
    GCUIT_NORMAL,
    GCUIT_TOOLBOX
} GenControlUIType
WordFlags GenControlInteractableFlags
GCIF_CONTROLLER 0x8000
GCIF_TOOLBOX_UI 0x0002
```

```

        GCIF_NORMAL_UI                0x0001
WordFlags GenControlStatusChange
        GCSF_HIGHLIGHTED_TOOLGROUP_SELECTED 0x0004
        GCSF_TOOLBOX_FEATURES_CHANGED 0x0002
        GCSF_NORMAL_FEATURES_CHANGED 0x0001
WordFlags GenControlUserFlags
        GCUF_USER_TOOLBOX_UI 0x0002
        GCUF_USER_UI 0x0001
ByteEnum GenControlScalableUICommand
        GCSUIC_SET_NORMAL_FEATURES_IF_APP_FEATURE_ON 0
        GCSUIC_SET_TOOLBOX_FEATURES_IF_APP_FEATURE_ON1
        GCSUIC_SET_NORMAL_FEATURES_IF_APP_FEATURE_OFF2
        GCSUIC_SET_TOOLBOX_FEATURES_IF_APP_FEATURE_OFF 3
        GCSUIC_SET_NORMAL_FEATURES_IF_APP_LEVEL 4
        GCSUIC_SET_TOOLBOX_FEATURES_IF_APP_LEVEL 5
        GCSUIC_ADD_NORMAL_FEATURES_IF_APP_FEATURE_ON 6
        GCSUIC_ADD_TOOLBOX_FEATURES_IF_APP_FEATURE_ON7

```

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Structures

```

typedef struct {
    ChunkHandle      GCFI_object
    optr             GCFI_name
    GenControlFeatureFlags GCFI_flags
} GenControlFeaturesInfo
typedef struct {
    ChunkHandle      GCCI_object
    WordFlags        GCCI_featureMask
    GenControlChildFlags GCCI_flags
} GenControlChildInfo
typedef struct {
    GenControlBuildFlags GCBI_flags
    const char           *GCBI_initFileKey
    const GCNListType    *GCBI_gcnList
    word                 GCBI_gcnCount
    const NotificationType *GCBI_notificationList
    word                 GCBI_notificationCount
    optr                 GCBI_controllerName
    MemHandle            GCBI_dupBlock
    const GenControlChildInfo *GCBI_childList
    word                 GCBI_childCount
    const GenControlFeaturesInfo *GCBI_featuresList
    word                 GCBI_featuresCount
    WordFlags            GCBI_features
    MemHandle            GCBI_toolBlock
    const GenControlChildInfo *GCBI_toolList
    word                 GCBI_toolCount
    const GenControlFeaturesInfo *GCBI_toolFeaturesList
    word                 GCBI_toolFeaturesCount
    WordFlags            GCBI_toolFeatures
    char                 *GCBI_helpContext
    byte                 GCBI_reserved[8]
} GenControlBuildInfo
typedef struct {
    WordFlags          GCSI_userAdded
    WordFlags          GCSI_userRemoved
    WordFlags          GCSI_appRequired
    WordFlags          GCSI_appProhibited

```

```

    } GenControlScanInfo
typedef struct {
    WordFlags      GCSR_features
    WordFlags      GCSR_required
    WordFlags      GCSR_prohibited
    WordFlags      GCSR_supported
} GenControlGetFeaturesReturn
typedef struct {
    optr           NGCS_controller
    GenControlStatusChange NGCS_statusChange
} NotifyGenControlStatusChange
typedef struct {
    GenControlInteractableFlags TGCI_interactableFlags
    MemHandle                  TGCI_childBlock
    MemHandle                  TGCI_toolBlock
    MemHandle                  TGCI_toolParent
    WordFlags                  TGCI_features
    WordFlags                  TGCI_toolboxFeatures
    GCNListType                TGCI_activeNotificationList
    GenControlInteractableFlags TGCI_upToDate
} TempGenControlInstance
typedef struct {
    GenControlUserFlags GCUD_flags
    word                GCUD_userAddedUI
    word                GCUD_userRemovedUI
    word                GCUD_userAddedToolboxUI
    word                GCUD_userRemovedToolboxUI
} GenControlUserData
typedef struct {
    GenControlScalableUICommand GCSUIE_command
    WordFlags                  GCSUIE_appFeature
    WordFlags                  GCSUIE_newFeatures
} GenControlScalableUIEntry

```

Messages

```

void MSG_GEN_CONTROL_GET_INFO(GenControlBuildInfo *info)
void MSG_GEN_CONTROL_GENERATE_UI()
void MSG_GEN_CONTROL_DESTROY_UI()
void MSG_GEN_CONTROL_GENERATE_TOOLBOX_UI(optr parent)
void MSG_GEN_CONTROL_DESTROY_TOOLBOX_UI()
void MSG_GEN_CONTROL_UPDATE_UI(@stack
    MemHandle toolBlock,
    MemHandle childBlock,
    WordFlags toolboxFeatures,
    WordFlags features,
    MemHandle data,
    word changeID,
    ManufacturerID manufID)
void MSG_GEN_CONTROL_ENABLE_DISABLE(
    Message msg,
    VisUpdateMode updateMode)
void MSG_GEN_CONTROL_SCAN_FEATURE_HINTS(
    GenControlUIType type,
    GenControlScanInfo *info)
void MSG_GEN_CONTROL_ADD_FEATURE(WordFlags featureToAdd)
void MSG_GEN_CONTROL_REMOVE_FEATURE(
    WordFlags featureToRemove)

```

```

void MSG_GEN_CONTROL_ADD_TOOLBOX_FEATURE(
    WordFlags featureToAdd)
void MSG_GEN_CONTROL_REMOVE_TOOLBOX_FEATURE(
    WordFlags featureToRemove)
void MSG_GEN_CONTROL_NOTIFY_INTERACTABLE(
    GenControlInteractableFlags flags)
void MSG_GEN_CONTROL_NOTIFY_NOT_INTERACTABLE(
    GenControlInteractableFlags flags)
void MSG_GEN_CONTROL_UNBUILD_NORMAL_UI_IF_POSSIBLE()
void MSG_GEN_CONTROL_ADD_TO_GCN_LISTS()
void MSG_GEN_CONTROL_REMOVE_FROM_GCN_LISTS()
MSG_GEN_CONTROL_GET_NORMAL_FEATURES(
    GenControlGetFeaturesReturn *return)
MSG_GEN_CONTROL_GET_TOOLBOX_FEATURES(
    GenControlGetFeaturesReturn *return)
void MSG_GEN_CONTROL_ADD_APP_UI(optr appUI)
void MSG_GEN_CONTROL_ADD_APP_TOOLBOX_UI(optr appUI)
void MSG_GEN_CONTROL_REBUILD_NORMAL_UI()
void MSG_GEN_CONTROL_REBUILD_TOOLBOX_UI()
void MSG_GEN_CONTROL_ADD_TO_UI()
void MSG_GEN_CONTROL_REMOVE_FROM_UI()
void MSG_GEN_CONTROL_OUTPUT_ACTION(EventHandle event)
void MSG_GEN_CONTROL_TWEAK_DUPLICATED_UI(
    MemHandle childBlock,
    WordFlags features)
void MSG_GEN_CONTROL_TWEAK_DUPLICATED_TOOLBOX_UI(
    MemHandle toolBlock,
    WordFlags toolboxFeatures)
void MSG_GEN_CONTROL_NOTIFY_ADDING_FEATURE(optr feature)
void MSG_GEN_CONTROL_FREE_OBJ_BLOCK(
    MemHandle blockToFree)

```



GenDisplayClass

```
@class GenDisplayClass, GenClass
```

Instance Data

```
GenDisplayAttrs GDI_attributes = GDA_USER_DISMISSABLE
optr            GDI_document
@default GI_attrs = (@default | GA_TARGETABLE |
                     GA_KBD_SEARCH_PATH)
```

Variable Data

```
ChunkHandle ATTR_GEN_DISPLAY_TRAVELING_OBJECTS
void ATTR_GEN_DISPLAY_NOT_MINIMIZABLE
void ATTR_GEN_DISPLAY_NOT_MAXIMIZABLE
void ATTR_GEN_DISPLAY_NOT_RESTORABLE
void ATTR_GEN_DISPLAY_MINIMIZED_STATE
void ATTR_GEN_DISPLAY_MAXIMIZED_STATE
void ATTR_GEN_DISPLAY_MENU_BAR_POPPED_OUT
```

Hints

```
void HINT_DISPLAY_MINIMIZED_ON_STARTUP
void HINT_DISPLAY_NOT_MINIMIZED_ON_STARTUP
void HINT_DISPLAY_MAXIMIZED_ON_STARTUP
void HINT_DISPLAY_NOT_MAXIMIZED_ON_STARTUP
void HINT_DISPLAY_NOT_RESIZABLE
```

Types and Flags

```
ByteFlags      GenDisplayAttrs
               GDA_USER_DISMISSABLE          0x80
```

Structures

```
typedef struct {
    optr      TIR_travelingObject
    ChunkHandle TIR_parent
    word      TIR_compChildFlags
} TravelingObjectReference
```

Messages

```
void MSG_GEN_DISPLAY_SET_MINIMIZED()
void MSG_GEN_DISPLAY_SET_NOT_MINIMIZED()
Boolean MSG_GEN_DISPLAY_GET_MINIMIZED()
void MSG_GEN_DISPLAY_SET_MAXIMIZED()
void MSG_GEN_DISPLAY_SET_NOT_MAXIMIZED()
Boolean MSG_GEN_DISPLAY_GET_MAXIMIZED()
void MSG_GEN_DISPLAY_SET_ATTRS(byte attrs)
byte MSG_GEN_DISPLAY_GET_ATTRS()
optr MSG_GEN_DISPLAY_GET_DOCUMENT()
void MSG_GEN_DISPLAY_CLOSE()
```

GenDisplayControlClass

```
@class GenDisplayControlClass, GenControlClass
```

Instance Data

```
GenDisplayControlAttributes GDCII_attrs =  
    (GDCA_MAXIMIZED_NAME_ON_PRIMARY)  
    @default GI_states = @default | GS_ENABLED  
    @default GCI_output = (TO_APP_TARGET)
```

Variable Data

```
void TEMP_GDC_CACHED_NAME  
NotifyDisplayListChange TEMP_GDC_CACHED_LIST_DATA  
NotifyDisplayListChange TEMP_GDC_CACHED_TOOL_LIST_DATA  
word TEMP_GDC_CACHED_SELECTED_DISPLAY
```

Hints

```
void HINT_DISPLAY_CONTROL\  
    NO_FEATURES_IF_TRANSPARENT_DOC_CTRL_MODE
```

Types and Flags

```
ByteFlags GenDisplayControlAttributes  
    GDCA_MAXIMIZED_NAME_ON_PRIMARY 0x80  
MAX_DISPLAY_NAME_SIZE 64  
WordFlags GDCFeatures  
    GDCF_OVERLAPPING_MAXIMIZED 0x0004  
    GDCF_TILE 0x0002  
    GDCF_DISPLAY_LIST 0x0001  
WordFlags GDCToolboxFeatures  
    GDCTF_OVERLAPPING_MAXIMIZED 0x0004  
    GDCTF_TILE 0x0002  
    GDCTF_DISPLAY_LIST 0x0001  
GDC_DEFAULT_FEATURES (GDCF_OVERLAPPING_MAXIMIZED |  
    GDCF_TILE |  
    GDCF_DISPLAY_LIST)  
GDC_DEFAULT_TOOLBOX_FEATURES (GDCTF_DISPLAY_LIST)  
ByteFlags GenDisplayControlAttributes  
    GDCA_MAXIMIZED_NAME_ON_PRIMARY 0x80
```

Structures

```
typedef struct {  
    optr NDC_display  
    char NDC_name[MAX_DISPLAY_NAME_SIZE]  
    byte NDC_overlapping  
} NotifyDisplayChange  
typedef struct {  
    word NDLC_counter  
    optr NDLC_group  
} NotifyDisplayListChange
```

Messages

```
void MSG_GDC_SET_OVERLAPPING()  
void MSG_GDC_TILE()  
void MSG_GDC_LIST_APPLY()  
void MSG_GDC_LIST_QUERY()
```

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GenDisplayGroupClass

```
@class GenDisplayGroupClass, GenClass
```

Instance Data

```
@default      GI_attrs = @default | GA_TARGETABLE
```

Variable Data

```
void ATTR_GEN_DISPLAY_GROUP_NO_FULL_SIZED
void ATTR_GEN_DISPLAY_GROUP_NO_OVERLAPPING
void ATTR_GEN_DISPLAY_GROUP_OVERLAPPING_STATE
```

Hints

```
void HINT_DISPLAY_GROUP_SEPARATE_MENUS
void HINT_DISPLAY_GROUP_ARRANGE_TILED
void HINT_DISPLAY_GROUP_FULL_SIZED_ON_STARTUP
void HINT_DISPLAY_GROUP_OVERLAPPING_ON_STARTUP
void HINT_DISPLAY_GROUP_\
    FULL_SIZED_IF_TRANSPARENT_DOC_CTRL_MODE
void HINT_DISPLAY_GROUP_TILE_HORIZONTALLY
void HINT_DISPLAY_GROUP_TILE_VERTICALLY
void HINT_DISPLAY_GROUP_SIZE_INDEPENDENTLY_OF_DISPLAYS
```

Messages

```
void MSG_GEN_DISPLAY_GROUP_SET_FULL_SIZED()
void MSG_GEN_DISPLAY_GROUP_SET_OVERLAPPING()
Boolean MSG_GEN_DISPLAY_GROUP_GET_FULL_SIZED()
void MSG_GEN_DISPLAY_GROUP_TILE_DISPLAYS()
void MSG_GEN_DISPLAY_GROUP_SELECT_DISPLAY(
    word displayNum)
```

GenDocumentClass

```
@class GenDocumentClass, GenContentClass
```

Instance Data

```
GenDocumentAttrs    GDI_attrs = 0
GenDocumentType      GDI_type = 0
word                 GDI_operation = 0
FileHandle           GDI_fileHandle = 0
FileLongName         GDI_fileName = ""
MemHandle            GDI_display = 0
@default GI_attrs = (@default | GA_KBD_SEARCH_PATH)
```

Variable Data

```
void ATTR_GEN_DOCUMENT_OPEN_FOR_IACP_ONLY
```

Types and Flags

```
WordFlags GenDocumentAttrs
    GDA_READ_ONLY          0x8000
    GDA_READ_WRITE         0x4000
    GDA_FORCE_DENY_WRITE   0x2000
    GDA_SHARED_MULTIPLE    0x1000
    GDA_SHARED_SINGLE      0x0800
    GDA_UNTITLED            0x0400
    GDA_DIRTY               0x0200
    GDA_CLOSING             0x0100
    GDA_ATTACH_TO_DIRTY_FILE 0x0080
    GDA_SAVE_FAILED         0x0040
    GDA_OPENING             0x0020
    GDA_AUTO_SAVE_STOPPED   0x0010
    GDA_MODEL               0x0008
    GDA_ON_WRITABLE_MEDIA   0x0004
    GDA_BACKUP_EXISTS       0x0002
    GDA_PREVENT_AUTO_SAVE   0x0001

typedef enum {
    GDT_NORMAL,
    GDT_READ_ONLY,
    GDT_TEMPLATE,
    GDT_READ_ONLY_TEMPLATE,
    GDT_PUBLIC,
    GDT_MULTI_USER
} GenDocumentType
typedef enum /* word */ {
    GDO_NORMAL,
    GDO_SAVE_AS,
    GDO_REVERT,
    GDO_REVERT_QUICK,
    GDO_ATTACH,
    GDO_DETACH,
    GDO_NEW,
    GDO_OPEN,
    GDO_SAVE,
    GDO_CLOSE,
    GDO_AUTO_SAVE
} GenDocumentOperation

typedef WordFlags DocumentOpenFlags
    DOF_CREATE_FILE_IF_FILE_DOES_NOT_EXIST 0x8000
    DOF_FORCE_TEMPLATE_BEHAVIOR             0x4000
```



```

DOF_SAVE_AS_OVERWRITE_EXISTING_FILE    0x2000
DOF_REOPEN                             0x1000
DOF_RAISE_APP_AND_DOC                   0x0800
DOF_NAME_HOLDS_FILE_ID                  0x0400
DOF_FORCE_REAL_EMPTY_DOCUMENT           0x0200
DOF_OPEN_FOR_IACP_ONLY                   0x0100
GEN_DOCUMENT_GET_VARIABLE_BUFFER_SIZE    100
GEN_DOCUMENT_GENERATE_NAME_ERROR         0xffff
GEN_DOCUMENT_GENERATE_NAME_CANCEL        0xfffe

```

Structures

```

typedef struct {
    FileLongName      DCP_name
    DiskHandle         DCP_diskHandle
    PathName           DCP_path
    GenDocumentAttrs   DCP_docAttrs
    DocumentOpenFlags  DCP_flags
    IACPConnection     DCP_connection
} DocumentCommonParams

```

Messages

```

Boolean MSG_GEN_DOCUMENT_INITIALIZE_DOCUMENT_FILE()
Boolean MSG_GEN_DOCUMENT_IMPORT(
    ImpexTranslationParams *params)
void MSG_GEN_DOCUMENT_CREATE_UI_FOR_DOCUMENT()
void MSG_GEN_DOCUMENT_DESTROY_UI_FOR_DOCUMENT()
void MSG_GEN_DOCUMENT_ATTACH_UI_TO_DOCUMENT()
void MSG_GEN_DOCUMENT_DETACH_UI_FROM_DOCUMENT()
void MSG_GEN_DOCUMENT_EXPORT(
    ImpexTranslationParams *params)
void MSG_GEN_DOCUMENT_READ_CACHED_DATA_FROM_FILE()
void MSG_GEN_DOCUMENT_WRITE_CACHED_DATA_TO_FILE(
    Boolean isSave)
void MSG_GEN_DOCUMENT_DOCUMENT_HAS_CHANGED()
Boolean MSG_GEN_DOCUMENT_PHYSICAL_SAVE(word *error)
Boolean MSG_GEN_DOCUMENT_PHYSICAL_UPDATE(word *error)
Boolean MSG_GEN_DOCUMENT_PHYSICAL_SAVE_AS(
    word *fileOrError,
    DocumentCommonParams *params)
Boolean MSG_GEN_DOCUMENT_PHYSICAL_SAVE_AS_FILE_HANDLE(
    word *error, FileHandle file)
Boolean MSG_GEN_DOCUMENT_PHYSICAL_REVERT(word *error)
Boolean
    MSG_GEN_DOCUMENT_UPDATE_EARLIER_COMPATIBLE_DOCUMENT()
Boolean
    MSG_GEN_DOCUMENT_UPDATE_EARLIER_INCOMPATIBLE_DOCUMENT()
Boolean MSG_GEN_DOCUMENT_PHYSICAL_CREATE(
    word *fileOrError,
    DocumentCommonParams *params)
Boolean MSG_GEN_DOCUMENT_PHYSICAL_OPEN(
    word *fileOrError,
    DocumentCommonParams *params)
void MSG_GEN_DOCUMENT_PHYSICAL_CLOSE()
void MSG_GEN_DOCUMENT_PHYSICAL_DELETE()
Boolean
    MSG_GEN_DOCUMENT_PHYSICAL_CHECK_FOR_MODIFICATIONS()
Boolean MSG_GEN_DOCUMENT_PHYSICAL_COPY_TEMPLATE(
    word *fileOrError)

```

```

void MSG_GEN_DOCUMENT_SAVE_AS_COMPLETED()
void MSG_GEN_DOCUMENT_ATTACH_FAILED()
void MSG_GEN_DOCUMENT_MARK_DIRTY()
word MSG_GEN_DOCUMENT_GENERATE_NAME_FOR_NEW(
    char *buffer, word retryCount)
void MSG_GEN_DOCUMENT_SAVE_AS_CANCELLED()
byte MSG_GEN_DOCUMENT_COMPUTE_ACCESS_FLAGS(
    DocumentCommonParams *params)
GenDocumentAttrs MSG_GEN_DOCUMENT_GET_ATTRS()
void MSG_GEN_DOCUMENT_ENABLE_AUTO_SAVE()
void MSG_GEN_DOCUMENT_DISABLE_AUTO_SAVE()
void MSG_GEN_DOCUMENT_GET_FILE_NAME(char *buffer)
FileHandle MSG_GEN_DOCUMENT_GET_FILE_HANDLE()
GenDocumentOperation MSG_GEN_DOCUMENT_GET_OPERATION()
optr MSG_GEN_DOCUMENT_GET_DISPLAY()
Boolean MSG_GEN_DOCUMENT_NEW(word *fileOrError,
    DocumentCommonParams *params)
Boolean MSG_GEN_DOCUMENT_OPEN(word *fileOrError,
    DocumentCommonParams *params)
word MSG_GEN_DOCUMENT_CLOSE(IACPConnection connection)
void MSG_GEN_DOCUMENT_QUICK_BACKUP()
void MSG_GEN_DOCUMENT_RECOVER_QUICK_BACKUP()
Boolean MSG_GEN_DOCUMENT_SAVE()
Boolean MSG_GEN_DOCUMENT_SAVE_AS(word *fileOrError,
    DocumentCommonParams *params)
Boolean MSG_GEN_DOCUMENT_SAVE_AS_TEMPLATE(
    word *fileOrError,
    DocumentCommonParams *params)
Boolean MSG_GEN_DOCUMENT_COPY_TO(
    DocumentCommonParams *params)
Boolean MSG_GEN_DOCUMENT_REVERT()
void MSG_GEN_DOCUMENT_EDIT_USER_NOTES()
void MSG_GEN_DOCUMENT_CHANGE_TYPE(GenDocumentType type)
void MSG_GEN_DOCUMENT_CHANGE_PASSWORD(char *password)
void MSG_GEN_DOCUMENT_RENAME()
void MSG_GEN_DOCUMENT_SET_EMPTY()
void MSG_GEN_DOCUMENT_CLEAR_EMPTY()
void MSG_GEN_DOCUMENT_SET_DEFAULT()
void MSG_GEN_DOCUMENT_CLEAR_DEFAULT()
void MSG_GEN_DOCUMENT_CLOSE_IF_CLEAN_UNNAMED()
Boolean MSG_GEN_DOCUMENT_SEARCH_FOR_DOC(
    DocumentCommonParams *params)
Boolean MSG_GEN_DOCUMENT_TEST_FOR_FILE(
    FileHandle file, optr *docFound)
void MSG_GEN_DOCUMENT_AUTO_SAVE()
void MSG_GEN_DOCUMENT_UPDATE(word *error)
void MSG_GEN_DOCUMENT_CHECK_FOR_MODIFICATIONS()
void MSG_GEN_DOCUMENT_CLOSE_FILE(
    IACPConnection connection)
void MSG_GEN_DOCUMENT_REOPEN_FILE()
void MSG_GEN_DOCUMENT_GET_VARIABLE(@stack
    VisTextGraphic *graphic,
    char *buffer)
void MSG_GEN_DOCUMENT_REVERT_NO_PROMPT()
void
MSG_GEN_DOCUMENT_FILE_CHANGED_REINITIALIZE_CREATED_UI()
void MSG_GEN_DOCUMENT_CLOSE_IF_OPEN_FOR_IACP_ONLY()

```



GenDocumentControlClass

```
@class GenDocumentControlClass, GenControlClass
```

Instance Data

```
GeodeToken          GDCI_documentToken = {"",0}
GenFileSelectorType GDCI_selectorType = GFST_DOCUMENTS
GenDocumentControlAttrs GDCI_attrs =
    ((GDCM_SHARED_SINGLE << GDCA_MODE_OFFSET) |
     GDCA_VM_FILE | GDCA_SUPPORTS_SAVE_AS_REVERT |
     | (GDCT_NEW << GDCA_CURRENT_TASK_OFFSET))
GenDocumentControlFeatures GDCI_features =
    (GDCF_READ_ONLY_SUPPORTS_SAVE_AS_REVERT |
     GDCF_SINGLE_FILE_CLEAN_CAN_NEW_OPEN |
     GDCF_SUPPORTS_TEMPLATES |
     GDCF_SUPPORTS_USER_SETTABLE_EMPTY_DOCUMENT
     | GDCF_SUPPORTS_USER_MAKING_SHARED_DOCUMENTS
     | GDCF_NAME_ON_PRIMARY)
GenDocumentAttrs    GDCI_docAttrs = 0
GenDocumentType     GDCI_docType = 0
FileHandle          GDCI_docFileHandle = 0
byte                GDCI_emptyExists = 0
byte                GDCI_defaultExists = 0
ChunkHandle         GDCI_enableDisableList
optr                GDCI_openGroup
optr                GDCI_importGroup
optr                GDCI_useTemplateGroup
optr                GDCI_saveAsGroup
optr                GDCI_exportGroup
optr                GDCI_dialogGroup
optr                GDCI_userLevelGroup
ChunkHandle         GDCI_noNameText
ChunkHandle         GDCI_defaultFile
ChunkHandle         GDCI_templateDir
optr                GDCI_documentGroup
FileLongName        GDCI_targetDocName = ""
ChunkHandle         GDCI_dialogNewText
ChunkHandle         GDCI_dialogTemplateText
ChunkHandle         GDCI_dialogOpenDefaultText
ChunkHandle         GDCI_dialogImportText
ChunkHandle         GDCI_dialogOpenText
ChunkHandle         GDCI_dialogUserLevelText
@visMoniker         GDCI_dialogNewMoniker
@visMoniker         GDCI_dialogTemplateMoniker
@visMoniker         GDCI_dialogOpenDefaultMoniker
@visMoniker         GDCI_dialogImportMoniker
@visMoniker         GDCI_dialogOpenMoniker
@visMoniker         GDCI_dialogUserLevelMoniker
@default GI_states = @default | GS_ENABLED
@default GI_attrs = @default | GA_KBD_SEARCH_PATH
```

Hints

```
void
HINT_GEN_DOCUMENT_CONTROL_NO_PROGRESS_DIALOG_ON_UPDATE_
MAJOR
void
HINT_GEN_DOCUMENT_CONTROL_PROGRESS_DIALOG_ON_UPDATE_MIN
OR
```

Variable Data

UIInterfaceLevel
ATTR_GEN_DOCUMENT_CONTROL_NO_EMPTY_DOC_IF_NOT_ABOVE

Types and Flags

WordFlags GDCFeatures
GDCF_NEW 0x4000
GDCF_OPEN 0x2000
GDCF_CLOSE 0x1000
GDCF_QUICK_BACKUP 0x0800
GDCF_SAVE 0x0400
GDCF_SAVE_AS 0x0200
GDCF_COPY 0x0100
GDCF_EXPORT 0x0080
GDCF_REVERT 0x0080
GDCF_RENAME 0x0040
GDCF_EDIT_USER_NOTES 0x0020
GDCF_SET_TYPE 0x0010
GDCF_SET_PASSWORD 0x0008
GDCF_SAVE_AS_TEMPLATE 0x0004
GDCF_SET_EMPTY_DOCUMENT 0x0002
GDCF_SET_DEFAULT_DOCUMENT 0x0001
WordFlags GDCToolboxFeatures
GDCTF_NEW_EMPTY 0x0020
GDCTF_USE_TEMPLATE 0x0010
GDCTF_OPEN 0x0008
GDCTF_CLOSE 0x0004
GDCTF_SAVE 0x0002
GDCTF_QUICK_BACKUP 0x0001
GDC_SUGGESTED_INTRODUCTORY_FEATURES (0)
GDC_SUGGESTED_BEGINNING_FEATURES
(GDC_SUGGESTED_INTRODUCTORY_FEATURES |
GDCF_QUICK_BACKUP | GDCF_COPY | GDCF_RENAME
| GDCF_EXPORT | GDCF_EDIT_USER_NOTES)
GDC_SUGGESTED_INTERMEDIATE_FEATURES
(GDC_SUGGESTED_BEGINNING_FEATURES |
GDCF_SAVE_AS | GDCF_REVERT |
GDCF_SET_PASSWORD)
GDC_SUGGESTED_ADVANCED_FEATURES
(GDC_SUGGESTED_INTERMEDIATE_FEATURES |
GDCF_SET_TYPE | GDCF_SAVE_AS_TEMPLATE |
GDCF_SET_EMPTY_DOCUMENT |
GDCF_SET_DEFAULT_DOCUMENT)
ByteEnum GDCTask
GDCT_NONE 0
GDCT_NEW 1
GDCT_OPEN 2
GDCT_USE_TEMPLATE 3
GDCT_SAVE_AS 4
GDCT_COPY_TO 5
GDCT_DIALOG 6
GDCT_TYPE 7
GDCT_PASSWORD 8
ByteEnum GenDocumentControlMode
GDCM_VIEWER 0
GDCM_SHARED_SINGLE 1
GDCM_SHARED_MULTIPLE 2



```

WordFlags    GenDocumentControlAttrs
GDCA_MULTIPLE_OPEN_FILES    0x8000
GDCA_MODE                    0x6000
GDCA_DOS_FILE_DENY_WRITE    0x1000
GDCA_VM_FILE                 0x0800
GDCA_NATIVE                  0x0400
GDCA_SUPPORTS_SAVE_AS_REVERT 0x0200
GDCA_DOCUMENT_EXISTS         0x0100
GDCA_CURRENT_TASK            0x00F0
GDCA_DO_NOT_SAVE_FILES       0x0008
GDCA_MODE_OFFSET             13
GDCA_CURRENT_TASK_OFFSET     5
WordFlags    GenDocumentControlFeatures
GDCF_READ_ONLY_SUPPORTS_SAVE_AS_REVERT 0x8000
GDCF_SINGLE_FILE_CLEAN_CAN_NEW_OPEN    0x4000
GDCF_SUPPORTS_TEMPLATES                 0x2000
GDCF_SUPPORTS_USER_SETTABLE_EMPTY_DOCUMENT 0x1000
GDCF_SUPPORTS_USER_SETTABLE_DEFAULT_DOCUMENT
                                           0x0800
GDCF_SUPPORTS_USER_MAKING_SHARED_DOCUMENTS 0x0400
GDCF_NAME_ON_PRIMARY                       0x0200
ByteEnum    GenFileSelectorType
GFST_DOCUMENTS        0
GFST_EXECUTABLES      1
GFST_NON_GEOS_FILES    2
GFST_ALL_FILES         3

```

Structures

```

typedef struct {
    FileLongName    DFCP_name
    DiskHandle       DFCP_diskHandle
    PathName         DFCP_path
    optr             DFCP_display
    optr             DFCP_document
} DocumentFileChangedParams
typedef struct {
    word            NDC_attrs    /* GenDocumentAttrs */
    word            NDC_type     /* GenDocumentType */
    FileHandle       NDC_fileHandle
    byte            NDC_emptyExists
    byte            NDC_defaultExists
} NotifyDocumentChange

```

Messages

```

void MSG_GEN_DOCUMENT_CONTROL_DISPLAY_DIALOG()
void MSG_GEN_DOCUMENT_CONTROL_INITIATE_NEW_DOC()
void
MSG_GEN_DOCUMENT_CONTROL_INITIATE_USE_TEMPLATE_DOC()
void MSG_GEN_DOCUMENT_CONTROL_INITIATE_OPEN_DOC()
void MSG_GEN_DOCUMENT_CONTROL_INITIATE_IMPORT_DOC()
void MSG_GEN_DOCUMENT_CONTROL_INITIATE_SAVE_DOC()
void MSG_GEN_DOCUMENT_CONTROL_INITIATE_SAVE_AS_DOC()
void
MSG_GEN_DOCUMENT_CONTROL_INITIATE_SAVE_AS_TEMPLATE_DOC(
)
void MSG_GEN_DOCUMENT_CONTROL_INITIATE_COPY_TO_DOC()
void MSG_GEN_DOCUMENT_CONTROL_INITIATE_EXPORT_DOC()
void MSG_GEN_DOCUMENT_CONTROL_INITIATE_SET_TYPE_DOC()

```

```

void
MSG_GEN_DOCUMENT_CONTROL_INITIATE_SET_PASSWORD_DOC()
GenDocumentControlAttrs
    MSG_GEN_DOCUMENT_CONTROL_GET_ATTRS()
GenDocumentControlFeatures
    MSG_GEN_DOCUMENT_CONTROL_GET_FEATURES()
void MSG_GEN_DOCUMENT_CONTROL_GET_TOKEN(
    GeodeToken *token)
void MSG_GEN_DOCUMENT_CONTROL_GET_CREATOR(
    GeodeToken *token)
void MSG_GEN_DOCUMENT_CONTROL_GET_TEMPLATE_DIR(
    char *buffer)
void MSG_GEN_DOCUMENT_CONTROL_SAVE_AS_CANCELLED()
void MSG_GEN_DOCUMENT_CONTROL_FILE_CHANGED(
    DocumentFileChangedParams dup)
void MSG_GEN_DOCUMENT_CONTROL_CONFIGURE_FILE_SELECTOR(
    optr fileSelector, word flags)
void MSG_GEN_DOCUMENT_CONTROL_OPEN_IMPORT_SELECTED(
    ImpexTranslationParams *params)
void MSG_GEN_DOCUMENT_CONTROL_FILE_EXPORTED()
void MSG_GEN_DOCUMENT_CONTROL_OPEN_DEFAULT_DOC()
void MSG_GEN_DOCUMENT_CONTROL_IMPORT_CANCELLED()

```

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GenDocumentGroupClass

```
@class GenDocumentGroupClass, GenClass
```

Instance Data

```

GenDocumentGroupAttrs GDGI_attrs = (GDGA_VM_FILE |
    GDGA_SUPPORTS_AUTO_SAVE |
    GDGA_AUTOMATIC_CHANGE_NOTIFICATION |
    GDGA_AUTOMATIC_DIRTY_NOTIFICATION |
    GDGA_APPLICATION_THREAD |
    GDGA_AUTOMATIC_UNDO_INTERACTION |
    GDGA_CONTENT_DOES_NOT_MANAGE_CHILDREN)
ChunkHandle GDGI_untitledName
ClassStruct * GDGI_documentClass =
    (ClassStruct *)&GenDocumentClass
optr GDGI_genDocument
optr GDGI_output
optr GDGI_documentControl
optr GDGI_genView
optr GDGI_genDisplay
optr GDGI_genDisplayGroup
word GDGI_protocolMajor = 1
word GDGI_protocolMinor = 0

```

Types and Flags

```

WordFlags GenDocumentGroupAttrs
GDGA_VM_FILE 0x8000
GDGA_NATIVE 0x4000
GDGA_SUPPORTS_AUTO_SAVE 0x2000
GDGA_AUTOMATIC_CHANGE_NOTIFICATION 0x1000
GDGA_AUTOMATIC_DIRTY_NOTIFICATION 0x0800
GDGA_APPLICATION_THREAD 0x0400
GDGA_VM_FILE_CONTAINS_OBJECTS 0x0200
GDGA_CONTENT_DOES_NOT_MANAGE_CHILDREN 0x0100

```

```

        GDGA_LARGE_CONTENT                0x0080
        GDGA_AUTOMATIC_UNDO_INTERACTION    0x0040
typedef enum /* word */ {
    DQS_OK,
    DQS_CANCEL,
    DQS_DELAYED,
    DQS_SAVE_ERROR
} DocQuitStatus

```

Messages

```

optr MSG_GEN_DOCUMENT_GROUP_NEW_DOC(
    DocumentCommonParams *params)
optr MSG_GEN_DOCUMENT_GROUP_IMPORT_NEW_DOC(
    ImpexTranslationParams *params)
optr MSG_GEN_DOCUMENT_GROUP_OPEN_DOC(
    DocumentCommonParams *params)
void MSG_GEN_DOCUMENT_GROUP_MARK_DIRTY(optr document)
void MSG_GEN_DOCUMENT_GROUP_MARK_DIRTY_BY_FILE(
    FileHandle file)
void MSG_GEN_DOCUMENT_GROUP_OPEN_DEFAULT_DOC(
    DocumentCommonParams *params)
GenDocumentGroupAttrs
MSG_GEN_DOCUMENT_GROUP_GET_ATTRS()
GenDocumentControlAttrs
MSG_GEN_DOCUMENT_GROUP_GET_UI_ATTRS()
void MSG_GEN_DOCUMENT_GROUP_GET_TEMPLATE_DIR(
    char *buffer)
GenDocumentControlFeatures
MSG_GEN_DOCUMENT_GROUP_GET_UI_FEATURES()
word MSG_GEN_DOCUMENT_GROUP_GET_DEFAULT_NAME(
    char *buffer)
optr MSG_GEN_DOCUMENT_GROUP_GET_OUTPUT()
void MSG_GEN_DOCUMENT_GROUP_SET_OUTPUT(optr output)
void MSG_GEN_DOCUMENT_GROUP_GET_TOKEN(GeodeToken *token)
void MSG_GEN_DOCUMENT_GROUP_GET_CREATOR(
    GeodeToken *token)
dword MSG_GEN_DOCUMENT_GROUP_GET_PROTOCOL()
optr MSG_GEN_DOCUMENT_GROUP_GET_VIEW()
optr MSG_GEN_DOCUMENT_GROUP_GET_DISPLAY()
optr MSG_GEN_DOCUMENT_GROUP_GET_DISPLAY_GROUP()
optr MSG_GEN_DOCUMENT_GROUP_GET_DOC_BY_FILE(
    FileHandle file)
void MSG_GEN_DOCUMENT_GROUP_SAVE_AS_CANCELLED()
Boolean MSG_GEN_DOCUMENT_GROUP_SEARCH_FOR_DOC(
    DocumentCommonParams *params)

```

GenDynamicListClass

```
@class GenDynamicListClass, GenItemGroupClass
```

Instance Data

```
word          GDLI_numItems = 0
word          GDLI_queryMsg = 0
```

Types and Flags

```
typedef WordFlags ReplaceItemMonikerFlags;
RIMF_NOT_ENABLED      0x8000
GDLI_NO_CHANGE        0xffff
GDLP_FIRST            0x0000
GDLP_LAST             0xffff
```

Messages

```
@prototype void GEN_DYNAMIC_LIST_QUERY_MSG(
    optr list, word item)
void MSG_GEN_DYNAMIC_LIST_REPLACE_ITEM_MONIKER(@stack
    word item,
    ReplaceItemMonikerFlags flags,
    word height, word width,
    word length,
    VisMonikerDataType dataType,
    VisMonikerSourceType sourceType,
    dword source)
void MSG_GEN_DYNAMIC_LIST_REPLACE_ITEM_MONIKER_OPTR(
    word item, optr moniker)
void MSG_GEN_DYNAMIC_LIST_REPLACE_ITEM_TEXT(
    word item, char *text)
void MSG_GEN_DYNAMIC_LIST_INITIALIZE(word numItems)
void MSG_GEN_DYNAMIC_LIST_INITIALIZE(word numItems)
word MSG_GEN_DYNAMIC_LIST_GET_NUM_ITEMS()
void MSG_GEN_DYNAMIC_LIST_ADD_ITEMS(
    word item, word numItems)
void MSG_GEN_DYNAMIC_LIST_REMOVE_ITEMS(
    word item, word numItems)
void MSG_GEN_DYNAMIC_LIST_REMOVE_ITEM_LIST(
    word *deletionList, word numItems)
```

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GenEditControlClass

```
@class GenEditControlClass, GenControlClass
```

Instance Data

```
@default GCI_output = (TO_APP_TARGET)
@default GI_states = (@default | GS_ENABLED)
@default GI_attrs = (@default | GA_KBD_SEARCH_PATH)
```

Variable Data

```
NotifyUndoStateChange TEMP_UNDO_DESCRIPTION
word TEMP_CLIPBOARD_NOTIFICATION_LIST_COUNT
```

Types and Flags

```
WordFlags    GECFeatures
    GECF_UNDO                0x0020
    GECF_CUT                  0x0010
    GECF_COPY                  0x0008
    GECF_PASTE                 0x0004
    GECF_SELECT_ALL           0x0002
    GECF_DELETE                0x0001

WordFlags    GECToolboxFeatures
    GECTF_UNDO                0x0020
    GECTF_CUT                  0x0010
    GECTF_COPY                  0x0008
    GECTF_PASTE                 0x0004
    GECTF_SELECT_ALL           0x0002
    GECTF_DELETE                0x0001

GEC_DEFAULT_FEATURES    (GECF_UNDO | GECF_CUT |
    GECF_COPY | GECF_PASTE | GECF_SELECT_ALL |
    GECF_DELETE)

GEC_DEFAULT_TOOLBOX_FEATURES (GECTF_UNDO | GECTF_CUT |
    GECTF_COPY | GECTF_PASTE | GECTF_SELECT_ALL |
    GECTF_DELETE)

typedef enum {
    SDT_TEXT,
    SDT_GRAPHICS,
    SDT_SPREADHSEET,
    SDT_INK,
    SDT_OTHER
} SelectionDataType

ByteEnum    UndoDescription
    UD_UNDO                0
    UD_REDO                 1
    UD_NOT_UNDOABLE        2
```

Structures

```
typedef struct {
    SelectionDataType    NSSC_selectionType
    byte                 NSSC_clipboardableSelection
    byte                 NSSC_selectAllAvailable
    byte                 NSSC_deleteableSelection
    byte                 NSSC_pasteable
} NotifySelectStateChange

typedef struct {
    optr                 NUSC_undoTitle
    UndoDescription      NUSC_undoType
} NotifyUndoStateChange
```

GenFieldClass

```
@class GenFieldClass, GenClass
```

Instance Data

```
/* instance data is internal and should not be used */
GenFieldFlags      GFI_flags = 0
optr               GFI_visParent = 0
byte               GFI_numDetachedApps = 0
byte               GFI_numRestartedApps = 0
byte               GFI_numAttachingApps = 0
ChunkHandle        GFI_apps = 0
ChunkHandle        GFI_processes = 0
ChunkHandle        GFI_genApplications = 0
byte               GFI_numAppsToCheck = 0
optr               GFI_notificationDestination = 0
```

Messages

```
void MSG_GEN_FIELD_ADD_GEN_APPLICATION(
    optr genApp,CompChildFlags flags)
void MSG_GEN_FIELD_ADD_APP_INSTANCE_REFERENCE(
    Handle appInstanceReference,
    Handle appObjectBlock)
void MSG_GEN_FIELD_ADD_APP_INSTANCE_REFERENCE HOLDER(
    Handle appObjectBlock)
void MSG_GEN_FIELD_RESET_BG()
void MSG_GEN_FIELD_ENABLE_BITMAP()
void MSG_GEN_FIELD_EXIT_TO_DOS()
void MSG_GEN_FIELD_OPEN_WINDOW_LIST()
optr MSG_GEN_FIELD_GET_TOP_GEN_APPLICATION()
UILaunchModel MSG_GEN_FIELD_GET_LAUNCH_MODEL()
```

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GenFileSelectorClass

@class GenFileSelectorClass, GenClass

Instance Data

GenFileSelectorSelection GFSI_selection = {0}
FileSelectorFileCriteria GFSI_fileCriteria =
 (FSFC_DIRS|FSFC_NON_GEOS_FILES |
 FSFC_GEOS_EXECUTABLES |
 FSFC_GEOS_NON_EXECUTABLES)
FileSelectorAttrs GFSI_attrs =
 (FSA_ALLOW_CHANGE_DIRS |
 FSA_HAS_CLOSE_DIR_BUTTON |
 FSA_HAS_OPEN_DIR_BUTTON |
 FSA_HAS_DOCUMENT_BUTTON |
 FSA_HAS_CHANGE_DIRECTORY_LIST |
 FSA_HAS_CHANGE_DRIVE_LIST |
 FSA_HAS_FILE_LIST)
optr GFSI_destination
Message GFSI_notificationMsg

Variable Data

void TEMP_GEN_FILE_SELECTOR_DATA
GeodeToken ATTR_GEN_FILE_SELECTOR_TOKEN_MATCH
GeodeToken ATTR_GEN_FILE_SELECTOR_CREATOR_MATCH
GenFileSelectorFileAttrs
 ATTR_GEN_FILE_SELECTOR_FILE_ATTR
GenFileSelectorGeodeAttrs
 ATTR_GEN_FILE_SELECTOR_GEODE_ATTR
GenFileSelectorMask ATTR_GEN_FILE_SELECTOR_NAME_MASK
GenFilePath ATTR_GEN_FILE_SELECTOR_VIRTUAL_ROOT

Hints

word HINT_FILE_SELECTOR_NUMBER_OF_FILES_TO_SHOW

Types and Flags

WordFlags FileSelectorFileCriteria
 FSFC_DIRS 0x8000
 FSFC_NON_GEOS_FILES 0x4000
 FSFC_GEOS_EXECUTABLES 0x2000
 FSFC_GEOS_NON_EXECUTABLES 0x1000
 FSFC_MASK_CASE_INSENSITIVE 0x0800
 FSFC_FILE_FILTER 0x0400
 FSFC_FILTER_IS_C 0x0200
 FSFC_TOKEN_NO_ID 0x0100
 FSFC_USE_MASK_FOR_DIRS 0x0080
WordFlags FileSelectorAttrs
 FSA_ALLOW_CHANGE_DIRS 0x8000
 FSA_SHOW_FIXED_DISKS_ONLY 0x2000
 FSA_SHOW_FILES_DISABLED 0x1000
 FSA_HAS_CLOSE_DIR_BUTTON 0x0800
 FSA_HAS_OPEN_DIR_BUTTON 0x0400
 FSA_HAS_DOCUMENT_BUTTON 0x0200
 FSA_HAS_CHANGE_DIRECTORY_LIST 0x0100
 FSA_HAS_CHANGE_DRIVE_LIST 0x0080
 FSA_HAS_FILE_LIST 0x0040
 FSA_USE_VIRTUAL_ROOT 0x0020
ByteEnum GenFileSelectorEntryType
 GFSET_FILE 0

```

GFSET_SUBDIR      1
GFSET_VOLUME      2
WordFlags         GenFileSelectorEntryFlags
GFSEF_TYPE        0xc000
GFSEF_OPEN        0x2000
GFSEF_NO_ENTRIES  0x1000
GFSEF_ERROR       0x0800
GFSEF_TEMPLATE    0x0400
GFSEF_SHARED_MULTIPLE 0x0200
GFSEF_SHARED_SINGLE 0x0100
GFSEF_READ_ONLY   0x0080
GFSEF_PARENT_DIR  0x0040
GFSEF_TYPE_OFFSET 14
FileLongName      GenFileSelectorMask
VolumeName        GenFileSelectorVolume
FileLongName      GenFileSelectorSelection
ByteEnum          GenFileSelectorScalableUICommand
GFSSUIC_SET_FEATURES_IF_APP_FEATURE_ON      0
GFSSUIC_SET_FEATURES_IF_APP_FEATURE_OFF     1
GFSSUIC_ADD_FEATURES_IF_APP_FEATURE_ON      2
GFSSUIC_SET_FEATURES_IF_APP_LEVEL           3
GFSSUIC_ADD_FEATURES_IF_APP_LEVEL           4

```

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Structures

```

typedef struct {
    GeodeToken      GTP_token
    word            GTP_unused
} GetTokenCreatorParams
typedef struct {
    Message         GAP_message
    word            GAP_unused
    optr            GAP_output
} GetActionParams
typedef struct {
    GenFileSelectorFilterRoutine*filterRoutine
    const FileExtAttrDesc *filterAttrs
} GenFileSelectorGetFilterRoutineResults
typedef struct {
    FileAttrs       GFSFA_match
    FileAttrs       GFSFA_mismatch
} GenFileSelectorFileAttrs
typedef struct {
    GeodeAttrs      GFSGA_match
    GeodeAttrs      GFSGA_mismatch
} GenFileSelectorGeodeAttrs
typedef struct {
    GenFileSelectorScalableUICommand GFSSUIE_command
    WordFlags         GFSSUIE_appFeature
    FileSelectorAttrs GFSSUIE_fsFeatures
} GenFileSelectorScalableUIEntry

```

Macros

```

GFS_GET_ENTRY_TYPE(A) (((A) & GFSEF_TYPE) >>
                        GFSEF_TYPE_OFFSET)
GFS_GET_ENTRY_NUMBER(A) ((word) (A >> 16))
GFS_GET_ENTRY_FLAGS(A) ((word) A)
GFS_GET_FULL_SELECTION_PATH_DISK_HANDLE(A)
                        ((DiskHandle) (A))

```

Messages

```

GET_MATCH_FILE_ATTRS(attr) ((byte) (attr))
GET_MISMATCH_FILE_ATTRS(attr) ((byte) (attr >> 8))
SET_TOKEN_CHARS(A, B, C, D) ((A) | ((B) << 8) |
                             ((C) << 16) | ((D) << 24))
GET_MATCH_ATTRS(attr) (((attr) >> 16) & 0xffff)
GET_MISMATCH_ATTRS(attr) ((attr) & 0xffff)

dword MSG_GEN_FILE_SELECTOR_GET_SELECTION(
    char *selection)
Boolean MSG_GEN_FILE_SELECTOR_SET_SELECTION(
    char *selection)
dword MSG_GEN_FILE_SELECTOR_GET_FULL_SELECTION_PATH(
    char *selection)
Boolean MSG_GEN_FILE_SELECTOR_SET_FULL_SELECTION_PATH(
    char *selection,
    DiskHandle diskHandle)
void MSG_GEN_FILE_SELECTOR_GET_MASK(char *mask)
void MSG_GEN_FILE_SELECTOR_SET_MASK(char *mask)
word MSG_GEN_FILE_SELECTOR_GET_FILE_ATTRS()
void MSG_GEN_FILE_SELECTOR_SET_FILE_ATTRS(
    byte setAttrs,
    byte clearAttrs)
void MSG_GEN_FILE_SELECTOR_GET_TOKEN(
    GetTokenCreatorParams *retValue)
void MSG_GEN_FILE_SELECTOR_SET_TOKEN(
    dword tokenChars
    ManufacturerID manufacturerID)
void MSG_GEN_FILE_SELECTOR_GET_CREATOR(
    GetTokenCreatorParams *retValue)
void MSG_GEN_FILE_SELECTOR_SET_CREATOR(
    dword tokenChars,
    ManufacturerID manufacturerID)
dword MSG_GEN_FILE_SELECTOR_GET_GEODE_ATTRS()
void MSG_GEN_FILE_SELECTOR_SET_GEODE_ATTRS(
    word matchGeodeAttrs,
    word mismatchGeodeAttrs)
void MSG_GEN_FILE_SELECTOR_GET_ACTION(
    GetActionParams *retValue)
void MSG_GEN_FILE_SELECTOR_SET_ACTION(
    optr actionOD,
    word actionMessage)
FileSelectorAttrs MSG_GEN_FILE_SELECTOR_GET_ATTRS()
void MSG_GEN_FILE_SELECTOR_SET_ATTRS(
    FileSelectorAttrs attributes)
FileSelectorFileCriteria
MSG_GEN_FILE_SELECTOR_GET_FILE_CRITERIA()
void MSG_GEN_FILE_SELECTOR_SET_FILE_CRITERIA(
    FileSelectorFileCriteria fileCriteria)
void MSG_GEN_FILE_SELECTOR_RESCAN()
void MSG_GEN_FILE_SELECTOR_UP_DIRECTORY()
Boolean MSG_GEN_FILE_SELECTOR_OPEN_ENTRY(
    word entryNumber)
Boolean MSG_GEN_FILE_SELECTOR_SUSPEND()
Boolean MSG_GEN_FILE_SELECTOR_END_SUSPEND()
Boolean MSG_GEN_FILE_SELECTOR_GET_DESTINATION_PATH(
    char *buffer, word bufSize)

```

```
void MSG_GEN_FILE_SELECTOR_GET_FILTER_ROUTINE(  
    GenFileSelectorGetFilterRoutineResults *filter)  
@prototype void GEN_FILE_SELECTOR_NOTIFICATION_MSG(  
    word entryNum,  
    word entryFlags)
```

Routines

```
Boolean GenFileSelectorFilterRoutine (  
    optr oself,  
    FileEnumCallbackData *fecd,  
    word frame)
```

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GenGlyphClass

```
@class GenGlyphClass, GenClass
```

GenInteractionClass

```
@class GenInteractionClass, GenClass
```

Instance Data

```
GenInteractionType      GII_type = GIT_ORGANIZATIONAL
GenInteractionVisibility GII_visibility = GIV_SUB_GROUP
GenInteractionAttrs     GII_attrs = 0
```

Variable Data

```
GenInteractionGroupType ATTR_GEN_INTERACTION_GROUP_TYPE
void ATTR_GEN_INTERACTION_OVERRIDE_INPUT_RESTRICTIONS
void ATTR_GEN_INTERACTION_ABIDE_BY_INPUT_RESTRICTIONS
void ATTR_GEN_INTERACTION_POPPED_OUT
void ATTR_GEN_INTERACTION_POPOUT_NOT_CLOSABLE
optr ATTR_GEN_INTERACTION_PEN_MODE_KEYBOARD_OBJECT
```

Hints

```
void HINT_INTERACTION_SINGLE_USAGE
void HINT_INTERACTION_FREQUENT_USAGE
void HINT_INTERACTION_COMPLEX_PROPERTIES
void HINT_INTERACTION_SIMPLE_PROPERTIES
void HINT_INTERACTION_RELATED_PROPERTIES
void HINT_INTERACTION_UNRELATED_PROPERTIES
void HINT_INTERACTION_SLOW_RESPONSE_PROPERTIES
void HINT_INTERACTION_FAST_RESPONSE_PROPERTIES
void HINT_INTERACTION_REQUIRES_VALIDATION
void HINT_INTERACTION_MAKE_RESIZABLE
void HINT_INTERACTION_CANNOT_BE_DEFAULT
void HINT_INTERACTION_MODAL
void HINT_INTERACTION_NO_DISTURB
void
HINT_INTERACTION_DEFAULT_ACTION_OS_NAVIGATE_TO_NEXT_FILE
LD
void HINT_INTERACTION_INFREQUENT_USAGE
void HINT_CUSTOM_SYS_MENU
void HINT_INTERACTION_MAXIMIZABLE
void HINT_INTERACTION_POPOUT_HIDDEN_ON_STARTUP
```

Types and Flags

```
enum /* word */ {
    IC_NULL,
    IC_DISMISS,
    IC_INTERACTION_COMPLETE,
    IC_APPLY,
    IC_RESET,
    IC_OK,
    IC_YES,
    IC_NO,
    IC_STOP,
    IC_EXIT,
    IC_HELP
} InteractionCommand
IC_CUSTOM_START 1000
ByteEnum GenInteractionType
    GIT_ORGANIZATIONAL 0
    GIT_PROPERTIES     1
    GIT_PROGRESS       2
    GIT_COMMAND        3
```

```

        GIT_NOTIFICATION          4
        GIT_AFFIRMATION           5
        GIT_MULTIPLE_RESPONSE     6
ByteEnum    GenInteractionVisibility
        GIV_NO_PREFERENCE         0
        GIV_POPUP                 1
        GIV_SUB_GROUP             2
        GIV_CONTROL_GROUP         3
        GIV_DIALOG                4
        GIV_POPOUT                5
ByteFlags    GenInteractionAttrs
        GIA_NOT_USER_INITIATABLE 0x80
        GIA_INITIATED_VIA_USER_DO_DIALOG 0x40
        GIA_MODAL                 0x20
        GIA_SYS_MODAL             0x10
ByteEnum    GenInteractionGroupType
        GIGT_FILE_MENU            0
        GIGT_EDIT_MENU            1
        GIGT_VIEW_MENU            2
        GIGT_OPTIONS_MENU         3
        GIGT_WINDOW_MENU          4
        GIGT_HELP_MENU            5
        GIGT_PRINT_GROUP          6

```

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Structures

```

typedef struct {
    ThreadHandle      UDDS_callingThread
    SemaphoreHandle   UDDS_semaphore
    word              UDDS_response
    word              UDDS_complete
    Boolean           UDDS_boxRunByCurrentThread
    optr              UDDS_dialog
    QueueHandle       UDDS_queue
} UserDoDialogStruct

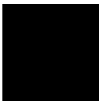
```

Messages

```

byte MSG_GEN_INTERACTION_GET_TYPE()
void MSG_GEN_INTERACTION_SET_TYPE(byte type)
byte MSG_GEN_INTERACTION_GET_VISIBILITY()
void MSG_GEN_INTERACTION_SET_VISIBILITY(byte visibility)
byte MSG_GEN_INTERACTION_GET_ATTRS()
void MSG_GEN_INTERACTION_SET_ATTRS(
    byte setAttrs, byte clearAttrs)
void MSG_GEN_INTERACTION_ACTIVATE_COMMAND(word command)
void MSG_GEN_INTERACTION_INITIATE()
void MSG_GEN_INTERACTION_INITIATE_NO_DISTURB()
void
MSG_GEN_INTERACTION_INITIATE_BLOCKING_THREAD_ON_RESPONS
E(UserDoDialogStruct *dialogInfo)
void
MSG_GEN_INTERACTION_RELEASE_BLOCKED_THREAD_WITH_RESPONS
E(word *command)
void MSG_GEN_INTERACTION_TEST_INPUT_RESTRICTABILITY()
/* XXX */
void MSG_GEN_INTERACTION_POP_OUT()
void MSG_GEN_INTERACTION_POP_IN()
void MSG_GEN_INTERACTION_TOGGLE_POPOUT()

```



GenItemClass

@class GenItemClass, GenClass

Instance Data

word GII_identifier

Messages

word MSG_GEN_ITEM_GET_IDENTIFIER()
void MSG_GEN_ITEM_SET_IDENTIFIER(word identifier)
void MSG_GEN_ITEM_SET_INTERACTABLE_STATE(
 Boolean interactable)

GenItemGroupClass

@class GenItemGroupClass, GenClass

Instance Data

GenItemGroupBehaviorType GIGI_behaviorType = GIGBT_EXCLUSIVE
word GIGI_selection = GIGS_NONE
word GIGI_numSelections = 0
GenItemGroupStateFlags GIGI_stateFlags = 0
optr GIGI_destination
Message GIGI_applyMsg = 0

Variable Data

Message ATTR_GEN_ITEM_GROUP_STATUS_MSG
void
ATTR_GEN_ITEM_GROUP_SET_MODIFIED_ON_REDUNDANT_SELECTION
Message ATTR_GEN_ITEM_GROUP_CUSTOM_DOUBLE_PRESS
optr ATTR_GEN_ITEM_GROUP_LINK
 @reloc ATTR_GEN_ITEM_GROUP_LINK, 0, optr
void ATTR_GEN_ITEM_GROUP_INIT_FILE_BOOLEAN

Hints

void HINT_ITEM_GROUP_SCROLLABLE
void HINT_ITEM_GROUP_MINIMIZE_SIZE
void HINT_ITEM_GROUP_RADIO_BUTTON_STYLE
void HINT_ITEM_GROUP_TOOLBOX_STYLE
void HINT_ITEM_GROUP_DISPLAY_CURRENT_SELECTION
void HINT_ITEM_GROUP_MINIMIZE_SIZE_IF_VERTICAL_SCREEN

Types and Flags

ByteEnum GenItemGroupBehaviorType
 GIGBT_EXCLUSIVE 0
 GIGBT_EXCLUSIVE_NONE 1
 GIGBT_EXTENDED_SELECTION 2
 GIGBT_NON_EXCLUSIVE 3
GIGS_NONE (-1)
ByteFlags GenItemGroupStateFlags
 GIGSF_INDETERMINATE 0x80
 GIGSF_MODIFIED 0x40

Messages

void MSG_GEN_ITEM_GROUP_SET_NONE_SELECTED(
 Boolean indeterminate)
void MSG_GEN_ITEM_GROUP_SET_SINGLE_SELECTION(
 word identifier,

```

        Boolean indeterminate)
void MSG_GEN_ITEM_GROUP_SET_MULTIPLE_SELECTIONS(
    word *selectionList,
    word numSelections)
word MSG_GEN_ITEM_GROUP_GET_SELECTION()
word MSG_GEN_ITEM_GROUP_GET_NUM_SELECTIONS()
word MSG_GEN_ITEM_GROUP_GET_MULTIPLE_SELECTIONS(
    word *selectionList,
    word maxSelections)
void MSG_GEN_ITEM_GROUP_SET_INDETERMINATE_STATE(
    Boolean indeterminateState)
Boolean MSG_GEN_ITEM_GROUP_IS_INDETERMINATE()
void MSG_GEN_ITEM_GROUP_SET_MODIFIED_STATE(
    Boolean modifiedState)
Boolean MSG_GEN_ITEM_GROUP_IS_MODIFIED()
void MSG_GEN_ITEM_GROUP_SEND_STATUS_MSG(
    Boolean modifiedState)
optr MSG_GEN_ITEM_GROUP_GET_ITEM_OPTR(word identifier)
void MSG_GEN_ITEM_GROUP_SET_ITEM_STATE(
    word identifier,
    Boolean state)
Boolean MSG_GEN_ITEM_GROUP_IS_ITEM_SELECTED(
    word identifier)
void MSG_GEN_ITEM_GROUP_MAKE_ITEM_VISIBLE(
    word identifier)
optr MSG_GEN_ITEM_GROUP_GET_DESTINATION()
void MSG_GEN_ITEM_GROUP_SET_DESTINATION(optr dest)
Message MSG_GEN_ITEM_GROUP_GET_APPLY_MSG()
void MSG_GEN_ITEM_GROUP_SET_APPLY_MSG(Message message)
GenItemGroupBehaviorType
    MSG_GEN_ITEM_GROUP_GET_BEHAVIOR_TYPE()
void MSG_GEN_ITEM_GROUP_SET_BEHAVIOR_TYPE(
    GenItemGroupBehaviorType behaviorType)
word MSG_GEN_ITEM_GROUP_GET_UNIQUE_IDENTIFIER()
void MSG_GEN_ITEM_GROUP_REDRAW_ITEMS(word offset)
@prototype void GEN_ITEM_GROUP_APPLY_MSG(
    word selection,
    word numSelections,
    byte stateFlags)
@prototype void GEN_ITEM_GROUP_STATUS_MSG(
    word selection,
    word numSelections,
    byte stateFlags)

```





GenPageControlClass

@class GenPageControlClass, GenControlClass

Instance Data

@default GCI_output = (TO_APP_TARGET)

Types and Flags

```
WordFlags      GPCFeatures
GPCF_GOTO_PAGE      0x0004
GPCF_NEXT_PAGE      0x0002
GPCF_PREVIOUS_PAGE  0x0001
WordFlags      GPCToolboxFeatures
GPCTF_PREVIOUS_PAGE 0x0004
GPCTF_GOTO_PAGE      0x0002
GPCTF_NEXT_PAGE      0x0001
GPC_DEFAULT_FEATURES (GPCF_GOTO_PAGE |
                      GPCF_NEXT_PAGE |
                      GPCF_PREVIOUS_PAGE)
GPC_DEFAULT_TOOLBOX_FEATURES (GPCTF_GOTO_PAGE |
                              GPCTF_NEXT_PAGE |
                              GPCTF_PREVIOUS_PAGE)
```

Structures

```
typedef struct {
    word      NPSC_firstPage
    word      NPSC_lastPage
    word      NPSC_currentPage
} NotifyPageStateChange
```

Messages

```
void MSG_PC_GOTO_PAGE()
void MSG_PC_NEXT_PAGE()
void MSG_PC_PREVIOUS_PAGE()
```

GenPenInputControlClass

```
@class GenPenInputControlClass, GenControlClass
```

Instance Data

```
@default GCI_output = (TO_APP_FOCUS)
```

Variable Data

```
CharTableData
    ATTR_GEN_PEN_INPUT_CONTROL_CUSTOM_CHAR_TABLE_DATA
optr
    ATTR_GEN_PEN_INPUT_CONTROL_CUSTOM_CHAR_TABLE_MONIKER
PenInputDisplayType
    ATTR_GEN_PEN_INPUT_CONTROL_STARTUP_DISPLAY_TYPE
```

Types and Flags

```
typedef enum { /* word */
    PIDT_KEYBOARD,
    PIDT_CHAR_TABLE,
    PIDT_CHAR_TABLE_SYMBOLS,
    PIDT_CHAR_TABLE_INTERNATIONAL,
    PIDT_CHAR_TABLE_MATH,
    PIDT_CHAR_TABLE_CUSTOM,
    PIDT_HWR_ENTRY_AREA
} PenInputDisplayType
WordFlags    GPICFeatures
    GPICF_KEYBOARD          0x0040
    GPICF_CHAR_TABLE        0x0020
    GPICF_CHAR_TABLE_SYMBOLS 0x0010
    GPICF_CHAR_TABLE_INTERNATIONAL 0x0008
    GPICF_CHAR_TABLE_MATH    0x0004
    GPICF_CHAR_TABLE_CUSTOM  0x0002
    GPICF_HWR_ENTRY_AREA     0x0001
WordFlags    GPICToolboxFeatures
    GPICTF_INITIATE          0x0001
GPIC_DEFAULT_FEATURES (GPICF_KEYBOARD | GPICF_CHAR_TABLE
    GPICF_HWR_ENTRY_AREA | GPICF_CHAR_TABLE_SYMBOLS |
    GPICF_CHAR_TABLE_MATH |
    GPICF_CHAR_TABLE_INTERNATIONAL)
GPIC_DEFAULT_TOOLBOX_FEATURES (GPICTF_INITIATE)
```

Structures

```
typedef struct {
    optr    CTD_line1
    optr    CTD_line2
    optr    CTD_line3
    optr    CTD_line4
    optr    CTD_line5
} CharTableData
typedef struct {
    VisTextRange    RWHWRD_range
    HWRContext      RWHWRD_context
} ReplaceWithHWRData
```

Messages

```
void MSG_GEN_PEN_INPUT_CONTROL_SET_DISPLAY(
    PenInputDisplayType dispType)
PenInputDisplayType
    MSG_GEN_PEN_INPUT_CONTROL_GET_DISPLAY()
```

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GenPrimaryClass

```
@class GenPrimaryClass, GenDisplayClass
```

Instance Data

```
ChunkHandle GPI_longTermMoniker  
@default GI_attrs = @default | GA_TARGETABLE
```

Hints

```
void HINT_PRIMARY_FULL_SCREEN  
void HINT_PRIMARY_NO_FILE_MENU  
void HINT_PRIMARY_NO_EXPRESS_MENU  
Rectangle HINT_PRIMARY_OPEN_ICON_BOUNDS  
void HINT_PRIMARY_NO_HELP_BUTTON
```

Messages

```
ChunkHandle MSG_GEN_PRIMARY_GET_LONG_TERM_MONIKER()  
void MSG_GEN_PRIMARY_USE_LONG_TERM_MONIKER(  
    ChunkHandle moniker)  
ChunkHandle MSG_GEN_PRIMARY_REPLACE_LONG_TERM_MONIKER(  
    @stack  
    VisUpdateMode updateMode,  
    word height,  
    word width,  
    word length,  
    VisMonikerDataType dateType,  
    VisMonikerSourceType sourceType,  
    dword source)
```

GenProcessClass

```
@class GenProcessClass, ProcessClass
```

Types and Flags

```
WordFlags AppAttachFlags
    AAF_RESTORING_FROM_STATE      0x8000
    AAF_STATE_FILE_PASSED        0x4000
    AAF_DATA_FILE_PASSED         0x2000
enum /* word */ {
    UADT_FLAGS = 0,
    UADT_PTR = 2,
    UADT_VM_CHAIN = 4
} UndoActionDataType
NULL_UNDO_CONTEXT 0
WordFlags AddUndoActionFlags
    AUAF_NOTIFY_BEFORE_FREEING    0x8000
    AUAF_NOTIFY_IF_FREED_WITHOUT_BEING_PLAYED_BACK 0x4000
ByteFlags AppLaunchFlags
    ALF_SEND_LAUNCH_REQUEST_TO_UI_TO_HANDLE 0x80
    ALF_OPEN_IN_BACK              0x40
    ALF_DESK_ACCESSORY            0x20
    ALF_DO_NOT_OPEN_ON_TOP        0x10
    ALF_OVERRIDE_MULTIPLE_INSTANCE 0x08
    ALF_LAUNCHED_FOR_PRINTING_ONLY 0x04
```

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Structures

```
typedef struct {
    dword    UADF_flags
    word     UADF_extraflags
} UndoActionDataFlags
typedef struct {
    void     *UADP_ptr
    word     UADP_size
} UndoActionDataPtr
typedef struct {
    VMChain  UADVMC_vmChain
    VMFileHandle UADVMC_file
} UndoActionDataVMChain
typedef union {
    UndoActionDataFlags UADU_flags
    UndoActionDataPtr UADU_ptr
    UndoActionDataVMChain UADU_vmChain
} UndoActionDataUnion
typedef struct {
    UndoActionDataType UAS_dataType
    UndoActionDataUnion UAS_data
    dword UAS_appType
} UndoActionStruct
typedef struct {
    UndoActionStruct AUAS_data
    optr AUAS_output
    AddUndoActionFlags AUAS_flags
} AddUndoActionStruct
typedef struct {
    PathName AIR_fileName
    FileLongName AIR_stateFile
```

```

        DiskHandle      AIR_diskHandle
        byte            AIR_savedDiskData[1]
    } AppInstanceReference
    typedef struct {
        AppInstanceReference ALB_appRef
        word                 ALB_appMode
        AppLaunchFlags       ALB_launchFlags
        MemHandle             ALB_diskHandle
        char                 ALB_path[PATH_BUFFER_SIZE]
        char                 ALB_dataFile[PATH_BUFFER_SIZE]
        optr                 ALB_genParent
        optr                 ALB_userLoadAckOutput
        Message              ALB_userLoadAckMessage
        word                 ALB_userLoadAckID
        word                 ALB_extraData
    } AppLaunchBlock

```

Messages

```

void MSG_GEN_PROCESS_RESTORE_FROM_STATE(
    AppAttachFlags attachFlags,
    MemHandle launchBlock,
    MemHandle extraState)
void MSG_GEN_PROCESS_OPEN_APPLICATION(
    AppAttachFlags attachFlags,
    MemHandle launchBlock,
    MemHandle extraState)
void MSG_GEN_PROCESS_OPEN_ENGINE(
    AppAttachFlags attachFlags,
    MemHandle launchBlock,
    MemHandle extraState)
MemHandle MSG_GEN_PROCESS_CLOSE_APPLICATION()
MemHandle MSG_GEN_PROCESS_CLOSE_ENGINE()
MemHandle MSG_GEN_PROCESS_CLOSE_CUSTOM()
MemHandle MSG_GEN_PROCESS_ATTACH_TO_PASSED_STATE_FILE(
    AppAttachFlags attachFlags,
    MemHandle launchBlock)
word MSG_GEN_PROCESS_CREATE_NEW_STATE_FILE(
    MemHandle appInstanceReference)
void MSG_GEN_PROCESS_INSTALL_TOKEN()
optr MSG_GEN_PROCESS_GET_PARENT_FIELD()
void MSG_GEN_PROCESS_SEND_TO_APP_GCN_LIST(@stack
    word sendFlags, EventHandle event,
    MemHandle block, word manufListType,
    word manufID)
void MSG_GEN_PROCESS_UNDO_START_CHAIN(@stack
    optr title, optr owner)
void MSG_GEN_PROCESS_UNDO_END_CHAIN(
    Boolean flushChainIfEmpty)
VMChain MSG_GEN_PROCESS_UNDO_ADD_ACTION(
    AddUndoActionStruct *data)
VMFileHandle MSG_GEN_PROCESS_UNDO_GET_FILE()
void MSG_GEN_PROCESS_UNDO_FLUSH_ACTIONS()
dword MSG_GEN_PROCESS_UNDO_SET_CONTEXT(dword context)
dword MSG_GEN_PROCESS_UNDO_GET_CONTEXT()
void MSG_GEN_PROCESS_UNDO_PLAYBACK_CHAIN()
void MSG_GEN_PROCESS_UNDO_IGNORE_ACTIONS(
    Boolean flushActions)

```

```
void MSG_GEN_PROCESS_UNDO_ACCEPT_ACTIONS()  
Boolean MSG_GEN_PROCESS_UNDO_CHECK_IF_IGNOREING()  
void MSG_GEN_PROCESS_UNDO_ABORT_CHAIN()
```

GenSystemClass

```
@class GenSystemClass, GenClass
```

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Messages

```
optr MSG_GEN_SYSTEM_GET_DEFAULT_SCREEN()  
void MSG_GEN_SYSTEM_SET_DEFAULT_FIELD(optr defaultField)  
optr MSG_GEN_SYSTEM_GET_DEFAULT_FIELD()  
void MSG_GEN_SYSTEM_SET_PTR_IMAGE(  
    optr ptrImage, PtrImageLevel level)  
void MSG_GEN_SYSTEM_NOTIFY_SYS_MODAL_WIN_CHANGE()  
void MSG_GEN_SYSTEM_BRING_GEODE_TO_TOP(  
    word geode, word layerID,  
    Handle parentWindow)  
void MSG_GEN_SYSTEM_LOWER_GEODE_TO_BOTTOM(  
    word geode, word layerID,  
    Handle parentWindow)
```



GenTextClass

```
@class GenTextClass, GenClass
```

Instance Data

```
ChunkHandle GTXI_text
word GTXI_maxLength = 32767
GenTextAttrs GTXI_attrs = GTA_USE_TAB_FOR_NAVIGATION
GenTextStateFlags GTXI_stateFlags = 0
optr GTXI_destination
word GTXI_applyMsg = 0
```

Variable Data

```
Message ATTR_GEN_TEXT_STATUS_MSG
void ATTR_GEN_TEXT_SELECTABLE
ColorQuad HINT_TEXT_WASH_COLOR
void HINT_TEXT_WHITE_WASH_COLOR
VisTextDefaultCharAttr ATTR_GEN_TEXT_DEFAULT_CHAR_ATTR
VisTextDefaultParaAttr ATTR_GEN_TEXT_DEFAULT_PARA_ATTR
ChunkHandle ATTR_GEN_TEXT_CHAR_ATTR
ChunkHandle ATTR_GEN_TEXT_MULTIPLE_CHAR_ATTR_RUNS
ChunkHandle ATTR_GEN_TEXT_PARA_ATTR
ChunkHandle ATTR_GEN_TEXT_MULTIPLE_PARA_ATTR_RUNS
void ATTR_GEN_TEXT_ALPHA
void ATTR_GEN_TEXT_NUMERIC
void ATTR_GEN_TEXT_SIGNED_NUMERIC
void ATTR_GEN_TEXT_SIGNED_DECIMAL
void ATTR_GEN_TEXT_FLOAT_DECIMAL
void ATTR_GEN_TEXT_ALPHA_NUMERIC
void ATTR_GEN_TEXT_LEGAL_FILENAMES
void ATTR_GEN_TEXT_LEGAL_DOS_FILENAMES
void ATTR_GEN_TEXT_LEGAL_DOS_PATH
void ATTR_GEN_TEXT_DATE
void ATTR_GEN_TEXT_TIME
void ATTR_GEN_TEXT_MAKE_UPPERCASE
void ATTR_GEN_TEXT_ALLOW_COLUMN_BREAKS
void ATTR_GEN_TEXT_DASHED_ALPHA_NUMERIC
void ATTR_GEN_TEXT_NORMAL_ASCII
void ATTR_GEN_TEXT_LEGAL_DOS_VOLUME_NAMES
void ATTR_GEN_TEXT_DOS_CHARACTER_SET
void ATTR_GEN_TEXT_NO_SPACES
void ATTR_GEN_TEXT_ALLOW_SPACES
word ATTR_GEN_TEXT_EXTENDED_FILTER
word ATTR_GEN_TEXT_TYPE_RUNS
word ATTR_GEN_TEXT_GRAPHIC_RUNS
word ATTR_GEN_TEXT_STYLE_ARRAY
word ATTR_GEN_TEXT_NAME_ARRAY
optr ATTR_GEN_TEXT_RUNS_ITEM_GROUP
@reloc ATTR_GEN_TEXT_RUNS_ITEM_GROUP, 0, optr
```

Hints

```
ColorQuad HINT_TEXT_WASH_COLOR
void HINT_TEXT_WHITE_WASH_COLOR
void HINT_TEXT_AUTO_HYPHENATE
void HINT_TEXT_SELECT_TEXT
void HINT_TEXT_CURSOR_AT_START
void HINT_TEXT_CURSOR_AT_END
void HINT_TEXT_FRAME
```

```

void HINT_TEXT_NO_FRAME
void HINT_TEXT_ALLOW_UNDO
void HINT_TEXT_ALLOW_SMART_QUOTES
void HINT_GEN_TEXT_DO_NOT_MAKE_LARGER_ON_PEN_SYSTEMS

```

Types and Flags

```

ByteFlags    GenTextStateFlags
             GTSF_INDETERMINATE          0x80
             GTSF_MODIFIED                0x40
ByteFlags    GenTextAttrs
             GTA_SINGLE_LINE_TEXT        0x80
             GTA_USE_TAB_FOR_NAVIGATION  0x40
             GTA_INIT_SCROLLING           0x20
             GTA_NO_WORD_WRAPPING        0x10
             GTA_ALLOW_TEXT_OFF_END      0x08
             GTA_TAIL_ORIENTED           0x04
             GTA_DONT_SCROLL_TO_CHANGES 0x02

```

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Messages

```

void MSG_GEN_TEXT_SET_ATTRS(
    byte attrsToSet, byte attrsToClear)
byte MSG_GEN_TEXT_GET_ATTRS()
void MSG_GEN_TEXT_SET_INDETERMINATE_STATE(
    Boolean indeterminateState)
Boolean MSG_GEN_TEXT_IS_INDETERMINATE()
void MSG_GEN_TEXT_SET_MODIFIED_STATE(
    Boolean modifiedState)
Boolean MSG_GEN_TEXT_IS_MODIFIED()
void MSG_GEN_TEXT_SEND_STATUS_MSG(
    Boolean modifiedState )
optr MSG_GEN_TEXT_GET_DESTINATION()
void MSG_GEN_TEXT_SET_DESTINATION(optr dest)
Message MSG_GEN_TEXT_GET_APPLY_MSG()
void MSG_GEN_TEXT_SET_APPLY_MSG(Message message)
void MSG_GEN_TEXT_SET_FROM_ITEM_GROUP(word item)
@prototype void GEN_TEXT_APPLY_MSG(word stateFlags)
@prototype void GEN_TEXT_STATUS_MSG(word stateFlags)

```



GenToolControlClass

```
@class GenToolControlClass, GenControlClass
```

Instance Data

```
ChunkHandle      GTCI_toolboxList
ChunkHandle      GTCI_toolGroupList
@default GI_states = @default | GS_ENABLED
```

Variable Data

```
TempGenToolControlInstance
TEMP_GEN_TOOL_CONTROL_INSTANCE
```

Types and Flags

```
WordFlags      GTCFeatures
               GTCF_TOOL_DIALOG      0x0001
MAX_NUM_TOOLBOXES  25
```

Structures

```
typedef struct {
    optr      TI_object
    optr      TI_name
} ToolboxInfo
typedef struct {
    optr      TGI_object
} ToolGroupInfo
typedef struct {
    optr      TGTCI_curController
    word      TGTCI_features
    word      TGTCI_required
    word      TGTCI_allowed
} TempGenToolControlInstance
```

GenToolGroup

```
@class GenToolGroupClass, GenInteractionClass
```

Instance Data

```
optr      GTGI_controller
@default GI_states = (@default & ~GS_ENABLED)
```

Variable Data

```
Color TEMP_TOOL_GROUP_HIGHLIGHT
```

Types and Flags

```
ByteEnum      ToolGroupHighlightType
               TGHT_INACTIVE_HIGHLIGHT      0
               TGHT_ACTIVE_HIGHLIGHT        1
               TGHT_NO_HIGHLIGHT             2
```

Messages

```
void MSG_GEN_TOOL_GROUP_SET_HIGHLIGHT(
    ToolGroupHighlightType hlType)
```

GenTriggerClass

```
@class GenTriggerClass, GenClass
```

Instance Data

```
optr          GTI_destination
Message       GTI_actionMsg
```

Variable Data

```
void ATTR_GEN_TRIGGER_IMMEDIATE_ACTION
word ATTR_GEN_TRIGGER_ACTION_DATA
word ATTR_GEN_TRIGGER_INTERACTION_COMMAND
Message ATTR_GEN_TRIGGER_CUSTOM_DOUBLE_PRESS
    @vardataAlias (ATTR_GEN_TRIGGER_ACTION_DATA)
        TwoWordArgs
        ATTR_GEN_TRIGGER_ACTION_TWO_WORDS
    @vardataAlias (ATTR_GEN_TRIGGER_ACTION_DATA)
        ThreeWordArgs
        ATTR_GEN_TRIGGER_ACTION_THREE_WORDS
    @vardataAlias (ATTR_GEN_TRIGGER_ACTION_DATA)
        OptrWordArgs
        ATTR_GEN_TRIGGER_ACTION_OPTR_AND_WORD
```

Hints

```
void HINT_TRIGGER_BRINGS_UP_WINDOW
void HINT_TRIGGER_DESTRUCTIVE_ACTION
```

Structures

```
typedef struct { word foo, foo2 } TwoWordArgs
typedef struct { word foo, foo2, foo3 } ThreeWordArgs
typedef struct { optr output; word foo } OptrWordArgs
```

Messages

```
void MSG_GEN_TRIGGER_SEND_ACTION(
    Boolean doublePressFlag)
Message MSG_GEN_TRIGGER_GET_ACTION_MSG()
void MSG_GEN_TRIGGER_SET_ACTION_MSG(Message message)
void MSG_GEN_TRIGGER_SET_DESTINATION(optr dest)
optr MSG_GEN_TRIGGER_GET_DESTINATION()
void MSG_GEN_TRIGGER_MAKE_DEFAULT_ACTION()
    @prototype void GEN_TRIGGER_ACTION(optr trigger)
```

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GenValueClass

```
@class GenValueClass, GenClass
```

Instance Data

```
WWFixedAsDWord    GVLI_value = MakeWWFixed(0.0)
WWFixedAsDWord    GVLI_minimum = MakeWWFixed(0.0)
WWFixedAsDWord    GVLI_maximum = MakeWWFixed(32766)
WWFixedAsDWord    GVLI_increment = MakeWWFixed(1.0)
GenValueStateFlags GVLI_stateFlags = 0
GenValueDisplayFormat GVLI_displayFormat = GVDF_INTEGER
optr              GVLI_destination
Message           GVLI_applyMsg = 0
```

Variable Data

```
Message ATTR_GEN_VALUE_STATUS_MSG
word ATTR_GEN_VALUE_DECIMAL_PLACES
WWFixed ATTR_GEN_VALUE_METRIC_INCREMENT
optr ATTR_GEN_VALUE_RUNS_ITEM_GROUP
@reloc ATTR_GEN_VALUE_RUNS_ITEM_GROUP, 0, optr
void ATTR_GEN_VALUE_SET_MODIFIED_ON_REDUNDANT_SELECTION
```

Hints

```
void HINT_VALUE_NAVIGATE_TO_NEXT_FIELD_ON_RETURN_PRESS
void HINT_VALUE_CUSTOM_RETURN_PRESS
void HINT_VALUE_INCREMENTABLE
void HINT_VALUE_NOT_INCREMENTABLE
void HINT_VALUE_X_SCROLLER
void HINT_VALUE_Y_SCROLLER
WWFixedAsDWord HINT_VALUE_DISPLAYS_RANGE
void HINT_VALUE_ANALOG_DISPLAY
GenValueIntervals HINT_VALUE_DISPLAY_INTERVALS
void HINT_VALUE_CONSTRAIN_TO_INTERVALS
void HINT_VALUE_SHOW_MIN_AND_MAX
void HINT_VALUE_IMMEDIATE_DRAG_NOTIFICATION
void HINT_VALUE_DELAYED_DRAG_NOTIFICATION
void HINT_VALUE_ORIENT_HORIZONTALLY
void HINT_VALUE_ORIENT_VERTICALLY
void HINT_VALUE_DIGITAL_DISPLAY
void HINT_VALUE_NO_DIGITAL_DISPLAY
void HINT_VALUE_NO_ANALOG_DISPLAY
void HINT_VALUE_NOT_DIGITALLY_EDITABLE
void HINT_VALUE_DO_NOT_MAKE_LARGER_ON_PEN_SYSTEMS
```

Types and Flags

```
ByteEnum    GenValueDisplayFormat
GVDF_INTEGER      0
GVDF_DECIMAL      1
GVDF_POINTS       2
GVDF_INCHES       3
GVDF_CENTIMETERS  4
GVDF_MILLIMETERS  5
GVDF_PICAS        6
GVDF_EUR_POINTS   7
GVDF_CICEROS      8
GVDF_POINTS_OR_MILLIMETERS 9
GVDF_INCHES_OR_CENTIMETERS 10
typedef enum /* word */ {
    GVT_VALUE,
```

```

        GVT_MINIMUM,
        GVT_MAXIMUM,
        GVT_INCREMENT,
        GVT_LONG,
        GVT_RANGE_LENGTH,
        GVT_RANGE_END,
        GVI_VALUE_AS_RATIO_OF_AVAILABLE_RANGE
    } GenValueType
    GEN_VALUE_MAX_TEXT_LEN    30
    ByteFlags    GenValueStateFlags
        GVSF_INDETERMINATE    0x80
        GVSF_MODIFIED          0x40
        GVSF_OUT_OF_DATE       0x20

```

Structures

```

typedef struct {
    word    GVI_numMajorIntervals
    word    GVI_numMinorIntervals
} GenValueIntervals

```

Messages

```

void MSG_GEN_VALUE_SET_VALUE(
    WWFixedAsDWord value,
    Boolean indeterminate)
void MSG_GEN_VALUE_SET_INTEGER_VALUE(
    word value, Boolean indeterminate)
WWFixedAsDWord MSG_GEN_VALUE_GET_VALUE()
@alias (MSG_GEN_VALUE_GET_VALUE) word
MSG_GEN_VALUE_GET_INTEGER_VALUE()
void MSG_GEN_VALUE_SET_MINIMUM(WWFixedAsDWord value)
WWFixedAsDWord MSG_GEN_VALUE_GET_MINIMUM()
void MSG_GEN_VALUE_SET_MAXIMUM(WWFixedAsDWord value)
WWFixedAsDWord MSG_GEN_VALUE_GET_MAXIMUM()
void MSG_GEN_VALUE_SET_INCREMENT(WWFixedAsDWord value)
WWFixedAsDWord MSG_GEN_VALUE_GET_INCREMENT()
void MSG_GEN_VALUE_SET_INDETERMINATE_STATE(
    Boolean indeterminateState)
Boolean MSG_GEN_VALUE_IS_INDETERMINATE()
void MSG_GEN_VALUE_SET_MODIFIED_STATE(
    Boolean modifiedState)
Boolean MSG_GEN_VALUE_IS_MODIFIED()
void MSG_GEN_VALUE_SET_DISPLAY_FORMAT(
    GenValueDisplayFormat format)
GenValueDisplayFormat MSG_GEN_VALUE_GET_DISPLAY_FORMAT()
void MSG_GEN_VALUE_SEND_STATUS_MSG(
    Boolean modifiedState)
optr MSG_GEN_VALUE_GET_DESTINATION()
void MSG_GEN_VALUE_SET_DESTINATION(optr dest)
Message MSG_GEN_VALUE_GET_APPLY_MSG()
void MSG_GEN_VALUE_SET_APPLY_MSG(Message message)
void MSG_GEN_VALUE_SET_RANGE_LENGTH(
    WWFixedAsDWord value)
WWFixedAsDWord MSG_GEN_VALUE_GET_RANGE_LENGTH()
void MSG_GEN_VALUE_ADD_RANGE_LENGTH()
void MSG_GEN_VALUE_SUBTRACT_RANGE_LENGTH()
void MSG_GEN_VALUE_GET_VALUE_TEXT(
    char *buffer,
    GenValueType valueType)

```

```
void MSG_GEN_VALUE_SET_VALUE_FROM_TEXT(  
    char *text, GenValueType valueType)  
WWFixedAsDWord MSG_GEN_VALUE_GET_VALUE_RATIO(  
    GenValueType valueType)  
void MSG_GEN_VALUE_SET_VALUE_FROM_RATIO(  
    WWFixed ratio,  
    GenValueType valueType)  
void MSG_GEN_VALUE_INCREMENT()  
void MSG_GEN_VALUE_DECREMENT()  
void MSG_GEN_VALUE_SET_VALUE_TO_MINIMUM()  
void MSG_GEN_VALUE_SET_VALUE_TO_MAXIMUM()  
VisTextFilters MSG_GEN_VALUE_GET_TEXT_FILTER()  
byte MSG_GEN_VALUE_GET_MAX_TEXT_LEN()  
void MSG_GEN_VALUE_SET_OUT_OF_DATE()  
@prototype void GEN_VALUE_APPLY_MSG(  
    WWFixedAsDWord value, word stateFlags)  
@prototype void GEN_VALUE_STATUS_MSG(  
    WWFixedAsDWord value, word stateFlags)
```



GenViewClass

```
@class GenViewClass, GenClass
```

Instance Data

```
PointDWordFixed GVI_origin = {{0, 0}, {0, 0}}
RectDWord       GVI_docBounds = {0, 0, 0, 0}
PointDWord      GVI_increment = {20, 15}
PointWWFixed    GVI_scaleFactor = {{0, 1}, {0, 1}}
ColorQuad       GVI_color = {C_WHITE, 0, 0, 0}
GenViewAttrs    GVI_attrs = (GVA_FOCUSABLE)
GenViewDimensionAttrs GVI_horizAttrs = 0
GenViewDimensionAttrs GVI_vertAttrs = 0
GenViewInkType  GVI_inkType = GVIT_PRESSES_ARE_NOT_INK
optr            GVI_content
optr            GVI_horizLink
optr            GVI_vertLink
@default GI_attrs = @default | GA_TARGETABLE
```

Variable Data

```
InkDestinationInfoParams
ATTR_GEN_VIEW_INK_DESTINATION_INFO
Xysize ATTR_GEN_VIEW_PAGE_SIZE
void ATTR_GEN_VIEW_SCALE_TO_FIT_BASED_ON_X
void ATTR_GEN_VIEW_SCALE_TO_FIT_BOTH_DIMENSIONS
void ATTR_GEN_VIEW_DO_NOT_WIN_SCROLL
```

Hints

```
void HINT_VIEW_LEAVE_ROOM_FOR_VERT_SCROLLER
void HINT_VIEW_LEAVE_ROOM_FOR_HORIZ_SCROLLER
void HINT_VIEW_IMMEDIATE_DRAG_UPDATES
void HINT_VIEW_DELAYED_DRAG_UPDATES
void HINT_VIEW_REMOVE_SCROLLERS_WHEN_NOT_SCROLLABLE
void HINT_VIEW_SHOW_SCROLLERS_WHEN_NOT_SCROLLABLE
optr HINT_VIEW_SHARES_SPACE_WITH_VIEW_ABOVE
optr HINT_VIEW_SHARES_SPACE_WITH_VIEW_BELOW
optr HINT_VIEW_SHARES_SPACE_WITH_VIEW_TO_LEFT
optr HINT_VIEW_SHARES_SPACE_WITH_VIEW_TO_RIGHT
```

Types and Flags

```
WordFlags    MakeRectVisibleFlags
MRVF_ALWAYS_SCROLL      0x0080
MRVF_USE_MARGIN_FROM_TOP_LEFT 0x0040
MRVM_0_PERCENT          0
MRVM_25_PERCENT         0xffff/4
MRVM_50_PERCENT         0xffff/2
MRVM_75_PERCENT         0xffff*3/4
MRVM_100_PERCENT        0xffff
ByteEnum       ScaleViewType
SVT_AROUND_UPPER_LEFT   0
SVT_AROUND_CENTER       1
SVT_AROUND_POINT        2
ByteEnum       ScrollAction
SA_NOHING              0
SA_TO_BEGINNING        1
SA_PAGE_BACK           2
SA_INC_BACK            3
SA_INC_FWD             4
SA_DRAGGING            5
```

SA_PAGE_FWD	6
SA_TO_END	7
SA_SCROLL	8
SA_SCROLL_INT0	9
SA_INITIAL_POS	10
SA_SCALE	11
SA_PAN	12
SA_DRAG_SCROLL	13
SA_SCROLL_FOR_SIZE_CHANGE	14

ByteFlags ScrollFlags

SF_VERTICAL	0x80
SF_ABSOLUTE	0x40
SF_DOC_SIZE_CHANGE	0x20
SF_WINDOW_NOT_SUSPENDED	0x10
SF_SCALE_TO_FIT	0x08
SF_SETUP_HAPPENED	0x04

VS_TYPICAL 0x8000
VS_SMALL 0x8001
VS_LARGE 0x8002

ByteEnum GenViewInkType

GVIT_PRESSES_ARE_NOT_INK	0
GVIT_INK_WITH_STANDARD_OVERRIDE	1
GVIT_PRESSES_ARE_INK	2
GVIT_QUERY_OUTPUT	3

WordFlags GenViewAttrs

GVA_CONTROLLED	0x8000
GVA_GENERIC_CONTENTS	0x4000
GVA_TRACK_SCROLLING	0x2000
GVA_DRAG_SCROLLING	0x1000
GVA_NO_WIN_FRAME	0x0800
GVA_SAME_COLOR_AS_PARENT_WIN	0x0400
GVA_VIEW_FOLLOWS_CONTENT_GEOMETRY	0x0200
GVA_WINDOW_COORDINATE_MOUSE_EVENTS	0x0100
GVA_DONT_SEND_PTR_EVENTS	0x0080
GVA_DONT_SEND_KBD_RELEASES	0x0040
GVA_SEND_ALL_KBD_CHARS	0x0020
GVA_FOCUSABLE	0x0010
GVA_SCALE_TO_FIT	0x0008
GVA_ADJUST_FOR_ASPECT_RATIO	0x0004

ByteFlags GenViewDimensionAttrs

GVDA_SCROLLABLE	0x80
GVDA_SPLITTABLE	0x40
GVDA_TAIL_ORIENTED	0x20
GVDA_DONT_DISPLAY_SCROLLBAR	0x10
GVDA_NO_LARGER_THAN_CONTENT	0x08
GVDA_NO_SMALLER_THAN_CONTENT	0x04
GVDA_SIZE_A_MULTIPLE_OF_INCREMENT	0x02
GVDA_KEEP_ASPECT_RATIO	0x01

Structures

```
typedef struct {
    RectDWord      MRVP_bounds
    word           MRVP_xMargin
    MakeRectVisibleFlags MRVP_xFlags
    word           MRVP_yMargin
    MakeRectVisibleFlags MRVP_yFlags
} MakeRectVisibleParams
```

```

typedef struct {
    optr          TR_object
    ClassStruct   *TR_class
} TargetReference
typedef struct {
    TargetReferenceVTI_target
    TargetReferenceVTI_content
} ViewTargetInfo
typedef struct {
    ScrollAction   TSP_action
    ScrollFlags    TSP_flags
    optr           TSP_caller
    PointDWord     TSP_change
    PointDWord     TSP_newOrigin
    PointDWord     TSP_oldOrigin
    sword          TSP_viewWidth
    sword          TSP_viewHeight
} TrackScrollingParams
typedef struct {
    WWFixedAsDWord GSP_yScaleFactor
    WWFixedAsDWord GSP_xScaleFactor
} GetScaleParams
typedef struct {
    optr           IDIP_dest
    word           IDIP_brushSize
    byte           IDIP_color
    Boolean        IDIP_createGState
} InkDestinationInfoParams

```

Macros

```

GVCD_INDEX(val) ((byte) (val))
GVCD_RED(val) ((byte) (val))
GVCD_FLAGS(val) ((byte) ((val) >> 8))
GVCD_BLUE_AND_GREEN(val) ((word) ((val) >> 16))
GVCD_BLUE(val) ((byte) ((val) >> 16))
GVCD_GREEN(val) ((byte) ((val) >> 24))
MAKE_HORIZ_ATTRS(val) ((byte) (val))
MAKE_VERT_ATTRS(val) ((byte) ((val) >> 8))
MAKE_SET_CLEAR_ATTRS(setAttrs, clrAttrs)
    (((word) (clrAttrs)) << 8) | (setAttrs))

```

Messages

```

void MSG_GEN_VIEW_GET_ORIGIN(PointDWord *origin)
void MSG_GEN_VIEW_SET_ORIGIN(@stack
    sword yOrigin, sword xOrigin)
void MSG_GEN_VIEW_SCROLL(@stack
    sword yOffset, sword xOffset)
void MSG_GEN_VIEW_MAKE_RECT_VISIBLE(@stack
    word yFlags, word yMargin,
    word xFlags, word xMargin,
    sword bottom, sword right,
    sword top, sword left)
void MSG_GEN_VIEW_SET_SCALE_FACTOR(@stack
    sword yOrigin, sword xOrigin,
    ScaleViewType scaleType,
    WWFixedAsDWord yScaleFactor,
    WWFixedAsDWord xScaleFactor)
void MSG_GEN_VIEW_GET_SCALE_FACTOR(

```

```

        GetScaleParams *retValue)
void MSG_GEN_VIEW_SET_CONTENT(optr content)
optr MSG_GEN_VIEW_GET_CONTENT()
WindowHandle MSG_GEN_VIEW_GET_WINDOW()
void MSG_GEN_VIEW_GET_VISIBLE_RECT(RectDWord *rect)
void MSG_GEN_VIEW_GET_INCREMENT(PointDWord *increment)
void MSG_GEN_VIEW_SET_INCREMENT(@stack
    sdword yIncrement,
    sdword xIncrement)
void MSG_GEN_VIEW_SUSPEND_UPDATE()
void MSG_GEN_VIEW_UNsuspend_UPDATE()
void MSG_GEN_VIEW_SET_DOC_BOUNDS(@stack
    sdword bottom, sdword right,
    sdword top, sdword left)
void MSG_GEN_VIEW_GET_DOC_BOUNDS(RectDWord *bounds)
word MSG_GEN_VIEW_GET_ATTRS()
void MSG_GEN_VIEW_SET_ATTRS(
    word attrsToSet, word attrsToClear,
    word updateMode)
void MSG_GEN_VIEW_SET_COLOR(
    byte indexOrRed, byte flags,
    word greenBlue)
dword MSG_GEN_VIEW_GET_COLOR()
SizeAsDWord MSG_GEN_VIEW_CALC_WIN_SIZE(
    word width, word height)
void MSG_GEN_VIEW_SET_PTR_IMAGE(
    optr pointerDef,
    PtrImageLevel level)
void MSG_GEN_VIEW_UPDATE_CONTENT_TARGET_INFO(
    ViewTargetInfo *targetInfo)
void MSG_GEN_VIEW_INITIATE_DRAG_SCROLL()
word MSG_GEN_VIEW_GET_DIMENSION_ATTRS()
void MSG_GEN_VIEW_SET_DIMENSION_ATTRS(
    word horizAttrsToSetClear,
    word vertAttrsToSetClear,
    word updateMode)
void MSG_GEN_VIEW_SCROLL_TOP()
void MSG_GEN_VIEW_SCROLL_PAGE_UP()
void MSG_GEN_VIEW_SCROLL_UP()
void MSG_GEN_VIEW_SCROLL_SET_Y_ORIGIN(sdword yOrigin)
void MSG_GEN_VIEW_SCROLL_DOWN()
void MSG_GEN_VIEW_SCROLL_PAGE_DOWN()
void MSG_GEN_VIEW_SCROLL_BOTTOM()
void MSG_GEN_VIEW_SCROLL_LEFT_EDGE()
void MSG_GEN_VIEW_SCROLL_PAGE_LEFT()
void MSG_GEN_VIEW_SCROLL_LEFT()
void MSG_GEN_VIEW_SCROLL_SET_X_ORIGIN(sdword xOrigin)
void MSG_GEN_VIEW_SCROLL_RIGHT()
void MSG_GEN_VIEW_SCROLL_PAGE_RIGHT()
void MSG_GEN_VIEW_SCROLL_RIGHT_EDGE()
void MSG_GEN_VIEW_ALLOW_GLOBAL_TRANSFER()
void MSG_GEN_VIEW_SET_DRAG_BOUNDS(@stack
    sdword bottom, sdword right,
    sdword top, sdword left)
void MSG_GEN_VIEW_SETUP_TRACKING_ARGS(
    TrackScrollingParams *args)
void MSG_GEN_VIEW_TRACKING_COMPLETE()

```



```

                                TrackScrollingParams *args)
optr MSG_GEN_VIEW_DETERMINE_VIS_PARENT(optr child)
void MSG_GEN_VIEW_SEND_TO_LINKS(
    EventHandle event, optr originator)
void MSG_GEN_VIEW_SEND_TO_VLINK(
    EventHandle event, optr originator)
void MSG_GEN_VIEW_SEND_TO_HLINK(
    EventHandle event, optr originator)
void MSG_GEN_VIEW_CALL_WITHOUT_LINKS(
    EventHandle event,
    MessageFlags messageFlags)
void MSG_GEN_VIEW_SET_ORIGIN_LOW(@stack
    sdword yOrigin, sdword xOrigin)
void MSG_GEN_VIEW_SET_INK_TYPE(GenViewInkType inkType)
void MSG_GEN_VIEW_SET_EXTENDED_INK_TYPE(
    Boolean createGState,
    Color inkColor,
    word brushSize,
    optr destObj)
void MSG_GEN_VIEW_RESET_EXTENDED_INK_TYPE()
void MSG_GEN_VIEW_SEND_NOTIFICATION()
void MSG_GEN_VIEW_SCALE_LOW(@stack
    sdword yOrigin, sdword xOrigin,
    ScaleViewType scaleType,
    WWFixedAsDWord yScaleFactor,
    WWFixedAsDWord xScaleFactor)
void MSG_GEN_VIEW_REDRAW_CONTENT()
void MSG_GEN_VIEW_SET_CONTROLLED_ATTRS(
    GenViewControlAttrs controlAttrs,
    word scaleFactor)

```

GenViewControlClass

```
@class GenViewControlClass, GenControlClass
```

Instance Data

```
word          GVCI_minZoom = DEFAULT_ZOOM_MINIMUM
word          GVCI_maxZoom = DEFAULT_ZOOM_MAXIMUM
word          GVCI_scale = 100
GenViewControlAttrs GVCI_attrs = (GVCA_SHOW_HORIZONTAL |
                                   GVCA_SHOW_VERTICAL | GVCA_APPLY_TO_ALL)
@default GI_attrs = (@default | GA_KBD_SEARCH_PATH)
```

Variable Data

```
void ATR_GEN_VIEW_CONTROL_LARGE_ZOOM
```

Types and Flags

```
WordFlags      GVCFeatures
    GVCF_MAIN_100          0x4000
    GVCF_MAIN_SCALE_TO_FIT 0x2000
    GVCF_ZOOM_IN           0x1000
    GVCF_ZOOM_OUT          0x0800
    GVCF_REDUCE            0x0400
    GVCF_100               0x0200
    GVCF_ENLARGE           0x0100
    GVCF_BIG_ENLARGE       0x0080
    GVCF_SCALE_TO_FIT     0x0040
    GVCF_ADJUST_ASPECT_RATIO 0x0020
    GVCF_APPLY_TO_ALL      0x0010
    GVCF_SHOW_HORIZONTAL   0x0008
    GVCF_SHOW_VERTICAL     0x0004
    GVCF_CUSTOM_SCALE      0x0002
    GVCF_REDRAW            0x0001
WordFlags      GVCToolboxFeatures
    GVCTF_100              0x1000
    GVCTF_SCALE_TO_FIT     0x0800
    GVCTF_ZOOM_IN          0x0400
    GVCTF_ZOOM_OUT         0x0200
    GVCTF_REDRAW           0x0100
    GVCTF_PAGE_LEFT        0x0080
    GVCTF_PAGE_RIGHT       0x0040
    GVCTF_PAGE_UP          0x0020
    GVCTF_PAGE_DOWN        0x0010
    GVCTF_ADJUST_ASPECT_RATIO 0x0008
    GVCTF_APPLY_TO_ALL      0x0004
    GVCTF_SHOW_HORIZONTAL   0x0002
    GVCTF_SHOW_VERTICAL     0x0001
GVC_DEFAULT_FEATURES (GVCF_MAIN_100 |
                     GVCF_MAIN_SCALE_TO_FIT | GVCF_ZOOM_IN |
                     GVCF_ZOOM_OUT | GVCF_REDUCE | GVCF_100 |
                     GVCF_ENLARGE | GVCF_SCALE_TO_FIT |
                     GVCF_ADJUST_ASPECT_RATIO |
                     GVCF_APPLY_TO_ALL | GVCF_SHOW_HORIZONTAL |
                     GVCF_SHOW_VERTICAL | GVCF_CUSTOM_SCALE)
GVC_DEFAULT_TOOLBOX_FEATURES (GVCTF_100 |
                             GVCTF_ZOOM_IN | GVCTF_ZOOM_OUT)
GVC_SUGGESTED_SIMPLE_FEATURES (GVCF_MAIN_100 |
                              GVCF_MAIN_SCALE_TO_FIT | GVCF_ZOOM_IN |
                              GVCF_ZOOM_OUT)
```

```

GVC_SUGGESTED_INTRODUCTORY_FEATURES (GVCF_MAIN_100 |
    GVCF_ZOOM_IN | GVCF_ZOOM_OUT)
GVC_SUGGESTED_BEGINNING_FEATURES
    (GVC_SUGGESTED_INTRODUCTORY_FEATURES |
    GVCF_MAIN_SCALE_TO_FIT)
DEFAULT_ZOOM_MINIMUM      25
DEFAULT_ZOOM_MAXIMUM      200
typedef enum /* word */ {
    GVCSSF_TO_FIT,
} GenViewControlSpecialScaleFactor
WordFlags GenViewControlAttrs
    GVCA_ADJUST_ASPECT_RATIO      0x8000
    GVCA_APPLY_TO_ALL             0x4000
    GVCA_SHOW_HORIZONTAL          0x2000
    GVCA_SHOW_VERTICAL            0x1000

```

Structures

```

typedef struct {
    PointDWordFixed      NVSC_origin
    RectDWord            NVSC_docBounds
    PointDWord           NVSC_increment
    PointWordFixed       NVSC_scaleFactor
    ColorQuad            NVSC_color
    GenViewAttrs         NVSC_attrs
    GenViewDimensionAttrs NVSC_horizAttrs
    GenViewDimensionAttrs NVSC_vertAttrs
    GenViewInkType       NVSC_inkType
    XYSize               NVSC_contentSize
    XYSize               NVSC_contentScreenSize
    PointDWord           NVSC_originRelative
    PointDWord           NVSC_documentSize
} NotifyViewStateChange
typedef struct {
    optr                NVO_view
} NotifyViewOpening

```

Messages

```

void MSG_GEN_VIEW_CONTROL_SET_ATTRS(
    GenViewControlAttrs attrsToSet,
    GenViewControlAttrs attrsToClear)
void MSG_GEN_VIEW_CONTROL_SET_MINIMUM_SCALE_FACTOR(
    word minimumScaleFactor)
void MSG_GEN_VIEW_CONTROL_SET_MAXIMUM_SCALE_FACTOR(
    word maximumScaleFactor)
void MSG_GVC_SET_SCALE()
void MSG_GVC_SET_SCALE_VIA_LIST()
void MSG_GVC_SET_ATTRS()
void MSG_GVC_REDRAW()
void MSG_GVC_ZOOM_IN()
void MSG_GVC_ZOOM_OUT()
void MSG_GVC_PAGE_LEFT()
void MSG_GVC_PAGE_RIGHT()
void MSG_GVC_PAGE_UP()
void MSG_GVC_PAGE_DOWN()

```

GrObjAlignDistributeControlClass

@class GrObjAlignDistributeControlClass, GenControlClass

Instance Data

@default GCI_output = (TO_APP_TARGET)
@default GII_type = GIT_PROPERTIES
@default GII_visibility = GIV_DIALOG

Types and Flags

WordFlags GrObjAlignDistributeControlFeatures
GOADCF_ALIGN_LEFT 0x8000
GOADCF_ALIGN_CENTER_HORIZONTALLY 0x4000
GOADCF_ALIGN_RIGHT 0x2000
GOADCF_ALIGN_WIDTH 0x1000
GOADCF_ALIGN_TOP 0x800
GOADCF_ALIGN_CENTER_VERTICALLY 0x400
GOADCF_ALIGN_BOTTOM 0x200
GOADCF_ALIGN_HEIGHT 0x100
GOADCF_DISTRIBUTE_LEFT 0x80
GOADCF_DISTRIBUTE_CENTER_HORIZONTALLY 0x40
GOADCF_DISTRIBUTE_RIGHT 0x20
GOADCF_DISTRIBUTE_WIDTH 0x10
GOADCF_DISTRIBUTE_TOP 0x8
GOADCF_DISTRIBUTE_CENTER_VERTICALLY 0x4
GOADCF_DISTRIBUTE_BOTTOM 0x2
GOADCF_DISTRIBUTE_HEIGHT 0x1
GOADC_DEFAULT_FEATURES
GrObjAlignDistributeControlFeatures

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GrObjAlignToGridControlClass

@class GrObjAlignToGridControlClass, GenControlClass

Instance Data

@default GII_type = (GIT_COMMAND)
@default GCI_output = (TO_APP_TARGET)

Types and Flags

ByteFlags GOATGCFeatures
GOATGCF_ALIGN_TO_GRID 0x01
GOATGC_DEFAULT_FEATURES (GOATGCF_ALIGN_TO_GRID)
GOATGC_DEFAULT_TOOLBOX_FEATURES 0

Messages

MSG_GOATGC_ALIGN_TO_GRID

GrObjArcControlClass

@class GrObjArcControlClass, GenControlClass

Instance Data

@default GCI_output = (TO_APP_TARGET)

Types and Flags

ByteFlags GOArcCFeatures
GOACF_START_ANGLE 0x8
GOACF_END_ANGLE 0x4
GOACF_PIE_TYPE 0x2

```

GOACF_CHORD_TYPE                0x1
GOArcC_DEFAULT_FEATURES (GOACF_START_ANGLE |
GOACF_END_ANGLE |
GOACF_PIE_TYPE |
GOACF_CHORD_TYPE)
GOArcC_DEFAULT_TOOLBOX_FEATURES 0

```

Messages

```

MSG_GOAC_SET_START_ANGLE
MSG_GOAC_SET_END_ANGLE
MSG_GOAC_SET_ARC_CLOSE_TYPE

```

GrObjAreaAttrControlClass

```
@class GrObjAreaAttrControlClass, GenControlClass
```

Instance Data

```

@default GCI_output = (TO_APP_TARGET)
@default GI_states = (@default | GS_ENABLED)

```

Types and Flags

```

ByteFlags  GOACFeatures
GOACF_MM_CLEAR          0x0100
GOACF_MM_COPY           0x0080
GOACF_MM_NOP            0x0040
GOACF_MM_AND            0x0020
GOACF_MM_INVERT         0x0010
GOACF_MM_XOR            0x0008
GOACF_MM_SET            0x0004
GOACF_MM_OR             0x0002
GOACF_TRANSPARENCY      0x0001
GOAC_DEFAULT_FEATURES (GOACF_TRANSPARENCY |
GOACF_MM_COPY |
GOACF_MM_INVERT |
GOACF_MM_XOR |
GOACF_MM_AND | GOACF_MM_OR)
GOAC_DEFAULT_TOOLBOX_FEATURES 0

```

Messages

```

MSG_GOAAC_SET_MIX_MODE
MSG_GOAAC_SET_AREA_TRANSPARENCY

```

GrObjAreaColorSelectorClass

```
@class GrObjAreaColorSelectorClass, ColorSelectorClass
```

Instance Data

```

@default GCI_output = (TO_APP_TARGET)
@default GI_states = (@default | GS_ENABLED)

```

Types and Flags

```

GOACS_DEFAULT_FEATURES (CSF_INDEX | CSF_RGB |
CSF_DRAW_MASK | CSF_PATTERN)

```

GrObjAttributeManagerClass

```
@class GrObjAttributeManagerClass, GrObjClass
```

Instance Data

```
word          GOAMI_areaAttrArrayHandle = 0
word          GOAMI_lineAttrArrayHandle = 0
word          GOAMI_grObjStyleArrayHandle = 0
ChunkHandle   GOAMI_bodyList = 0
word          GOAMI_charAttrArrayHandle = 0
word          GOAMI_paraAttrArrayHandle = 0
word          GOAMI_typeArrayHandle = 0
word          GOAMI_graphicArrayHandle = 0
word          GOAMI_nameArrayHandle = 0
word          GOAMI_textStyleArrayHandle = 0
optr          GOAMI_text
              default GOI_optFlags = (GOOF_GROBJ_INVALID |
                                      GOOF_ATTRIBUTE_MANAGER)
```

Types and Flags

```
GROBJ_VM_ELEMENT_ARRAY_CHUNK (sizeof LMemblockHeader)
```

Messages

```
MSG_GOAM_ATTACH_AND_CREATE_ARRAYS
MSG_GOAM_ADD_AREA_ATTR_ELEMENT
MSG_GOAM_ADD_LINE_ATTR_ELEMENT
MSG_GOAM_DEREF_AREA_ATTR_ELEMENT_TOKEN
MSG_GOAM_DEREF_LINE_ATTR_ELEMENT_TOKEN
MSG_GOAM_ADD_REF_AREA_ATTR_ELEMENT_TOKEN
MSG_GOAM_ADD_REF_LINE_ATTR_ELEMENT_TOKEN
MSG_GOAM_GET_FULL_AREA_ATTR_ELEMENT
MSG_GOAM_GET_FULL_LINE_ATTR_ELEMENT
MSG_GOAM_GET_STYLE_ARRAY
MSG_GOAM_GET_AREA_ATTR_ARRAY
MSG_GOAM_GET_LINE_ATTR_ARRAY
MSG_GOAM_GET_AREA_AND_LINE_TOKENS_FROM_STYLE
MSG_GOAM_ATTACH_BODY
MSG_GOAM_INVALIDATE_BODIES
MSG_GOAM_SUBST_AREA_TOKEN
MSG_GOAM_SUBST_LINE_TOKEN
MSG_GOAM_GET_TEXT_OD
MSG_GOAM_GET_TEXT_ARRAYS
MSG_GOAM_LOAD_STYLE_SHEET_PARAMS
MSG_GOAM_DETACH_BODY
MSG_GOAM_SUBST_TEXT_ATTR_TOKEN
MSG_GOAM_RECALC_FOR_TEXT_ATTR_CHANGE
void MSG_GOAM_LOAD_STYLE_SHEET
void MSG_GOAM_SET_GROBJ_DRAW_FLAGS(
    GrObjDrawFlags flagsToSet,
    GrObjDrawFlags flagsToReset)
```

GrObjBackgroundColorSelectorClass

```
@class GrObjBackgroundColorSelectorClass,
                                   ColorSelectorClass
```

Instance Data

```
@default GCI_output = (TO_APP_TARGET)
```



```
@default GI_states = (@default | GS_ENABLED)
```

Types and Flags

```
GOBGCS_DEFAULT_FEATURES (CSF_INDEX | CSF_RGB)
```

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GrObjBitmapClass

```
@class GrObjBitmapClass, GrObjVisClass
```

GrObjBodyClass

```
@class GrObjBodyClass, VisCompClass
```

Instance Data

```
RectDWord      GBI_bounds = {0,0,0,0}
CompPart       GBI_drawComp = {NullOpPtr}
CompPart       GBI_reverseComp = {NullOpPtr}
word           GBI_childCount
optr           GBI_selectionArray
HierarchicalGrab GBI_targetExcl = {NullOpPtr, 0}
HierarchicalGrab GBI_focusExcl = {NullOpPtr, 0}
optr           GBI_mouseGrab
word           GBI_objBlockArray
GrObjFunctionsActive GBI_defaultOptions
GrObjFunctionsActive GBI_currentModifiers
GrObjFunctionsActive GBI_currentOptions
GrObjBodyFlags  GBI_flags = (GBF_DEFAULT_TARGET |
                             GBF_DEFAULT_FOCUS)

GrObjDrawFlags  GBI_drawFlags
GrObjFileStatus GBI_fileStatus
word            GBI_graphicsState = 0
optr            GBI_head
optr            GBI_goam
optr            GBI_ruler
word            GBI_priorityList = 0
byte            GBI_desiredHandleSize =
                DEFAULT_DESIRED_HANDLE_SIZE
byte            GBI_curHandleWidth = 0
byte            GBI_curHandleHeight = 0
BBFixed         GBI_curNudgeX = {0, 0}
BBFixed         GBI_curNudgeY = {0, 0}
PointWWFixed    GBI_curScaleFactor =
                {MakeWWFixed(1),
                 MakeWWFixed(0)}
PointDWFixed    GBI_interestingPoint =
                {{0, -30000}, {0, -30000}}
PointDWFixed    GBI_lastPtr = {0,0}
word            GBI_suspendCount = 0
GrObjBodyUnsuspendOps GBI_unsuspendOps = 0
VisTextNotificationFlags GBI_textUnsuspendOps = 0
word            GBI_reserved1 = 0
word            GBI_reserved2 = 0
@default VI_optFlags = 0
@default VI_typeFlags = (VTF_IS_COMPOSITE |
                         VTF_IS_INPUT_NODE)
@default VI_attrs = (VA_DRAWABLE | VA_DETECTABLE |
                     VA_FULLY_ENABLED )
```

Variable Data

GrObjBodyPasteCallBackStruct ATTR_GB_PASTE_CALL_BACK

Types and Flags

```
WordFlags    GrObjBodyUnsuspendOps
ByteFlags    GrObjBodyFlags
             GBF_HAS_ACTION_NOTIFICATION    0x04
             GBF_DEFAULT_TARGET            0x02
             GBF_DEFAULT_FOCUS             0x01

WordFlags    GrObjDrawFlags
             GODF_DRAW_QUICK_VIEW          0x100
             GODF_DRAW_CLIP_ONLY          0x80
             GODF_DRAW_WRAP_TEXT_INSIDE_ONLY 0x40
             GODF_DRAW_WRAP_TEXT_AROUND_ONLY 0x20
             GODF_DRAW_WITH_INCREASED_RESOLUTION 0x10
             GODF_DRAW_INSTRUCTIONS        0x08
             GODF_DRAW_SELECTED_OBJECTS_ONLY 0x04
             GODF_DRAW_OBJECTS_ONLY        0x02
             GODF_PRINT_INSTRUCTIONS       0x01

ByteFlags    GrObjsInRectSpecial
             GOIRS_IGNORE_TEMP            0x04
             GOIRS_IGNORE_RECT            0x02
             GOIRS_XOR_CHECK              0x01

WordFlags    GrObjBodyAddGrObjFlags
             GOBAGOF_DRAW_LIST_POSITION    0x8000
             GOBAGOF_REFERENCE             0x7fff

GOBAGOR_FIRST    CCO_FIRST
GOBAGOR_LAST     CCO_LAST
```

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Structures

```
typedef struct {
    word                GOIRD_tempMessage
    word                GOIRD_tempMessageDX
    word                GOIRD_inRectMessage
    word                GOIRD_inRectMessageDX
    RectDWord           GOIRD_rect
    GrObjsInRectSpecial GOIRD_special
    word                align
} GrObjsInRectData
typedef struct {
    word                GBGCDP_repetitions
    PointDWordFixed     GBGCDP_move
    WWFixed             GBGCDP_rotation
    GrObjHandleSpecification GBGCDP_rotateAnchor
    GrObjAnchoredSkewData GBGCDP_skew
    GrObjAnchoredScaleData GBGCDP_scale
} GrObjBodyCustomDuplicateParams
typedef struct {
    word                GOBPCBS_message
    optr               GOBPCBS_optr
} GrObjBodyPasteCallBackStruct
```

Messages

```
MSG_GB_CREATE_GSTATE
MSG_GB_INVALIDATE
MSG_GB_GIVE_ME_MOUSE_EVENTS
MSG_GB_DONT_GIVE_ME_MOUSE_EVENTS
MSG_GB_ATTACH_HEAD
```

```
void MSG_GB_ATTACH_GOAM(optr GrObjAttrManager)
MSG_GB_ATTACH_RULER
void MSG_GB_ADD_GROBJ(optr object, word flags)
MSG_GB_REMOVE_GROBJ
MSG_GB_FIND_GROBJ */
MSG_GB_PULL_SELECTED_GROBJS_TO_FRONT
MSG_GB_PUSH_SELECTED_GROBJS_TO_BACK
MSG_GB_SHUFFLE_SELECTED_GROBJS_UP
MSG_GB_SHUFFLE_SELECTED_GROBJS_DOWN
void MSG_GB_SET_DESIRED_HANDLE_SIZE(byte handleSize)
MSG_GB_GET_DESIRED_HANDLE_SIZE
void MSG_GB_ATTACH_UI(optr GrObjHead)
void MSG_GB_DETACH_UI()
MSG_GB_ADD_GROBJ_TO_SELECTION_LIST
MSG_GB_REMOVE_GROBJ_FROM_SELECTION_LIST
MSG_GB_REMOVE_ALL_GROBJS_FROM_SELECTION_LIST
MSG_GB_SEND_CLASSSED_EVENT_TO_SELECTED_GROBJS
MSG_GB_GET_NUM_SELECTED_GROBJS
MSG_GB_GET_BOUNDS_OF_SELECTED_GROBJS
MSG_GB_GET_DWF_BOUNDS_OF_SELECTED_GROBJS
MSG_GB_GET_SUMMED_DWF_DIMENSIONS_OF_SELECTED_GROBJS
MSG_GB_DELETE_SELECTED_GROBJS
MSG_GB_PROCESS_ALL_GROBJS_IN_RECT
MSG_GB_INCREASE_POTENTIAL_EXPANSION
MSG_GB_DECREASE_POTENTIAL_EXPANSION
MSG_GB_FILL_PRIORITY_LIST
MSG_GB_MESSAGE_TO_FLOATER_IF_PARENT
MSG_GB_UPDATE_UI_CONTROLLERS
MSG_GB_UPDATE_EXTENDED_AREA_ATTR_CONTROLLERS
MSG_GB_UPDATE_EXTENDED_AREA_ATTR_CONTROLLERS_WITH_DEFAULTS
MSG_GB_UPDATE_EXTENDED_LINE_ATTR_CONTROLLERS
MSG_GB_UPDATE_EXTENDED_LINE_ATTR_CONTROLLERS_WITH_DEFAULTS
MSG_GB_UPDATE_INSTRUCTION_CONTROLLERS
MSG_GB_ADD_DUPLICATE_FLOATER
MSG_GB_PRIORITY_LIST_RESET
MSG_GB_PRIORITY_LIST_GET_NUM_ELEMENTS
MSG_GB_PRIORITY_LIST_GET_ELEMENT
MSG_GB_PRIORITY_LIST_INIT
MSG_GB_GROUP_SELECTED_GROBJS
MSG_GB_UNGROUP_SELECTED_GROUPS
MSG_GB_TRANSFER_GROBJ_FROM_GROUP
MSG_GB_CLOSE_FINISH_UP
MSG_GB_CLEAR()
MSG_GB_ALIGN_SELECTED_GROBJS
MSG_GB_CREATE_SORTABLE_ARRAY
MSG_GB_DESTROY_SORTABLE_ARRAY
MSG_GB_FILL_SORTABLE_ARRAY_USING_GO_DWF_BOUNDS
MSG_GB_FILL_SORTABLE_ARRAY_USING_GO_CENTERS
MSG_GB_SORT_SORTABLE_ARRAY
MSG_GB_GET_CENTER_OF_SELECTED_GROBJS
MSG_GB_GET_CENTER_OF_FIRST_SELECTED_GROBJ
MSG_GB_GET_CENTER_OF_LAST_SELECTED_GROBJ
MSG_GB_GET_DWF_BOUNDS_OF_FIRST_SELECTED_GROBJ
MSG_GB_GET_DWF_BOUNDS_OF_LAST_SELECTED_GROBJ
MSG_GB_GET_BLOCK_FOR_ONE_GROBJ
```

```

MSG_GB_GET_WINDOW
void MSG_GB_ADD_GROBJ_THEN_DRAW(optr object, word flags)
void MSG_GB_SET_BOUNDS(RectDWord *bounds)
void MSG_GB_GET_BOUNDS(RectDWord *bounds)
void MSG_GB_SET_ACTION_NOTIFICATION_OUTPUT(
    optr object, word messageNumber)
void MSG_GB_SUSPEND_ACTION_NOTIFICATION()
void MSG_GB_UNSPEND_ACTION_NOTIFICATION()
optr MSG_GB_INSTANTIATE_GROBJ(ClassStruct *class)
MSG_GB_SUBST_AREA_TOKEN
MSG_GB_SUBST_LINE_TOKEN
MSG_GB_CREATE_GROBJ_TRANSFER_FORMAT
MSG_GB_CREATE_GSTRING_TRANSFER_FORMAT
MSG_GB_SEND_CLASSSED_EVENT_SET_DEFAULT_ATTRS
MSG_GB_CHANGE_GROBJ_DEPTH
MSG_GB_DRAW( GStateHandle gstate,
    DrawFlags visDrawFlags,
    GrObjDrawFlags GODrawFlags)

MSG_GB_EXPORT
MSG_GB_GRAB_TARGET_FOCUS
MSG_GB_GENERATE_TEXT_NOTIFY
MSG_GB_GENERATE_SPLINE_NOTIFY
MSG_GB_DETACH_GOAM
MSG_GB_IMPORT
MSG_GB_CONVERT_SELECTED_GROBJS_TO_BITMAP
MSG_GB_CONVERT_SELECTED_GROBJS_TO_GRAPHIC
MSG_GB_IGNORE_UNDO_ACTIONS_AND_SUSPEND
MSG_GB_UNSPEND_AND_ACCEPT_UNDO_ACTIONS
MSG_GB_MAKE_INSTRUCTIONS_SELECTABLE_AND_EDITABLE
MSG_GB_MAKE_INSTRUCTIONS_UNSELECTABLE_AND_UNEDITABLE
void MSG_GB_SET_GROBJ_DRAW_FLAGS(
    GrObjDrawFlags flagsToSet,
    GrObjDrawFlags flagsToReset)

MSG_GB_DELETE_INSTRUCTIONS
MSG_GB_PASTE_INSIDE
MSG_GB_CLONE_SELECTED_GROBJS
MSG_GB_CREATE_POLYGON
MSG_GB_CREATE_STAR
MSG_GB_SUBST_TEXT_ATTR_TOKEN
MSG_GB_RECALC_FOR_TEXT_ATTR_CHANGE
void MSG_GB_GET_BOUNDS_OF_GROBJS(RectDWord *retValue)
void MSG_GB_CUSTOM_DUPLICATE_SELECTED_GROBJS(
    GrObjBodyCustomDuplicateParams *cdParams)
MSG_GB_EXPORT_SELECTED_GROBJS
MSG_GB_HIDE_UNSELECTED_GROBJS
MSG_GB_SHOW_ALL_GROBJS
MSG_GB_CREATE_GROBJ
MSG_GB_DUPLICATE_SELECTED_GROBJS
MSG_GB_FIND_NEXT_GROBJ_THAT_OVERLAPS
MSG_GB_FIND_PREV_GROBJ_THAT_OVERLAPS
MSG_GB_ZOOM_IN_ABOUT_POINT
MSG_GB_ZOOM_OUT_ABOUT_POINT
MSG_GB_EVALUATE_MOUSE_POSITION
MSG_GB_EVALUATE_POINT_FOR_HANDLE
MSG_GB_EVALUATE_POINT_FOR_BOUNDS
MSG_GB_SET_NORMAL_SIZE_ABOUT_POINT
MSG_GB_DRAW_GROBJ

```



```
MSG_GB_SEND_TO_SELECTED_GROBJS_SHARE_DATA
MSG_GB_STANDARD_PASTE_CALL_BACK
MSG_GB_PASTE
MSG_GB_REORDER_SELECTION_ARRAY
MSG_GB_ABORT_SEARCH_SPELL_MESSAGE
void MSG_GB_QUICK_PASTE(PointDWFxed *pasteAt)
GrObjDrawFlags MSG_GB_GET_GROBJ_DRAW_FLAGS(
    DrawFlags drawFlags)
void MSG_GB_SET_BOUNDS_WITHOUT_MARKING_DIRTY(
    RectDWord *bounds)
void MSG_GB_SET_GROBJ_DRAW_FLAGS_NO_BROADCAST(
    GrObjDrawFlags flagsToSet,
    GrObjDrawFlags flagsToReset)
MSG_GB_QUICK_PASTE_CALL_BACK
```

GrObjClass

```
@class GrObjClass, MetaClass, master
```

Instance Data

```
LinkPart          GOI_drawLink
LinkPart          GOI_reverseLink
GrObjAttrFlags    GOI_attrFlags =
    (GOAF_INSERT_DELETE_MOVE_ALLOWED |
    GOAF_INSERT_DELETE_RESIZE_ALLOWED |
    GOAF_INSERT_DELETE_DELETE_ALLOWED )
GrObjOptimizationFlags GOI_optFlags =
    (GOOF_GROBJ_INVALID)
GrObjMessageOptimizationFlags GOI_msgOptFlags =(0)
GrObjLocks        GOI_locks = 0
GrObjActionModes  GOI_actionModes = 0
GrObjTempModes    GOI_tempState = 0
ChunkHandle       GOI_normalTransform = NullChunk
ChunkHandle       GOI_spriteTransform = NullChunk
word              GOI_areaAttrToken = CA_NULL_ELEMENT
word              GOI_lineAttrToken = CA_NULL_ELEMENT
```

Variable Data

```
GrObjObjManipData ATTR_GO_OBJ_MANIP_DATA
GrObjActionNotificationStruct
    ATTR_GO_ACTION_NOTIFICATION
PointWWFixed ATTR_GO_PARENT_DIMENSIONS_OFFSET
```

Types and Flags

```
ByteFlags    GrObjHandleSpecification
    GOHS_HANDLE_LEFT      0x08
    GOHS_HANDLE_TOP       0x04
    GOHS_HANDLE_RIGHT     0x02
    GOHS_HANDLE_BOTTOM    0x01
HANDLE_MOVE      0
HANDLE_CENTER    HANDLE_MOVE
HANDLE_LEFT_TOP  (GOHS_HANDLE_LEFT | GOHS_HANDLE_TOP)
HANDLE_MIDDLE_TOP GOHS_HANDLE_TOP
HANDLE_RIGHT_TOP (GOHS_HANDLE_RIGHT |
    GOHS_HANDLE_TOP)
HANDLE_LEFT_MIDDLE GOHS_HANDLE_LEFT
HANDLE_RIGHT_MIDDLE GOHS_HANDLE_RIGHT
HANDLE_LEFT_BOTTOM (GOHS_HANDLE_LEFT |
```

```

                                GOHS_HANDLE_BOTTOM)
HANDLE_MIDDLE_BOTTOM GOHS_HANDLE_BOTTOM
HANDLE_RIGHT_BOTTOM (GOHS_HANDLE_BOTTOM |
                    GOHS_HANDLE_RIGHT)
ByteFlags      HandleUpdateMode
                HUM_NOW          0
                HUM_MANUAL       1
WordFlags      GrObjBaseAreaAttrDiffs
                GOBAAD_MULTIPLE_ELEMENT_TYPES      0x8000
                GOBAAD_MULTIPLE_STYLE_ELEMENTS     0x4000
                GOBAAD_MULTIPLE_COLORS              0x2000
                GOBAAD_MULTIPLE_BACKGROUND_COLORS   0x1000
                GOBAAD_MULTIPLE_MASKS              0x0800
                GOBAAD_MULTIPLE_PATTERNS            0x0400
                GOBAAD_MULTIPLE_DRAW_MODES          0x0200
                GOBAAD_MULTIPLE_INFOS               0x0100
                GOBAAD_MULTIPLE_GRADIENT_END_COLORS 0x0080
                GOBAAD_MULTIPLE_GRADIENT_TYPES      0x0040
                GOBAAD_MULTIPLE_GRADIENT_INTERVALS 0x0020
                GOBAAD_FIRST_RECIPIENT              0x0001
FUTURE_AREA_ATTR_ELEMENT_SIZE 50
WordFlags      GrObjBaseLineAttrDiffs
                GOBLAD_MULTIPLE_STYLE_ELEMENTS     0x8000
                GOBLAD_MULTIPLE_ELEMENT_TYPES      0x4000
                GOBLAD_MULTIPLE_COLORS              0x2000
                GOBLAD_MULTIPLE_ENDS                0x1000
                GOBLAD_MULTIPLE_JOINS               0x0800
                GOBLAD_MULTIPLE_WIDTHS              0x0400
                GOBLAD_MULTIPLE_MASKS               0x0200
                GOBLAD_MULTIPLE_STYLES              0x0100
                GOBLAD_MULTIPLE_DRAW_MODES          0x0080
                GOBLAD_MULTIPLE_MITER_LIMITS        0x0040
                GOBLAD_FIRST_RECIPIENT              0x0001
FUTURE_LINE_ATTR_ELEMENT_DATA_SIZE 50
ByteFlags      GrObjSelectionStateFlags
                GSSF_EDITING                       0x20
                GSSF_UNGROUPABLE                   0x10
                GSSF_TEXT_SELECTED                  0x08
                GSSF_BITMAP_SELECTED                0x04
                GSSF_SPLINE_SELECTED                0x02
                GSSF_ARC_SELECTED                   0x01
ByteFlags      GrObjSelectionStateDiffs
                GSSD_MULTIPLE_CLASSES               0x80
                GSSD_MULTIPLE_ARC_CLOSE_TYPES       0x40
                GSSD_MULTIPLE_ARC_START_ANGLES      0x20
                GSSD_MULTIPLE_ARC_END_ANGLES        0x10
WordFlags      GrObjUINotificationTypes
                GOUINT_AREA                         0x8000
                GOUINT_LINE                         0x4000
                GOUINT_SELECT                       0x2000
                GOUINT_GROBJ_SELECT                 0x1000
                GOUINT_STYLE_SHEET                  0x0800
                GOUINT_STYLE                        0x0400
                GOUINT_SPLINE                       0x0200

```

Structures

```
typedef struct {
```



```

        WWFixed        RWWF_left
        WWFixed        RWWF_top
        WWFixed        RWWF_right
        WWFixed        RWWF_bottom
    } RectWWFixed
    typedef struct {
        WWFixed        GOSD_xScale
        WWFixed        GOSD_yScale
    } GrObjScaleData
    typedef struct {
        GrObjScaleData    GOASD_scale
        GrObjHandleSpecification    GOASD_scaleAnchor
    } GrObjAnchoredScaleData
    typedef struct {
        GrObjBaseAreaAttrElement    GOFAAE_base
        byte    GOFAAE_future[FUTURE_AREA_ATTR_ELEMENT_SIZE]
    } GrObjFullAreaAttrElement
    typedef struct {
        GrObjBaseAreaAttrElement    GNAAC_areaAttr
        GrObjBaseAreaAttrDiffs    GNAAC_areaAttrDiffs
    } GrObjNotifyAreaAttrChange
    typedef struct {
        GrObjBaseLineAttrElement    GOFLAE_base
        byte
        GOFLAE_future[FUTURE_LINE_ATTR_ELEMENT_DATA_SIZE]
    } GrObjFullLineAttrElement
    typedef struct {
        word                GSS_numSelected
        ClassStruct        *GSS_classSelected
        GrObjSelectionStateFlags    GSS_flags
        GrObjAttrFlags    GSS_grObjFlags
        GrObjLocks        GSS_locks
    } GrObjSelectionState
    typedef struct {
        WWFixed        GOSD_xDegrees
        WWFixed        GOSD_yDegrees
    } GrObjSkewData
    typedef struct {
        GrObjSkewData    GOASD_degrees
        GrObjHandleSpecification    GOASD_skewAnchor
    } GrObjAnchoredSkewData
    typedef struct {
        WWFixed        GTM_e11
        WWFixed        GTM_e12
        WWFixed        GTM_e21
        WWFixed        GTM_e22
    } GrObjTransMatrix
    typedef struct {
        WWFixed        GOGSP_height
        WWFixed        GOGSP_width
    } GOGSPSizeParams
    typedef struct {
        PointDWWFixed    GOID_position
        WWFixed        GOID_width
        WWFixed        GOID_height
    } GrObjInitializeData
    typedef struct {

```

```

StyleSheetParams          GTP_ssp
VisTextSaveStyleSheetParams GTP_textSSP
PointDwFixed              GTP_selectionCenterDOCUMENT
Handle                    GTP_optBlock
Handle                    GTP_vmFile
word                      GTP_curSlot
dword                     GTP_id
word                      GTP_curSize
word                      GTP_curPos
} GrObjTransferParams

```

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Messages

```

void MSG_GO_GAINED_SELECTION_LIST(HandleUpdateMode hum)
void MSG_GO_LOST_SELECTION_LIST()
void MSG_GO_BECOME_SELECTED(HandleUpdateMode hum)
void MSG_GO_TOGGLE_SELECTION()
void MSG_GO_BECOME_UNSELECTED()
MSG_GO_UNDRAW_SPRITE
MSG_GO_DRAW_SPRITE
MSG_GO_DRAW_SPRITE_RAW
MSG_GO_DRAW_HANDLES
MSG_GO_UNDRAW_HANDLES
MSG_GO_DRAW_HANDLES_RAW
MSG_GO_DRAW_HANDLES_FORCE
MSG_GO_DRAW_HANDLES_MATCH
MSG_GO_DRAW_HANDLES_OPPOSITE
MSG_GO_ACTIVATE_MOVE
MSG_GO_ACTIVATE_RESIZE
MSG_GO_ACTIVATE_ROTATE
MSG_GO_ACTIVATE_CREATE
MSG_GO_REACTIVATE_CREATE
MSG_GO_START_CHOOSE_ABS
MSG_GO_START_MOVE_ABS
MSG_GO_JUMP_START_MOVE
MSG_GO_JUMP_START_RESIZE
MSG_GO_JUMP_START_ROTATE
MSG_GO_PTR_CHOOSE_ABS
MSG_GO_PTR_MOVE
MSG_GO_PTR_RESIZE
MSG_GO_PTR_ROTATE
MSG_GO_PTR_MOVE_ABS
MSG_GO_END_CHOOSE_ABS
MSG_GO_END_MOVE_ABS
MSG_GO_END_MOVE
MSG_GO_END_RESIZE
MSG_GO_END_ROTATE
MSG_GO_CLEAR
MSG_GO_INVERT_HANDLES
MSG_GO_INIT_BASIC_DATA
void MSG_GO_FLIP_HORIZ()
void MSG_GO_FLIP_VERT()
void MSG_GO_ROTATE(WwFixed angle,
                  GrObjHandleSpecification center)
void MSG_GO_UNTRANSFORM()
void MSG_GO_MOVE(PointDwFixed *distance)
void MSG_GO_MOVE_CENTER_ABS(PointDwFixed *location)
MSG_GO_ALIGN

```

```

MSG_GO_ALIGN_TO_GRID
MSG_GO_SEND_ANOTHER_TOOL_ACTIVATED
MSG_GO_ANOTHER_TOOL_ACTIVATED
MSG_GO_SPECIAL_RESIZE_CONSTRAIN(
    GrObjHandleSpecification grObjHandleSpec)
MSG_GO_DUPLICATE_FLOATER
MSG_GO_GRAB_MOUSE
MSG_GO_RELEASE_MOUSE
MSG_GO_UNGROUPABLE
MSG_GO_GET_BOUNDING_RECTDWFIXED
MSG_GO_CALC_PARENT_DIMENSIONS
MSG_GO_INIT_CREATE
void MSG_GO_NOTIFY_GROBJ_VALID()
MSG_GO_EVALUATE_PARENT_POINT_FOR_HANDLE
MSG_GO_INVERT_GROBJ_SPRITE
MSG_GO_INVERT_GROBJ_NORMAL_SPRITE
void MSG_GO_INVALIDATE()
void MSG_GO_GET_DW_PARENT_BOUNDS(RectDWord *bounds)
MSG_GO_GET_DWF_PARENT_BOUNDS
MSG_GO_GET_DWF_SELECTION_HANDLE_BOUNDS_FOR_TRIVIAL_REJECT
MSG_GO_GET_WWF_PARENT_BOUNDS
void MSG_GO_GET_WWF_OBJECT_BOUNDS(RectWWFixed *retValue)
MSG_GO_BECOME_UNEDITABLE
MSG_GO_EVALUATE_POSITION
MSG_GO_EVALUATE_PARENT_POINT_FOR_SELECTION
void MSG_GO_GET_CENTER(PointDWWFixed *center)
void MSG_GO_INIT_TO_DEFAULT_ATTRS()
MSG_GO_DRAW
MSG_GO_LARGE_START_SELECT
MSG_GO_LARGE_START_MOVE_COPY
MSG_GO_LARGE_END_SELECT
MSG_GO_LARGE_END_MOVE_COPY
MSG_GO_LARGE_DRAG_SELECT
MSG_GO_LARGE_DRAG_MOVE_COPY
MSG_GO_LARGE_PTR
MSG_GO_AFTER_ADDED_TO_GROUP
MSG_GO_BEFORE_REMOVED_FROM_GROUP
void MSG_GO_AFTER_ADDED_TO_BODY()
void MSG_GO_BEFORE_REMOVED_FROM_BODY()
void MSG_GO_SET_AREA_ATTR(
    GrObjBaseAreaAttrElement *attr)
void MSG_GO_SET_AREA_COLOR(byte red,
    byte green, byte blue)
void MSG_GO_SET_AREA_MASK(SysDrawMask mask)
void MSG_GO_SET_AREA_DRAW_MODE(MixMode mode)
void MSG_GO_SET_TRANSPARENCY(byte transparent)
void MSG_GO_SET_LINE_ATTR(
    GrObjBaseLineAttrElement *attr)
void MSG_GO_SET_LINE_COLOR(byte red,
    byte green, byte blue)
void MSG_GO_SET_LINE_MASK(SystemDrawMask drawMask)
void MSG_GO_SET_LINE_END(LineEnd end)
void MSG_GO_SET_LINE_JOIN(LineJoin join)
void MSG_GO_SET_LINE_STYLE(LineStyle style)
void MSG_GO_SET_LINE_WIDTH(WWFixed width)
void MSG_GO_SET_LINE_MITER_LIMIT(WWFixed miterLimit)

```

```

MSG_GO_GET_GROBJ_AREA_TOKEN
MSG_GO_GET_GROBJ_LINE_TOKEN
MSG_GO_SET_GROBJ_AREA_TOKEN
MSG_GO_SET_GROBJ_LINE_TOKEN
MSG_GO_SUBST_AREA_TOKEN
MSG_GO_SUBST_LINE_TOKEN
MSG_GO_GET_ANCHOR_DOCUMENT
MSG_GO_BECOME_EDITABLE
MSG_GO_DRAW_EDIT_INDICATOR
MSG_GO_UNDRAW_EDIT_INDICATOR
MSG_GO_DRAW_EDIT_INDICATOR_RAW
MSG_GO_INVERT_EDIT_INDICATOR
MSG_GO_GROBJ_SPECIFIC_INITIALIZE
MSG_GO_GROBJ_SPECIFIC_INITIALIZE_WITH_DATA_BLOCK
MSG_GO_APPLY_ATTRIBUTES_TO_GSTATE
word MSG_GO_SET_ACTION_NOTIFICATION_OUTPUT(
    optr object, Message messageNumber)
word MSG_GO_NOTIFY_ACTION(
    GrObjActionNotificationType action)
void MSG_GO_NUDGE(sword xDistance, sword yDistance)
void MSG_GO_SET_SIZE(PointWWFixed *size)
void MSG_GO_SET_POSITION(PointDWFfixed *location)
dword MSG_GO_CHANGE_LOCKS(GrObjLocks setBits,
    GrObjLocks clearBits)
void MSG_GO_SCALE(GrObjAnchoredScaleData *params)
void MSG_GO_COMBINE_AREA_NOTIFICATION_DATA(
    Handle change)
void MSG_GO_COMBINE_GRADIENT_NOTIFICATION_DATA(
    Handle change)
void MSG_GO_COMBINE_LINE_NOTIFICATION_DATA(
    Handle change)
void MSG_GO_COMBINE_SELECT_STATE_NOTIFICATION_DATA(
    Handle change)
void MSG_GO_COMBINE_SELECTION_STATE_NOTIFICATION_DATA(
    Handle change)
void MSG_GO_COMBINE_STYLE_NOTIFICATION_DATA(
    Handle change)
void MSG_GO_COMBINE_STYLE_SHEET_NOTIFICATION_DATA(
    Handle change)
void MSG_GO_SEND_UI_NOTIFICATION(
    GrObjUINotificationTypes notifications)
void MSG_GO_SUSPEND_ACTION_NOTIFICATION()
void MSG_GO_UNsuspend_ACTION_NOTIFICATION()
void MSG_GO_SKEW(GrObjAnchoredSkewData *params)
void MSG_GO_TRANSFORM(TransMatrix *transformation)
MSG_GO_COMPLETE_CREATE
MSG_GO_COMPLETE_TRANSFORM
MSG_GO_COMPLETE_TRANSLATE
void MSG_GO_GET_SIZE(GOGetSizeParams *retValue)
void MSG_GO_GET_POSITION(PointDWFfixed *retValue)
void MSG_GO_INITIALIZE(GrObjInitializeData *data)
MSG_GO_SCALE_ABOUT_PARENT_LEFT_TOP
MSG_GO_INSERT_OR_DELETE_SPACE
MSG_GO_BEGIN_CREATE
MSG_GO_END_CREATE
MSG_GO_EVALUATE_PARENT_POINT_FOR_EDIT
void MSG_GO_CREATE_TRANSFER(GrObjTransferParams *params)

```

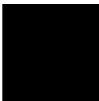
```

void MSG_GO_REPLACE_WITH_TRANSFER(
    GrObjTransferParams *params)
void MSG_GO_WRITE_INSTANCE_TO_TRANSFER(
    GrObjTransferParams *params)
void MSG_GO_READ_INSTANCE_FROM_TRANSFER(
    GrObjTransferParams *params)
MSG_GO_GET_POINTER_IMAGE
MSG_GO_GET_LOCKS
void MSG_GO_DRAW_FG_AREA(DrawFlags drawFlags,
    GrObjDrawFlags grobjDrawFlags,
    GStateHandle gstate)
MSG_GO_DRAW_BG_AREA
void MSG_GO_DRAW_SPRITE_LINE(GStateHandle gstate)
MSG_GO_DRAW_NORMAL_SPRITE_LINE
MSG_GO_DO_NOTHING
MSG_GO_ADD_POTENTIAL_SIZE_TO_BLOCK
MSG_GO_SUBTRACT_POTENTIAL_SIZE_FROM_BLOCK
MSG_GO_GET_GROBJ_CLASS
MSG_GO_UNDO_REPLACE_GEOMETRY_INSTANCE_DATA
MSG_GO_GENERATE_UNDO_REPLACE_GEOMETRY_INSTANCE_DATA_ACT
ION
MSG_GO_GENERATE_UNDO_REPLACE_GEOMETRY_INSTANCE_DATA_CHA
IN
MSG_GO_CLEAR_SANS_UNDO
MSG_GO_REMOVE_FROM_BODY
MSG_GO_REMOVE_FROM_GROUP
MSG_GO_RELEASE_EXCLS
MSG_GO_GENERATE_UNDO_CLEAR_CHAIN
MSG_GO_GENERATE_UNDO_UNDO_CLEAR_CHAIN
MSG_GO_DEREF_A_GROBJ_AREA_TOKEN
MSG_GO_DEREF_A_GROBJ_LINE_TOKEN
MSG_GO_INVALIDATE_AREA
MSG_GO_INVALIDATE_LINE
MSG_GO_SUSPEND_COMPLETE_CREATE
MSG_GO_GET_TEMP_STATE_AND_OPT_FLAGS
MSG_GO_MAKE_INSTRUCTION
MSG_GO_MAKE_NOT_INSTRUCTION
MSG_GO_SET_WRAP_TEXT_TYPE
MSG_GO_SET_PASTE_INSIDE(
MSG_GO_SET_INSERT_DELETE_MOVE_ALLOWED
MSG_GO_SET_INSERT_DELETE_RESIZE_ALLOWED
MSG_GO_SET_INSERT_DELETE_DELETE_ALLOWED
MSG_GO_DRAW_PARENT_RECT
MSG_GO_NUKE_DATA_IN_OTHER_BLOCKS
void MSG_GO_DRAW_FG_AREA_HI_RES(DrawFlags drawFlags,
    GrObjDrawFlags grobjDrawFlags,
    GStateHandle gstate)
void MSG_GO_DRAW_FG_LINE(DrawFlags drawFlags,
    GrObjDrawFlags grobjDrawFlags,
    GStateHandle gstate)
void MSG_GO_DRAW_FG_LINE_HI_RES(DrawFlags drawFlags,
    GrObjDrawFlags grobjDrawFlags,
    GStateHandle gstate)
MSG_GO_DRAW_CLIP_AREA
MSG_GO_DRAW_CLIP_AREA_HI_RES
MSG_GO_DRAW_FG_GRADIENT_AREA
MSG_GO_DRAW_FG_GRADIENT_AREA_HI_RES

```

```
MSG_GO_DRAW_BG_AREA_HI_RES
MSG_GO_SET_BG_COLOR
MSG_GO_SET_AREA_PATTERN
MSG_GO_SET_AREA_ATTR_ELEMENT_TYPE
MSG_GO_SET_LINE_ATTR_ELEMENT_TYPE
MSG_GO_SET_STARTING_GRADIENT_COLOR
MSG_GO_SET_ENDING_GRADIENT_COLOR
MSG_GO_SET_NUMBER_OF_GRADIENT_INTERVALS
MSG_GO_SET_GRADIENT_TYPE
MSG_GO_SET_ARROWHEAD_ON_START
MSG_GO_SET_ARROWHEAD_ON_END
MSG_GO_SET_ARROWHEAD_FILLED
MSG_GO_SET_ARROWHEAD_ANGLE
MSG_GO_SET_ARROWHEAD_LENGTH
MSG_GO_NOTIFY_GROBJ_INVALID
MSG_GO_SET_GROBJ_ATTR_FLAGS
MSG_GO_SET_SYS_TARGET
void MSG_GO_SCALE_OBJECT(GrObjAnchoredScaleData *params)
MSG_GO_GENERATE_UNDO_CLEAR_CHAIN_WITH_ACTION_NOTIFICATION
MSG_GO_RECREATE_CACHED_GSTATES
MSG_GO_DRAW_QUICK_VIEW
MSG_GO_DRAW_SPRITE_LINE_HI_RES
MSG_GO_DRAW_NORMAL_SPRITE_LINE_HI_RES
MSG_GO_GET_GROBJ_ATTR_FLAGS
MSG_GO_MAKE_ATTRS_DEFAULT
MSG_GO_GET_SITUATIONAL_POINTER_IMAGE
MSG_GO_OBJ_FREE
MSG_GO_ADJUST_CREATE
MSG_GO_GENERATE_UNDO_UNDO_CLEAR_CHAIN_WITH_ACTION_NOTIFICATION
MSG_GO_NUDGE_INSIDE
MSG_GO_MOVE_INSIDE
MSG_GO_REPLACE_GEOMETRY_INSTANCE_DATA
MSG_GO_CHECK_ACTION_MODES
MSG_GO_EVALUATE_PARENT_POINT_FOR_HANDLE_MOVE_RESIZE
MSG_GO_EVALUATE_PARENT_POINT_FOR_HANDLE_MOVE_ROTATE
MSG_GO_COMBINE_LOCKS
MSG_GO_DESELECT_IF_GROUP_LOCK_SET
MSG_GO_GET_POTENTIAL_GROBJECT_SIZE
MSG_GO_GROUP_GAINED_SELECTION_LIST
MSG_GO_GROUP_LOST_SELECTION_LIST
MSG_GO_INVALIDATE_WITH_UNDO
MSG_GO_AFTER_QUICK_PASTE
MSG_GO_QUICK_TOTAL_BODY_CLEAR
```





GrObjConvertControlClass

@class GrObjConvertControlClass, GenControlClass

Instance Data

@default GCI_output = (TO_APP_TARGET)

Types and Flags

ByteFlags GOCCFeatures
 GOCCF_CONVERT_TO_BITMAP 0x0004
 GOCCF_CONVERT_TO_GRAPHIC 0x0002
 GOCCF_CONVERT_FROM_GRAPHIC 0x0001
GROBJ_CONVERT_CONTROL_DEFAULT_FEATURES
 (GOCCF_CONVERT_TO_BITMAP |
 GOCCF_CONVERT_TO_GRAPHIC |
 GOCCF_CONVERT_FROM_GRAPHIC)
GROBJ_CONVERT_CONTROL_DEFAULT_TOOLBOX_FEATURES
 (GOCCF_CONVERT_TO_BITMAP |
 GOCCF_CONVERT_TO_GRAPHIC |
 GOCCF_CONVERT_FROM_GRAPHIC)

Messages

MSG_GOCC_CONVERT_TO_BITMAP
MSG_GOCC_CONVERT_TO_GRAPHIC
MSG_GOCC_CONVERT_FROM_GRAPHIC

GrObjCreateControlClass

@class GrObjCreateControlClass, GenControlClass

Instance Data

@default GCI_output = (TO_APP_TARGET)

@default GI_states = (@default | GS_ENABLED)

Types and Flags

ByteFlags GrObjCreateControlFeatures
 GOCCF_RECTANGLE 0x0200
 GOCCF_ELLIPSE 0x0100
 GOCCF_LINE 0x0080
 GOCCF_ROUNDED_RECTANGLE 0x0040
 GOCCF_ARC 0x0020
 GOCCF_TRIANGLE 0x0010
 GOCCF_HEXAGON 0x0008
 GOCCF_OCTOGON 0x0004
 GOCCF_FIVE_POINTED_STAR 0x0002
 GOCCF_EIGHT_POINTED_STAR 0x0001
GROBJ_CREATE_CONTROL_DEFAULT_FEATURES 0x03fb
GROBJ_CREATE_CONTROL_DEFAULT_TOOLBOX_FEATURES 0x03fb

Messages

MSG_GOCC_CREATE_GROBJ
MSG_GOCC_CREATE_POLYGON
MSG_GOCC_CREATE_STAR

GrObjCustomDuplicateControlClass

```
@class GrObjCustomDuplicateControlClass, GenControlClass
```

```
@class GrObjCustomDuplicateControlClass, GenControlClass
```

Instance Data

```
@default GCI_output = (TO_APP_TARGET)
```

Types and Flags

```

ByteFlags      GOCDChFeatures
      GOCDCh_REPETITIONS      0x10
      GOCDCh_MOVE            0x08
      GOCDCh_SCALE           0x04
      GOCDCh_ROTATE          0x02
      GOCDCh_SKEW            0x01
GOCDCh_DEFAULT_FEATURES      (GOCDCh_REPETITIONS |
      GOCDCh_MOVE | GOCDCh_ROTATE |
      GOCDCh_SCALE)

```

Messages

MSG_GOCDC_CUSTOM_DUPLICATE

GrObjCustomShapeControlClass

```
@class GrObjCustomShapeControlClass, GenControlClass
```

Instance Data

```
@default GCI_output = (TO_APP_TARGET)
@default GI_states = (@default | GS_ENABLED)
```

Types and Flags

```
ByteFlags      GOCSCFeatures
               GOCSCF_POLYGONS          0x02
               GOCSCF_STARS              0x01
GOCSC_DEFAULT_FEATURES (GOCSCF_POLYGONS | GOCSCF_STARS)
```

Messages

MSG_GOCSC_CREATE_POLYGON
MSG_GOCSC_CREATE_STAR

GrObjDefaultAttributesControlClass

```
@class GrObjDefaultAttributesControlClass,
                                     GenControlClass
```

Instance Data

```
@default GCI_output = (TO_APP_TARGET)
```

Types and Flags

```
ByteFlags    GODACFeatures
              GODACF_SET_DEFAULT_ATTRIBUTES    0x01
GODAC_DEFAULT_FEATURES (GODACF_SET_DEFAULT_ATTRIBUTES)
GODAC_DEFAULT_TOOLBOX_FEATURES
              (GODACF_SET_DEFAULT_ATTRIBUTES)
```

Messages

MSG_GODAC_SET_DEFAULT_ATTRIBUTES



GrObjDepthControlClass

@class GrObjDepthControlClass, GenControlClass

Instance Data

@default GCI_output = (TO_APP_TARGET)

Types and Flags

ByteFlags GODepthCFeatures
GODepthCF_BRING_TO_FRONT 0x0008
GODepthCF_SEND_TO_BACK 0x0004
GODepthCF_SHUFFLE_UP 0x0002
GODepthCF_SHUFFLE_DOWN 0x0001
GODepthC_DEFAULT_FEATURES (GODepthCF_BRING_TO_FRONT |
GODepthCF_SEND_TO_BACK |
GODepthCF_SHUFFLE_UP |
GODepthCF_SHUFFLE_DOWN)
GODepthC_DEFAULT_TOOLBOX_FEATURES
(GODepthCF_BRING_TO_FRONT |
GODepthCF_SEND_TO_BACK |
GODepthCF_SHUFFLE_UP |
GODepthCF_SHUFFLE_DOWN)

Messages

MSG_GODC_BRING_TO_FRONT
MSG_GODC_SEND_TO_BACK
MSG_GODC_SHUFFLE_UP
MSG_GODC_SHUFFLE_DOWN

GrObjDraftModeControlClass

@class GrObjDraftModeControlClass, GenControlClass

Instance Data

@default GCI_output = (TO_APP_TARGET)

Types and Flags

ByteFlags GODMCFFeatures
GODMCF_DRAFT_MODE 0x01
GODMC_DEFAULT_FEATURES (GODMCF_DRAFT_MODE)

Messages

MSG_GODMC_SET_DRAFT_MODE_STATUS

GrObjDuplicateControlClass

@class GrObjDuplicateControlClass, GenControlClass

Instance Data

@default GCI_output = (TO_APP_TARGET)

Types and Flags

ByteFlags GrObjDuplicateControlFeatures
GODCF_DUPLICATE 0x0002
GODCF_DUPLICATE_IN_PLACE 0x0001
ByteFlags GrObjDuplicateControlToolboxFeatures
GODCTF_DUPLICATE 0x0002
GODCTF_DUPLICATE_IN_PLACE 0x0001
GROBJ_DUPLICATE_CONTROL_DEFAULT_FEATURES

```
(GODCF_DUPLICATE |
GODCF_DUPLICATE_IN_PLACE)
GROBJ_DUPLICATE_CONTROL_DEFAULT_TOOLBOX_FEATURES
(GODCTF_DUPLICATE |
GODCTF_DUPLICATE_IN_PLACE)
```

Messages

```
MSG_GROBJ_DUPLICATE_CONTROL_DUPLICATE
MSG_GROBJ_DUPLICATE_CONTROL_DUPLICATE_IN_PLACE
```

GrObjEndingGradientColorSelectorClass

```
@class GrObjEndingGradientColorSelectorClass,
ColorSelectorClass
```

Instance Data

```
@default GCI_output = (TO_APP_TARGET)
@default GI_states = (@default & ~GS_ENABLED)
```

Types and Flags

```
GOSGCS_DEFAULT_FEATURES (CSF_INDEX | CSF_RGB)
```

GrObjFlipControlClass

```
@class GrObjFlipControlClass, GenControlClass
```

Instance Data

```
@default GCI_output = (TO_APP_TARGET)
```

Types and Flags

```
ByteFlags GOFCFFeatures
GOGFCF_FLIP_HORIZONTALLY 0x02
GOGFCF_FLIP_VERTICALLY 0x01
```

Messages

```
MSG_GOFC_FLIP_HORIZONTALLY
MSG_GOFC_FLIP_VERTICALLY
```

GrObjGradientFillControlClass

```
@class GrObjGradientFillControlClass, GenControlClass
```

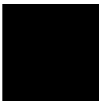
Instance Data

```
@default GCI_output = (TO_APP_TARGET)
```

Types and Flags

```
ByteFlags GrObjGradientFillControlFeatures
GOGFCF_HORIZONTAL_GRADIENT 0x0010
GOGFCF_VERTICAL_GRADIENT 0x0008
GOGFCF_RADIAL_RECT_GRADIENT 0x0004
GOGFCF_RADIAL_ELLIPSE_GRADIENT 0x0002
GOGFCF_NUM_INTERVALS 0x0001
GOGFC_DEFAULT_FEATURES (GOGFCF_HORIZONTAL_GRADIENT |
GOGFCF_VERTICAL_GRADIENT |
GOGFCF_RADIAL_RECT_GRADIENT |
GOGFCF_RADIAL_ELLIPSE_GRADIENT |
GOGFCF_NUM_INTERVALS)
```





Messages

MSG_GOGFC_SET_GRADIENT_TYPE
MSG_GOGFC_SET_NUMBER_OF_GRADIENT_INTERVALS

GrObjGroupControlClass

@class GrObjGroupControlClass, GenControlClass

Instance Data

@default GCI_output = (TO_APP_TARGET);

Types and Flags

ByteFlags GOGCFeatures
GOGCF_GROUP 0x01
GOGCF_UNGROUP 0x02
GOGC_DEFAULT_FEATURES (GOGCF_GROUP | GOGCF_UNGROUP)
GOGC_DEFAULT_TOOLBOX_FEATURES (GOGCF_GROUP | GOGCF_UNGROUP)

Messages

MSG_GOGC_GROUP
MSG_GOGC_UNGROUP

GrObjHandleControlClass

@class GrObjHandleControlClass, GenControlClass

Instance Data

@default GCI_output = (TO_APP_TARGET)
@default GI_states = (@default | GS_ENABLED)

Types and Flags

ByteFlags GOHCFeatures
GOHCF_SMALL_HANDLES 0x08
GOHCF_MEDIUM_HANDLES 0x04
GOHCF_LARGE_HANDLES 0x02
GOHCF_INVISIBLE_HANDLES 0x01
GOHC_DEFAULT_FEATURES (GOHCF_SMALL_HANDLES | GOHCF_MEDIUM_HANDLES | GOHCF_LARGE_HANDLES | GOHCF_INVISIBLE_HANDLES)
GOHC_DEFAULT_TOOLBOX_FEATURES 0

Messages

MSG_GOHC_SET_HANDLES

GrObjHeadClass

```
@class GrObjHeadClass, MetaClass
```

Instance Data

```
ClassStruct      *GH_currentTool = NullClass
word             GH_initializeFloaterData = 0
optr             GH_currentBody
optr             GH_floater
```

Structures

```
typedef struct {
    word             CTV_grObjSpecificData
    word             CTV_unused
    ClassStruct      *CTV_toolClass
} CurrentToolValues
```

Messages

```
void MSG_GH_SET_CURRENT_TOOL(ClassStruct *toolClass,
                             word initData)
void MSG_GH_SET_CURRENT_TOOL_WITH_DATA_BLOCK(
    ClassStruct *toolClass,
    word initData)
MSG_GH_SET_CURRENT_BODY
MSG_GH_CLEAR_CURRENT_BODY
MSG_GH_CLASSSED_EVENT_TO_FLOATER
MSG_GH_CLASSSED_EVENT_TO_FLOATER_IF_CURRENT_BODY
MSG_GH_FLOATER_FINISHED_CREATE
void MSG_GH_GET_CURRENT_TOOL(CurrentToolValues *retVal)
MSG_GH_SEND_NOTIFY_CURRENT_TOOL
MSG_GH_CALL_FLOATER
MSG_GH_SET_TEXT_TOOL_FOR_SEARCH_SPELL
```

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GrObjHideShowControlClass

```
@class GrObjHideShowControlClass, GenControlClass;
```

Instance Data

```
@default      GCI_output = (TO_APP_TARGET)
@default      GI_states = (@default | GS_ENABLED)
```

Types and Flags

```
ByteFlags      GOHSCFeatures
GOHSCF_HIDE    0x02
GOHSCF_SHOW    0x01
GOHSC_DEFAULT_FEATURES (GOHSCF_HIDE | GOHSCF_SHOW)
```

Messages

```
MSG_GOHSC_HIDE
MSG_GOHSC_SHOW
```

GrObjInstructionControlClass

```
@class GrObjInstructionControlClass, GenControlClass
```

Instance Data

```
@default GCI_output = (TO_APP_TARGET)
```

Types and Flags

```
ByteFlags      GrObjInstructionControlFeatures
GOICF_DRAW      0x8000
GOICF_PRINT     0x4000
GOICF_MAKE_EDITABLE 0x2000
GOICF_MAKE_UNEDITABLE 0x1000
GOICF_DELETE     0x0800
GOICF_DEFAULT_FEATURES (GOICF_DRAW | GOICF_PRINT |
                        GOICF_MAKE_EDITABLE |
                        GOICF_MAKE_UNEDITABLE |
                        GOICF_DELETE)
```

Messages

```
MSG_GOIC_MAKE_INSTRUCTIONS_EDITABLE
MSG_GOIC_MAKE_INSTRUCTIONS_UNEDITABLE
MSG_GOIC_DELETE_INSTRUCTIONS
MSG_GOIC_SET_INSTRUCTION_ATTRS
```

GrObjLineAttrControlClass

```
@class GrObjLineAttrControlClass, GenControlClass
```

Instance Data

```
@default GCI_output = (TO_APP_TARGET)
@default GI_states = (@default | GS_ENABLED)
```

Types and Flags

```
WordFlags      GOLACFeatures
GOLACF_WIDTH_INDEX      0x0010
GOLACF_WIDTH_VALUE      0x0008
GOLACF_STYLE            0x0004
GOLACF_ARROWHEAD_TYPE   0x0002
GOLACF_ARROWHEAD_WHICH_END 0x0001
GOLAC_DEFAULT_FEATURES (GOLACF_WIDTH_INDEX |
                        GOLACF_WIDTH_VALUE |
                        GOLACF_STYLE |
                        GOLACF_ARROWHEAD_TYPE |
                        GOLACF_ARROWHEAD_WHICH_END)

WordFlags      GOLACToolboxFeatures
GOLACTF_WIDTH_INDEX      0x0002
GOLACTF_STYLE            0x0001
GOLAC_DEFAULT_TOOLBOX_FEATURES (GOLACTF_WIDTH_INDEX |
                                GOLACTF_STYLE)
```

Messages

```
MSG_GOLAC_SET_LINE_VALUE_FROM_INDEX
MSG_GOLAC_SET_LINE_INDEX_FROM_VALUE
MSG_GOLAC_SET_INTEGER_LINE_WIDTH
MSG_GOLAC_SET_LINE_WIDTH
MSG_GOLAC_SET_LINE_STYLE
MSG_GOLAC_SET_ARROWHEAD_TYPE
MSG_GOLAC_SET_ARROWHEAD_WHICH_END
```

GrObjLineColorSelectorClass

```
@class GrObjLineColorSelectorClass, ColorSelectorClass
```

Instance Data

```
@default      GCI_output = (TO_APP_TARGET)
@default      GI_states = (@default | GS_ENABLED)
@default      CSI_toolboxPrefs = @default |
                (COO_LINE_ORIENTED <<
                CTP_INDEX_ORIENTATION_OFFSET) |
                (COO_LINE_ORIENTED <<
                CTP_DRAW_MASK_ORIENTATION_OFFSET)
```

Types and Flags

```
GOLCS_DEFAULT_FEATURES (CSF_INDEX | CSF_RGB |
                        CSF_DRAW_MASK | CSF_PATTERN)
```

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GrObjLocksControlClass

```
@class GrObjLocksControlClass, GenControlClass
```

Instance Data

```
@default GCI_output = (TO_APP_TARGET)
```

Types and Flags

```
GOLC_DEFAULT_FEATURES (GOL_MOVE | GOL_RESIZE |
                        GOL_ROTATE)
GOLC_DEFAULT_TOOLBOX_FEATURES 0
```

Messages

```
MSG_GOLC_CHANGE_LOCKS
```

GrObjMoveInsideControlClass

```
@class GrObjMoveInsideControlClass,
                        GrObjNudgeControlClass
```

GrObjNudgeControlClass

```
@class GrObjNudgeControlClass, GenControlClass
```

Instance Data

```
@default GCI_output = (TO_APP_TARGET)
```

Types and Flags

```
ByteFlags      GONCFfeatures
                GONCF_NUDGE_LEFT          0x10
                GONCF_NUDGE_RIGHT         0x08
                GONCF_NUDGE_UP            0x04
                GONCF_NUDGE_DOWN          0x02
                GONCF_CUSTOM_MOVE          0x01
GROBJ_NUDGE_CONTROL_DEFAULT_FEATURES (GONCF_NUDGE_LEFT |
                                      GONCF_NUDGE_RIGHT |
                                      GONCF_NUDGE_UP |
                                      GONCF_NUDGE_DOWN |
                                      GONCF_CUSTOM_MOVE)
```

Messages

```
MSG_GONC_NUDGE
```



```
MSG_GONC_CUSTOM_MOVE
MSG_GONC_SET_DISPLAY_FORMAT
```

GrObjObscureAttrControlClass

```
@class GrObjObscureAttrControlClass, GenControlClass
```

Instance Data

```
@default GCI_output = (TO_APP_TARGET)
@default GI_states = (@default | GS_ENABLED)
```

Types and Flags

```
ByteFlags      GrObjObscureAttrControlFeatures
GOOACF_INSTRUCTIONS      0x80
GOOACF_INSERT_OR_DELETE_MOVE      0x40
GOOACF_INSERT_OR_DELETE_RESIZE      0x20
GOOACF_INSERT_OR_DELETE_DELETE      0x10
GOOACF_DONT_WRAP      0x08
GOOACF_WRAP_INSIDE      0x04
GOOACF_WRAP_AROUND_RECT      0x02
GOOACF_WRAP_TIGHTLY      0x01
GOOAC_INSERT_OR_DELETE_FEATURES
(GOOACF_INSERT_OR_DELETE_MOVE |
GOOACF_INSERT_OR_DELETE_RESIZE |
GOOACF_INSERT_OR_DELETE_DELETE)
GOOAC_WRAP_FEATURES (GOOACF_DONT_WRAP |
GOOACF_WRAP_INSIDE |
GOOACF_WRAP_AROUND_RECT |
GOOACF_WRAP_TIGHTLY)
GOOAC_DEFAULT_FEATURES (GOOACF_INSTRUCTIONS |
GOOAC_WRAP_FEATURES |
GOOAC_INSERT_OR_DELETE_FEATURES)
```

Messages

```
MSG_GOOAC_SET_WRAP_TEXT_TYPE
MSG_GOOAC_CHANGE_OBSCURE_ATTRS
```

GrObjPasteInsideControlClass

```
@class GrObjPasteInsideControlClass, GenControlClass
```

Instance Data

```
word      GPICI_lastNumSelected = 0
@default GCI_output = (TO_APP_TARGET)
```

Types and Flags

```
ByteFlags      GOPICFeatures
GOPICF_PASTE_INSIDE      0x0002
GOPICF_BREAKOUT_PASTE_INSIDE      0x0001
ByteFlags      GOPICToolboxFeatures
GOPICTF_PASTE_INSIDE      0x0002
GOPICTF_BREAKOUT_PASTE_INSIDE      0x0001
GOPIC_DEFAULT_FEATURES (GOPICF_PASTE_INSIDE |
GOPICF_BREAKOUT_PASTE_INSIDE)
GOPIC_DEFAULT_TOOLBOX_FEATURES (GOPICTF_PASTE_INSIDE |
GOPICTF_BREAKOUT_PASTE_INSIDE)
```

Messages

MSG_GOPIC_PASTE_INSIDE
MSG_GOPIC_BREAKOUT_PASTE_INSIDE

GrObjRotateControlClass

@class GrObjRotateControlClass, GenControlClass

Instance Data

@default GCI_output = (TO_APP_TARGET)

Types and Flags

ByteFlags GORCFeatures
 GORCF_45_DEGREES_CW 0x0080
 GORCF_90_DEGREES_CW 0x0040
 GORCF_135_DEGREES_CW 0x0020
 GORCF_180_DEGREES 0x0010
 GORCF_135_DEGREES_CCW 0x0008
 GORCF_90_DEGREES_CCW 0x0004
 GORCF_45_DEGREES_CCW 0x0002
 GORCF_CUSTOM_ROTATION 0x0001
GORC_DEFAULT_FEATURES 0x00ff

Messages

MSG_GORC_ROTATE
MSG_GORC_CUSTOM_ROTATE

GrObjScaleControlClass

@class GrObjScaleControlClass, GenControlClass

Instance Data

@default GCI_output = (TO_APP_TARGET)

Types and Flags

ByteFlags GrObjScaleControlFeatures
 GOSCF_HALF_WIDTH 0x0010
 GOSCF_HALF_HEIGHT 0x0008
 GOSCF_DOUBLE_WIDTH 0x0004
 GOSCF_DOUBLE_HEIGHT 0x0002
 GOSCF_CUSTOM_SCALE 0x0001
GROBJ_SCALE_CONTROL_DEFAULT_FEATURES 0x001f

Messages

MSG_GOSC_SCALE_HORIZONTALLY
MSG_GOSC_SCALE_VERTICALLY
MSG_GOSC_CUSTOM_SCALE





GrObjSkewControlClass

```
@class GrObjSkewControlClass, GenControlClass
```

Instance Data

```
@default GCI_output = (TO_APP_TARGET)
```

Types and Flags

```
ByteFlags      GrObjSkewControlFeatures
GOSCF_LEFT      0x0010
GOSCF_RIGHT     0x0008
GOSCF_UP        0x0004
GOSCF_DOWN      0x0002
GOSCF_CUSTOM_SKEW 0x0001
GROBJ_SKEW_CONTROL_DEFAULT_FEATURES 0x001f
```

Messages

```
MSG_GOSC_SKEW_HORIZONTALLY
MSG_GOSC_SKEW_VERTICALLY
void MSG_GOSC_CUSTOM_SKEW
```

GrObjSplineClass

```
@class GrObjSplineClass, GrObjVisClass
```

GrObjStartingGradientColorSelectorClass

```
@class GrObjStartingGradientColorSelectorClass,
ColorSelectorClass
```

Instance Data

```
@default GCI_output = (TO_APP_TARGET)
@default GI_states = (@default & ~GS_ENABLED)
```

Types and Flags

```
GOSGCS_DEFAULT_FEATURES (CSF_INDEX | CSF_RGB)
```

GrObjStyleSheetControlClass

```
@class GrObjStyleSheetControlClass,
StyleSheetControlClass
```

Instance Data

```
@default GCI_output = (TO_APP_TARGET)
@default GI_states = (@default & ~GS_ENABLED)
@default SSCI_targetClass =
(ClassStruct *)&GrObjBodyClass
@default SSCI_styledClass =
(ClassStruct *)&GrObjClass
```

GrObjTextClass

```
@class GrObjTextClass, GrObjVisClass;
```

Messages

```
MSG_GT_ADJUST_MARGINS_FOR_LINE_WIDTH
```

GrObjToolControlClass

```
@class GrObjToolControlClass, GenControlClass
```

Instance Data

```
@default GCI_output = (TO_APP_TARGET)
```

Variable Data

```
word ATTR_GROBJ_TOOL_CONTROL_POSITION_FOR_ADDED_TOOLS
```

Types and Flags

```
WordFlags    GOTCFeatures
    GOTCF_PTR                0x0800
    GOTCF_ROTATE_PTR         0x0400
    GOTCF_ZOOM               0x0200
    GOTCF_TEXT               0x0100
    GOTCF_LINE               0x0080
    GOTCF_RECT               0x0040
    GOTCF_ROUNDED_RECT       0x0020
    GOTCF_ELLIPSE            0x0010
    GOTCF_ARC                0x0008
    GOTCF_POLYLINE           0x0004
    GOTCF_POLYCURVE          0x0002
    GOTCF_SPLINE             0x0001
GOTC_DEFAULT_FEATURES (GOTCF_PTR |
    GOTCF_ROTATE_PTR |
    GOTCF_ZOOM | GOTCF_TEXT |
    GOTCF_LINE | GOTCF_RECT |
    GOTCF_ROUNDED_RECT |
    GOTCF_ELLIPSE | GOTCF_ARC |
    GOTCF_POLYLINE |
    GOTCF_POLYCURVE |
    GOTCF_SPLINE)
GOTC_DEFAULT_TOOLBOX_FEATURES (GOTC_DEFAULT_FEATURES)
```

Messages

```
MSG_GOTC_SET_TOOL
```

GrObjToolItemClass

```
@class GrObjToolItemClass, GenItemClass
```

Instance Data

```
ClassStruct    *GOTII_toolClass = NullClass
word           GOTII_specInitData = 0
```

Messages

```
MSG_GOTI_GET_TOOL_CLASS
MSG_GOTI_SELECT_SELF_IF_MATCH
```

GrObjTransformControlClass

```
@class GrObjTransformControlClass, GenControlClass
```

Instance Data

```
@default GCI_output = (TO_APP_TARGET)
```

Types and Flags

```
ByteFlags    GOTTransformCFeatures
```

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```
GOTCF_UNTRANSFORM                                0x8000
GOTTransformC_DEFAULT_FEATURES (GOTCF_UNTRANSFORM)
```

Messages

```
MSG_GOTC_UNTRANSFORM
```

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```
@class GrObjVisClass, VisClass, master, variant
```

Instance Data

```
optr          GVI_guardian
```

Messages

```
MSG_GV_GET_WWFIXED_CENTER
MSG_GV_SET_GUARDIAN_LINK
MSG_GV_SET_VIS_BOUNDS
MSG_GV_GET_GROBJ_VIS_CLASS
MSG_GV_SET_REALIZED_AND_UPWARD_LINK
MSG_GV_CLEAR_REALIZED_AND_UPWARD_LINK
MSG_GV_GET_GUARDIAN
MSG_GV_GET_POTENTIAL_WARD_SIZE
```

GrObjVisGuardianClass

```
@class GrObjVisGuardianClass, GrObjClass
```

Instance Data

```
optr          GOVGI_ward
word          *GOVGI_class
GrObjVisGuardianFlags  GOVGI_flags
```

Types and Flags

```
ByteFlags    GrObjVisGuardianFlags
GOVGF_VIS_BOUNDS_HAVE_CHANGED      0x80
GOVGF_LARGE                        0x40
GOVGF_GUARDIAN_INITIATED_TRANSFORM 0x20
GOVGF_IGNORE_WARD_CHANGE_BOUNDS    0x10
GOVGF_APPLY_OBJECT_TO_VIS_TRANSFORM 0x08
GOVGF_CAN_EDIT_EXISTING_OBJECTS     0x04
GOVGF_CREATE_MODE                   0x03
```

Messages

```
MSG_GOVG_UPDATE_VIS_WARD_WITH_STORED_DATA
MSG_GOVG_CONVERT_LARGE_MOUSE_DATA
optr MSG_GOVG_CREATE_VIS_WARD(MemHandle wardBlock)
MSG_GOVG_ADD_VIS_WARD
MSG_GOVG_APPLY_OBJECT_TO_VIS_TRANSFORM
MSG_GOVG_CREATE_GSTATE
MSG_GOVG_VIS_BOUNDS_SETUP
MSG_GOVG_SET_VIS_WARD_MOUSE_EVENT_TYPE
MSG_GOVG_UPDATE_EDIT_GRAB_WITH_STORED_DATA
MSG_GOVG_NORMALIZE
MSG_GOVG_NOTIFY_VIS_WARD_CHANGE_BOUNDS
MSG_GOVG_GET_EDIT_CLASS
optr MSG_GOVG_GET_VIS_WARD_OD()
MSG_GOVG_GET_TRANSFER_BLOCK_FROM_VIS_WARD
MSG_GOVG_CREATE_WARD_WITH_TRANSFER
```

```
MSG_GOVG_SET_VIS_WARD_CLASS
MSG_GOVG_APPLY_SPRITE_OBJECT_TO_VIS_TRANSFORM
MSG_GOVG_CHECK_FOR_EDIT_WITH_FIRST_START_SELECT
MSG_GOVG_RULE_LARGE_START_SELECT_FOR_WARD
MSG_GOVG_RULE_LARGE_PTR_FOR_WARD
MSG_GOVG_RULE_LARGE_END_SELECT_FOR_WARD
```

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GroupClass

```
@class GroupClass, GrObjClass
```

Instance Data

```
CompPart      GI_drawHead
word           GI_suspendCount
GroupUnsuspendOps  GI_unsuspendOps
```

Types and Flags

```
ByteFlags      GroupUnsuspendOps
GUO_EXPAND      0x01
```

Messages

```
MSG_GROUP_ADD_GROBJ
MSG_GROUP_REMOVE_GROBJ
MSG_GROUP_CREATE_GSTATE
MSG_GROUP_PROCESS_ALL_GROBJS_SEND_CALL_BACK_MESSAGE
MSG_GROUP_INITIALIZE
MSG_GROUP_EXPAND
optr MSG_GROUP_INSTANTIATE_GROBJ(ClassStruct *class)
MSG_GROUP_SET_HAS_PASTE_INSIDE_CHILDREN
MSG_GROUP_PASTE_CALL_BACK_FOR_PASTE_INSIDE
MSG_GROUP_CREATE_GSTATE_FOR_BOUNDS_CALC
MSG_GROUP_VIS_TEXT_GENERATE_NOTIFY
MSG_GROUP_CHECK_FOR_GROBJ_TEXTS
```

GStringClass

```
@class GStringClass, GrObjClass
```

Instance Data

```
word           GSI_vmemBlockHandle
PointWWFixed    GSI_gstringCenterTrans
```

Messages

```
void MSG_GSO_SET_GSTRING()
```

HelpControlClass

```
@class HelpControlClass, GenControlClass
```

Instance Data

```
HelpType      HCI_helpType
MemHandle     HCI_curFile
MemHandle     HCI_historyBuf
word          HCI_nameArrayVM
GeodeHandle   HCI_compressLib
@default GII_attrs = (@default |
                      GIA_NOT_USER_INITIATABLE)
@default GII_visibility = GIV_DIALOG
```

Variable Data

```
void ATTR_HELP_SUPPRESS_INITIATE
char[] ATTR_HELP_INITIAL_HELP
optr ATTR_HELP_CUSTOM_POINTER_IMAGE
```

Hints

```
CompSizeHintArgs HINT_HELP_TEXT_FIXED_SIZE
```

Types and Flags

```
ByteEnum      HelpType
HT_NORMAL_HELP      0
HT_FIRST_AID        1
HT_STATUS_HELP      2
HT_SIMPLE_HELP      3
HT_SYSTEM_HELP      4

WordFlags     HPCFeatures
HPCF_HELP      0x0100
HPCF_TEXT      0x0080
HPCF_CONTENTS  0x0040
HPCF_HISTORY   0x0020
HPCF_GO_BACK   0x0010
HPCF_CLOSE     0x0008
HPCF_INSTRUCTIONS 0x0004
HPCF_FIRST_AID_GO_BACK 0x0002
HPCF_FIRST_AID  0x0001

MAX_CONTEXT_NAME_SIZE 20
typedef char ContextName[MAX_CONTEXT_NAME_SIZE]
```

Structures

```
typedef struct {
    HelpType      NHCC_type
    ContextName   NHCC_context
    FileLongName  NHCC_filename
    FileLongName  NHCC_filenameTOC
} NotifyHelpContextChange
```

Messages

```
MSG_HELP_CONTROL_FOLLOW_LINK
MSG_HELP_CONTROL_GET_POINTER_IMAGE
```

Routines

```
void HelpSendHelpNotification(
    word HelpType,
    const char *contextname,
    const char *filename)
```

ImpexMapControlClass

```
@class ImpexMapControlClass, GenControlClass
```

Instance Data

```
word          IMCI_dataBlock1
word          IMCI_dataBlock2
word          IMCI_childBlock
word          IMCI_mapListBlock
ImpexMapFlags IMCI_flags
```

Types and Flags

```
SOURCE          0
DESTINATION      1
ByteFlags       IMCFeatures
                IMCF_MAP                      0x01
IMC_DEFAULT_FEATURES (IMCF_MAP)
IMC_DEFAULT_TOOLBOX_FEATURES 0
IMC_MAP_MONIKER_SIZE 1024
ByteFlags       ImpexMapFlags
                IMF_IMPORT                      0x80
                IMF_EXPORT                      0x40
ByteEnum        DefaultFieldNameUsage
                DFNU_FIELD                      0
                DFNU_COLUMN                     1
                DFNU_FIXED                      2
```

Structures

```
typedef struct {
    LMemBlockHeader IMFIH_base
    word            IMFIH_fieldChunk
    word            IMFIH_numFields
    DefaultFieldNameUsage IMFIH_flag
} ImpexMapFileInfoHeader
typedef struct {
    LMemBlockHeader MLBH_base
    word            MLBH_numDestFields
    word            MLBH_chunk1
} MapListBlockHeader
typedef struct {
    word            CML_source
    word            CML_dest
} ChunkMapList
```

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ImportControlClass

```
@class ImportControlClass, ImportExportClass
```

Instance Data

```
ImportControlAttrs    ICI_attrs
ImpexDataClasses      ICI_dataClasses
optr                  ICI_destination
word                  ICI_message
```

Variable Data

```
optr ATTR_IMPORT_CONTROL_APP_UI
@reloc ATTR_IMPORT_CONTROL_APP_UI, 0, optr
optr ATTR_IMPORT_CONTROL_CANCEL_DESTINATION
@reloc ATTR_IMPORT_CONTROL_CANCEL_DESTINATION, 0, optr
word ATTR_IMPORT_CONTROL_CANCEL_MESSAGE
```

Types and Flags

```
WordFlags    ImportControlAttrs
ICA_IGNORE_INPUT    0x8000
ByteFlags    ImportControlFeatures
IMPORTCF_PREVIEW_TRIGGER    0x0020
IMPORTCF_IMPORT_TRIGGER    0x0010
IMPORTCF_FORMAT_OPTIONS    0x0008
IMPORTCF_FILE_MASK    0x0004
IMPORTCF_BASIC    0x0002
IMPORTCF_GLYPH    0x0001
IMPORTC_DEFAULT_FEATURES (IMPORTCF_GLYPH |
                          IMPORTCF_BASIC | IMPORTCF_FILE_MASK
                          | IMPORTCF_FORMAT_OPTIONS |
                          IMPORTCF_IMPORT_TRIGGER)
ByteFlags    ImportControlToolboxFeatures
IMPORTCTF_DIALOG_BOX    0x01
IMPORTC_DEFAULT_TOOLBOX_FEATURES (IMPORTCTF_DIALOG_BOX)
```

Structures

```
typedef struct {
    int    notUsed
    word    message
    optr    destOD
} ObjectState
```

Messages

```
void MSG_IMPORT_CONTROL_SET_DATA_CLASSES(
    ImpexDataClasses dataClasses)
ImpexDataClasses MSG_IMPORT_CONTROL_GET_DATA_CLASSES()
void MSG_IMPORT_CONTROL_SET_ACTION(
    optr destOD, word ICImsg)
void MSG_IMPORT_CONTROL_SET_MSG(word ECImsg)
void MSG_IMPORT_CONTROL_GET_ACTION(
    ObjectState *retValue)
void MSG_IMPORT_CONTROL_SET_ATTRS(
    ImportControlAttrs attrs)
ImportControlAttrs MSG_IMPORT_CONTROL_GET_ATTRS()
word MSG_IMPORT_CONTROL_GET_FILE_SELECTOR_OFFSET(
    ImportControlFeatures features)
word MSG_IMPORT_CONTROL_GET_FORMAT_LIST_OFFSET(
    ImportControlFeatures features)
word MSG_IMPORT_CONTROL_GET_FILE_MASK_OFFSET(
    ImportControlFeatures features)
```

```

        ImportControlFeatures features)
word MSG_IMPORT_CONTROL_GET_FORMAT_UI_PARENT_OFFSET(
        ImportControlFeatures features)
word MSG_IMPORT_CONTROL_GET_APP_UI_PARENT_OFFSET(
        ImportControlFeatures features)
word MSG_IMPORT_CONTROL_GET_IMPORT_TRIGGER_OFFSET(
        ImportControlFeatures features)
void MSG_IMPORT_CONTROL_IMPORT_COMPLETE(
        ImpexTranslationParams *itParams)

```

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ImportExportClass

```

@class ImportExportClass, GenControlClass,
                                master, variant

```

Instance Data

```

@default ImportExport = GenControlClass
@default GII_attrs = GIA_MODAL
@default GII_type = GIT_COMMAND
@default GII_visibility = GIV_DIALOG
@default GI_states = (GS_USABLE|GS_ENABLED)

```

Variable Data

```

TempImportExportData TEMP_IMPORT_EXPORT_DATA

```

Types and Flags

```

WordFlags    ImpexDataClasses
IDC_TEXT      0x8000
IDC_GRAPHICS  0x4000
IDC_SPREADSHEET 0x2000
IDC_FONT      0x1000
NUMBER_IMPEX_DATA_CLASSES 4
XLAT_TOKEN_TEXT_12 ( 'T' | ('L' << 8) )
XLAT_TOKEN_TEXT_34 ( 'T' | ('X' << 8) )
XLAT_TOKEN_GRAPHICS_12 ( 'T' | ('L' << 8) )
XLAT_TOKEN_GRAPHICS_34 ( 'G' | ('R' << 8) )
XLAT_TOKEN_SPREADSHEET_12 ( 'T' | ('L' << 8) )
XLAT_TOKEN_SPREADSHEET_34 ( 'S' | ('S' << 8) )
XLAT_TOKEN_FONT_12 ( 'T' | ('L' << 8) )
XLAT_TOKEN_FONT_34 ( 'F' | ('N' << 8) )

```

Structures

```

typedef struct {
    FileLongName      IFSD_selection
    PathName          IFSD_path
    word              IFSD_disk
    GenFileSelectorEntryFlags IFSD_type
} ImpexFileSelectionData
typedef struct {
    optr      TIED_formatUI
    Handle     TIED_formatLibrary
} TempImportExportData

```

InkClass

```
@class InkClass, VisClass
```

Instance Data

```
InkFlags      II_flags = IF_HAS_UNDO
InkTool       II_tool = 0
Color         II_penColor = 0
MemHandle     II_segments = NullHandle
optr          II_dirtyAD = NullOptr
Message       II_dirtyMsg
Rectangle     II_selectBounds
GStateHandle  II_cachedGState
TimerHandle   II_antTimer
word          II_antTimerID
byte          II_antMask
```

Variable Data

```
InkStrokeSize ATTR_INK_STROKE_SIZE
```

Types and Flags

```
WordFlags      InkFlags
IF_MOUSE_FLAGS      0x8000
IF_SELECTING        0x4000
IF_HAS_TARGET       0x2000
IF_HAS_SYS_TARGET   0x1000
IF_DIRTY            0x0800
IF_ONLY_CHILD_OF_CONTENT 0x0400
IF_CONTROLLED       0x0200
IF_INVALIDATE_ERASURES 0x0100
IF_HAS_UNDO         0x0080

typedef enum /* word */ {
    IT_PENCIL = 0,
    IT_ERASER = 2,
    IT_SELECTOR = 4
} InkTool
```

Structures

```
typedef struct {
    Rectangle      IDBF_bounds
    VMFileHandle   IDBF_VMFile
    DBGroupAndItem IDBF_DBGroupAndItem
    word           IDBF_DBExtra
} InkDBFrame
typedef struct {
    word           DBR_group
    word           DBR_item
    word           unused1
    word           unused2
} DBReturn
typedef struct {
    byte           ISS_width
    byte           ISS_height
} InkStrokeSize
```

Messages

```
void MSG_INK_SAVE_TO_DB_ITEM(
    DBReturn *RetVal, InkDBFrame *ptr)
void MSG_INK_LOAD_FROM_DB_ITEM(InkDBFrame *ptr)
```

```

void MSG_INK_UNDO()
void MSG_INK_SET_TOOL(InkTool tool)
InkTool MSG_INK_GET_TOOL()
void MSG_INK_SET_PEN_COLOR(Color clr)
void MSG_INK_SET_DIRTY_AD(word method, optr object)
void MSG_INK_SET_FLAGS(InkFlags setflags,
                       InkFlags clearflags)
InkFlags MSG_INK_GET_FLAGS()
void MSG_INK_SET_STROKE_SIZE(byte width, byte height)

```

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Related Routines

```

void _pascal InkDBInit(VMFileHandle fh)
dword _pascal InkDBGetHeadFolder(VMFileHandle fh)
void _pascal InkDBGetDisplayInfo(
    InkDBDisplayInfo *RetVal,
    VMFileHandle fh)
void _pascal InkDBSetDisplayInfo(VMFileHandle fh,
    dword ofh, dword note, word page)
void _pascal InkSetDocPageInfo(PageSizeReport *psr,
    VMFileHandle fh)
void _pascal InkGetDocPageInfo(PageSizeReport *psr,
    VMFileHandle fh)
void _pascal InkSetDocGString(VMFileHandle dbfh,
    word type)
word _pascal InkGetDocGString(VMFileHandle dbfh)
void _pascal InkSetDocCustomGString(VMFileHandle dbfh,
    Handle gh)
Handle _pascal InkGetDocCustomGString(VMFileHandle dbfh)
void _pascal InkSetTitleToTextObject(dword tag,
    VMFileHandle fh, optr to)
word _pascal InkGetTitle(dword tag, VMFileHandle fh,
    char *dest)
dword _pascal InkGetParentFolder(dword tag,
    VMFileHandle fh)
void _pascal InkFolderSetTitleFromTextObject(dword fldr,
    VMFileHandle fh, optr text)
void _pascal InkNoteSetTitleFromTextObject(dword note,
    VMFileHandle fh, optr text)
dword _pascal InkFolderGetContents(dword tag,
    VMFileHandle fh,
    DBGGroupAndItem *subFolders)
dword _pascal InkFolderGetNumChildren(dword fldr,
    VMFileHandle fh)
void _pascal InkFolderDisplayChildInList(dword fldr,
    VMFileHandle fh, optr list,
    word entry, Boolean displayFolders)
Boolean _pascal InkFolderGetChildInfo(dword fldr,
    VMFileHandle fh, word child,
    dword *childID)
word _pascal InkFolderGetChildNumber(dword fldr,
    VMFileHandle fh, dword note)
dword _pascal InkFolderCreateSubFolder(dword tag,
    VMFileHandle fh)
void _pascal InkFolderMove(dword fldr, dword pfldr)
void _pascal InkFolderDelete(dword tag, VMFileHandle fh)
word _pascal InkFolderDepthFirstTraverse(dword rfldr,
    VMFileHandle fh,

```

```

        PCB(Boolean, callback, (dword fldr,
                                VMFileHandle fh, word *info)),
        word *info)
dword _pascal InkNoteCreate(dword tag, VMFileHandle fh)
void _pascal InkNoteCopyMoniker(dword title, optr list,
                                word type, word entry)
dword _pascal InkNoteGetPages(dword tag,
                              VMFileHandle fh)
word _pascal InkNoteGetNumPages(dword item)
word _pascal InkNoteCreatePage(dword tag,
                              VMFileHandle fh, word page)
void _pascal InkNoteLoadPage(dword tag, VMFileHandle fh,
                             word page, optr obj, word type)
void _pascal InkNoteSavePage(dword tag, VMFileHandle fh,
                             word page, optr obj, word type)
void _pascal InkNoteSetKeywordsFromTextObject(dword tag,
        VMFileHandle fh, optr text)
void _pascal InkNoteSetKeywords(dword tag,
        VMFileHandle fh, const char *text)
word _pascal InkNoteGetKeywords(dword tag,
        VMFileHandle fh, char *text)
void _pascal InkNoteSendKeywordsToTextObject(dword tag,
        VMFileHandle fh, optr text)
void _pascal InkNoteDelete(dword tag, VMFileHandle fh)
void _pascal InkNoteMove(dword tag, dword pfolder,
        VMFileHandle fh)
void _pascal InkNoteSetModificationDate(word tdft1,
        word tdft2, dword note,
        VMFileHandle fh)
dword _pascal InkNoteGetModificationDate(dword note,
        VMFileHandle fh)
dword _pascal InkNoteGetCreationDate(dword note,
        VMFileHandle fh)
NoteType _pascal InkNoteGetNoteType(dword note,
        VMFileHandle fh)
void _pascal InkNoteSetNoteType(dword note,
        VMFileHandle fh, NoteType nt)
word _pascal InkNoteFindByTitle(char *string, byte opt,
        Boolean body, VMFileHandle fh)
word _pascal InkNoteFindByKeywords(VMFileHandle fh,
        const char *strings, word opt)

```

InkControlClass

```
@class InkControlClass, GenControlClass
```

Instance Data

```
@default GCI_output = TO_APP_TARGET
```

Types and Flags

```
ByteFlags      InkControlFeatures
    ICF_PENCIL_TOOL          0x04
    ICF_ERASER_TOOL          0x02
    ICF_SELECTION_TOOL       0x01
ByteFlags      InkControlToolboxFeatures
    ICTF_PENCIL_TOOL         0x04
    ICTF_ERASER_TOOL         0x02
    ICTF_SELECTION_TOOL      0x01
IC_DEFAULT_FEATURES      (ICF_PENCIL_TOOL |
    ICF_ERASER_TOOL | ICF_SELECTION_TOOL)
IC_DEFAULT_TOOLBOX_FEATURES (ICTF_PENCIL_TOOL |
    ICTF_ERASER_TOOL | ICTF_SELECTION_TOOL)
```

Structures

```
typedef struct {
    optr      NIHT_optr
} NotifyInkHasTarget
```

Messages

```
void MSG_IC_SET_TOOL_FROM_LIST()
```

LineClass

```
@class LineClass, GrObjClass
```



MetaClass

```
@class MetaClass, meta
```

Instance Data

```
MetaBase      MI_base
```

Variable Data

```
TempMetaGCNData TEMP_META_GCN
ChunkHandle TEMP_META_QUIT_LIST
DetachDataEntry DETACH_DATA
word TEMP_EC_IN_USE_COUNT
word TEMP_EC_INTERACTIBLE_COUNT
```

Types and Flags

```
PTR_LEAVE_LEFT      0x01
PTR_LEAVE_TOP       0x02
PTR_LEAVE_RIGHT     0x04
PTR_LEAVE_BOTTOM    0x08
typedef enum /* word */ {
    QL_BEFORE_UI,
    QL_UI,
    QL_AFTER_UI,
    QL_DETACH,
    QL_AFTER_DETACH
} QuitLevel
typedef enum {
    TO_NULL,
    TO_SELF,
    TO_OBJ_BLOCK_OUTPUT,
    TO_PROCESS
} TravelOption
WordFlags GCNListTypeFlags
    GCNLTF_SAVE_TO_STATE      0x8000
ByteFlags TempMetaGCNFlags
    TMGCNF_RELOCATED         0x80
WordFlags GCNListSendFlags
    GCNLSF_SET_STATUS        0x8000
    GCNLSF_IGNORE_IF_STATUS_TRANSITIONING 0x4000
    GCNLSF_FORCE_QUEUE       0x2000
INI_CATEGORY_BUFFER_SIZE 64
typedef enum {
    OFIQNS_SYSTEM_INPUT_OBJ=0,
    OFIQNS_INPUT_OBJ_OF_OWNING_GEODE=2,
    OFIQNS_PROCESS_OF_OWNING_GEODE=4,
    OFIQNS_DISPATCH=6
} ObjFlushInputQueueNextStop
WordFlags UpdateWindowFlags
    UWF_ATTACHING            0x8000
    UWF_DETACHING            0x4000
    UWF_RESTOREING_FROM_STATE 0x2000
    UWF_TOP_LEVEL_WINDOW     0x1000
WordFlags CompChildFlags
    CCF_MARK_DIRTY           0x8000
    CCF_REFERENCE            0x7fff
    CCO_FIRST                0x0000
    CCO_LAST                 0x7FFF
CCF_REFERENCE_OFFSET 0
```

```

ByteEnum      InsertChildOption
    ICO_FIRST          0
    ICO_LAST           1
    ICO_BEFORE_REFERENCE 2
    ICO_AFTER_REFERENCE 3
WordFlags      InsertChildFlags
    ICF_MARK_DIRTY     0x8000
    ICF_OPTIONS         0x0003
typedef enum /* word */ {
    OCCT_SAVE_PARAMS_TEST_ABORT=0,
    OCCT_SAVE_PARAMS_DONT_TEST_ABORT=2,
    OCCT_DONT_SAVE_PARAMS_TEST_ABORT=4,
    OCCT_DONT_SAVE_PARAMS_DONT_TEST_ABORT=6,
    OCCT_ABORT_AFTER_FIRST=8,
    OCCT_COUNT_CHILDREN=10
} ObjCompCallType

```

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Structures

```

typedef struct {
    ClassStruct      *MB_class
} MetaBase
typedef struct {
    word             ax
    word             cx
    word             dx
    word             bp
} AsmPassReturn
typedef struct {
    ClassStruct *
    optr             GTP_class
                    GTP_target
} GetTargetParams
typedef struct {
    ManufacturerID   NT_manuf
    word             NT_type
} NotificationType
typedef struct {
    word             GCNLT_manuf
    word             GCNLT_type
} GCNListType
typedef struct {
    optr             GCNLE_item
} GCNListElement
typedef struct {
    ChunkArrayHeader GCNLH_meta
    word             GCNLH_statusEvent
    MemHandle        GCNLH_statusData
    word             GCNLH_statusCount
} GCNListHeader
typedef struct {
    GCNListType      GCNLOLE_ID
    ChunkHandle      GCNLOLE_list
} GCNListOfListsElement
typedef struct {
    ChunkArrayHeader GCNLOL_meta
} GCNListOfListsHeader
typedef struct {
    ChunkHandle      TMGCND_listOfLists
}

```

```

        TempMetaGCNFlags      TMGCND_flags
    } TempMetaGCNData
typedef struct {
    GCNListType                GCNLP_ID
    optr                        GCNLP_optr
} GCNListParams
typedef struct {
    word                        DDE_ackCount
    word                        DDE_callerID
    optr                        DDE_ackOD
    word                        DDE_completeMsg
} DetachDataEntry
typedef struct {
    optr                        LP_next
} LinkPart
typedef struct {
    optr                        CP_firstChild
} CompPart

```

Messages

```

void MSG_META_NULL()
void MSG_META_INITIALIZE()
void MSG_META_DUMMY()
void MSG_META_APP_STARTUP(MemHandle appLaunchBlock)
void MSG_META_ATTACH()
@alias(MSG_META_ATTACH) void MSG_META_ATTACH_PROCESS(
    word value1, word value2)
@alias(MSG_META_ATTACH) void
    MSG_META_ATTACH_GENPROCESSCLASS(
        MemHandle appLaunchBlock)
@alias(MSG_META_ATTACH) void MSG_META_ATTACH_OBJECT(
    word flags,
    MemHandle appLaunchBlock,
    MemHandle extraState)
@alias(MSG_META_ATTACH) void MSG_META_ATTACH_THREAD()
void MSG_META_DETACH(word callerID, optr caller)
void MSG_META_DETACH_COMPLETE()
void MSG_META_DETACH_ABORT()
void MSG_META_ACK(word callerID, optr caller)
void MSG_META_APP_SHUTDOWN(word callerID, optr ackOD)
void MSG_META_SHUTDOWN_COMPLETE()
void MSG_META_SHUTDOWN_ACK(word callerID, optr ackOD)
ClassStruct * MSG_META_GET_CLASS()
Boolean MSG_META_IS_OBJECT_IN_CLASS(ClassStruct *class)
void MSG_META_BLOCK_FREE()
void MSG_META_OBJ_FREE()
ClassStruct * MSG_META_RESOLVE_VARIANT_SUPERCLASS(
    word MasterOffset)
Boolean MSG_META_RELOCATE(word vmRelocType, word frame)
Boolean MSG_META_UNRELOCATE(word vmRelocType,
    word frame)
void MSG_META_SET_FLAGS(ChunkHandle objChunk,
    ObjChunkFlags bitsToSet,
    ObjChunkFlags bitsToClear)
word MSG_META_GET_FLAGS(ChunkHandle ch)
void MSG_META_VM_FILE_DIRTY(FileHandle file)
void MSG_META_QUIT()

```

```

@alias(MSG_META_QUIT) void MSG_META_QUIT_PROCESS(
    word quitLevel,
    ChunkHandle ackODChunk)
@alias(MSG_META_QUIT) void MSG_META_QUIT_OBJECT(
    optr obj)
void MSG_META_QUIT_ACK(word quitLevel, word abortFlag)
Boolean MSG_META_DISPATCH_EVENT(AsmPassReturn *retVals,
    EventHandle eventHandle,
    MessageFlags msgFlags)

void MSG_META_SEND_CLASSSED_EVENT(
    EventHandle event,
    TravelOption whereTo)
optr MSG_META_GET_OPTR()
void MSG_META_GET_TARGET_AT_TARGET_LEVEL(
    GetTargetParams *retValue,
    TargetLevel level)
void MSG_META_ADD_VAR_DATA(@stack
    word dataType, word dataSize,
    void *data)
Boolean MSG_META_DELETE_VAR_DATA(word dataType)
word MSG_META_INITIALIZE_VAR_DATA(word dataType)
void MSG_META_NOTIFY(ManufacturerID manufID,
    word notificationType, word data)
void MSG_META_NOTIFY_WITH_DATA_BLOCK(
    ManufacturerID manufID,
    word notificationType,
    MemHandle data)
Boolean MSG_META_GCN_LIST_ADD(@stack
    optr dest, word listType,
    ManufacturerID listManuf)
Boolean MSG_META_GCN_LIST_REMOVE(@stack
    optr dest, word listType,
    ManufacturerID listManuf)
void MSG_META_GCN_LIST_SEND(@stack
    GCNListSendFlags flags,
    EventHandle event, MemHandle block,
    word listType,
    ManufacturerID listManuf)
void MSG_META_GCN_LIST_DESTROY()
void MSG_META_SAVE_OPTIONS()
void MSG_META_GET_INI_CATEGORY(char *buf)
void MSG_META_SUSPEND()
void MSG_META_UNsuspend()
void MSG_META_LOAD_OPTIONS()
void MSG_META_GET_VAR_DATA(@stack
    word dataType, word bufSize,
    void *buf)
void MSG_META_NOTIFY_OBJ_BLOCK_INTERACTIBLE(
    MemHandle objBlock)
void MSG_META_NOTIFY_OBJ_BLOCK_NOT_INTERACTIBLE(
    MemHandle objBlock)
void MSG_META_OBJ_FLUSH_INPUT_QUEUE(
    EventHandle event,
    ObjFlushInputQueueNextStop nextStop,
    MemHandle objBlock)
void MSG_META_WIN_DEC_REF_COUNT(MemHandle win)
void MSG_META_UPDATE_WINDOW(

```

```

        UpdateWindowFlags updateFlags,
        VisUpdateMode updateMode)
void MSG_META_FINISH_QUIT(Boolean abortFlag)
void MSG_META_FINISH_QUIT(Boolean abortFlag)
void MSG_META_SET_OBJ_BLOCK_OUTPUT(optr output)
void MSG_META_GET_HELP_FILE(char *buf)
void MSG_META_GET_HELP_TYPE (byte helpType)
optr MSG_META_GET_OBJ_BLOCK_OUTPUT()
void MSG_META_RESET_OPTIONS()
void MSG_META_BRING_UP_HELP()
void MSG_META_SET_HELP_FILE(char *buf)
Boolean MSG_META_GCN_LIST_FIND_ITEM(@stack optr dest,
        word listType,
        ManufacturerID listManuf)
void MSG_META_TRANSPARENT_DETACH()

```

Window Messages

```

@exportMessages MetaWindowMessages,
        DEFAULT_EXPORTED_MESSAGES
void MSG_META_EXPOSED(WindowHandle win)
void MSG_META_EXPOSED_FOR_PRINT(
        GStringHandle gstring,
        optr completionOD)
MSG_META_WIN_UPDATE_COMPLETE
MSG_META_WIN_CHANGE
MSG_META IMPLIED_WIN_CHANGE
MSG_META_RAW_UNIV_ENTER
MSG_META_RAW_UNIV_LEAVE
MSG_META_INVALID_TREE
MSG_META_INVALID_BOUNDS

```

Input Messages

```

@exportMessages MetaInputMessages,
        DEFAULT_EXPORTED_MESSAGES
void MSG_META_MOUSE_BUTTON(word xPosition,
        word yPosition, word inputState)
void MSG_META_MOUSE_PTR(word xPosition, word yPosition,
        word inputState)
@alias (MSG_META_MOUSE_PTR) void MSG_META_PTR(
        MouseReturnParams *retVal,
        sword xPosition, sword yPosition,
        word inputState)
void MSG_META_KBD_CHAR(word character, word flags,
        word state)
MSG_META_PRESSURE
MSG_META_DIRECTION
MSG_META_MOUSE_TIMER
void MSG_META_DRAG(word xPosition, word yPosition,
        word inputState)

```

UI Messages

```

@exportMessages MetaUIMessages,
        DEFAULT_EXPORTED_MESSAGES_4
void MSG_META_CLIPBOARD_NOTIFY_QUICK_TRANSFER_FEEDBACK(
        QuickTransferCursor quickTransferCursor)
void
        MSG_META_CLIPBOARD_NOTIFY_QUICK_TRANSFER_CONCLUDED(
        ClipboardQuickNotifyFlags flags)

```

```

void MSG_META_CLIPBOARD_CUT()
void MSG_META_CLIPBOARD_COPY()
void MSG_META_CLIPBOARD_PASTE()
void MSG_META_UNDO(UndoActionStruct *undoData)
void MSG_META_UNDO_FREEING_ACTION(
    AddUndoActionStruct *data)
void MSG_META_SELECT_ALL()
void MSG_META_DELETE()
void MSG_META_CLIPBOARD_NOTIFY_TRANSFER_ITEM_FREED(
    VMFileHandle itemFile,
    VMBlockHandle itemBlock)
void
MSG_META_CLIPBOARD_NOTIFY_NORMAL_TRANSFER_ITEM_CHANGED(
)
void MSG_META_CONTENT_SET_VIEW(optr view)
void MSG_META_CONTENT_VIEW_OPENING(optr view)
void MSG_META_CONTENT_VIEW_CLOSING()
void MSG_META_CONTENT_VIEW_WIN_OPENED(
    word viewWidth, word viewHeight,
    WindowHandle viewWindow)
void MSG_META_CONTENT_VIEW_WIN_CLOSED(
    WindowHandle viewWindow)
void MSG_META_CONTENT_VIEW_ORIGIN_CHANGED(@stack
    WindowHandle viewWindow,
    sdword xOrigin, sdword yOrigin)
void MSG_META_CONTENT_VIEW_SCALE_FACTOR_CHANGED(@stack
    WindowHandle viewWindow,
    WWFixedAsDWord yScaleFactor,
    WWFixedAsDWord xScaleFactor)
void MSG_META_CONTENT_VIEW_SIZE_CHANGED(
    word viewWidth, word viewHeight,
    WindowHandle viewWindow)
void MSG_META_CONTENT_TRACK_SCROLLING(
    TrackScrollingParams *args)
void MSG_META_CONTENT_VIEW_LOST_GADGET_EXCL(
    WindowHandle viewWindow)
void MSG_META_CONTENT_NAVIGATION_QUERY(
    optr queryOrigin, word navFlags,
    NavigationQueryParams *retValue)
void MSG_META_CONTENT_APPLY_DEFAULT_FOCUS()
void MSG_META_CONTENT_ENTER(optr view)
void MSG_META_CONTENT_LEAVE(optr view)
Boolean MSG_META_DOC_OUTPUT_INITIALIZE_DOCUMENT_FILE(
    optr document, FileHandle file)
void MSG_META_DOC_OUTPUT_CREATE_UI_FOR_DOCUMENT(
    optr document, FileHandle file)
void MSG_META_DOC_OUTPUT_DESTROY_UI_FOR_DOCUMENT(
    optr document, FileHandle file)
void MSG_META_DOC_OUTPUT_ATTACH_UI_TO_DOCUMENT(
    optr document, FileHandle file)
void MSG_META_DOC_OUTPUT_DETACH_UI_FROM_DOCUMENT(
    optr document, FileHandle file)
void MSG_META_DOC_OUTPUT_READ_CACHED_DATA_FROM_FILE(
    optr document, FileHandle file)
void MSG_META_DOC_OUTPUT_WRITE_CACHED_DATA_TO_FILE(
    optr document, FileHandle file)
void MSG_META_DOC_OUTPUT_DOCUMENT_HAS_CHANGED(

```

```

        optr document, FileHandle file)
void MSG_META_DOC_OUTPUT_PHYSICAL_SAVE(
    word *error, optr document,
    FileHandle file)
Boolean MSG_META_DOC_OUTPUT_PHYSICAL_UPDATE(word *error,
    optr document, FileHandle file)
void MSG_META_DOC_OUTPUT_PHYSICAL_SAVE_AS_FILE_HANDLE(
    word *error, optr document,
    FileHandle file)
void MSG_META_DOC_OUTPUT_PHYSICAL_REVERT(
    word *error, optr document,
    FileHandle file)

Boolean
MSG_META_DOC_OUTPUT_UPDATE_EARLIER_COMPATIBLE_DOCUMENT(
    word *error, optr document,
    FileHandle file)

Boolean
MSG_META_DOC_OUTPUT_UPDATE_EARLIER_INCOMPATIBLE_DOCUMENT(
    word *error, optr document,
    FileHandle file)

void MSG_META_DOC_OUTPUT_SAVE_AS_COMPLETED(
    optr document, FileHandle file)
void MSG_META_DOC_OUTPUT_ATTACH_FAILED(
    optr document, FileHandle file)
void MSG_META_UI_FORCE_CONTROLLER_UPDATE(
    ManufacturerID manufID,
    word changeID)
Boolean MSG_META_GEN_PATH_RESTORE_DISK_PROMPT(
    GenPathDiskRestoreArgs *args,
    DiskRestoreError *error)
void MSG_META_PAGED_OBJECT_GOTO_PAGE(word page)
void MSG_META_PAGED_OBJECT_NEXT_PAGE()
void MSG_META_PAGED_OBJECT_PREVIOUS_PAGE()
void MSG_META_NOTIFY_TASK_SELECTED()
void MSG_META_GAINED_MOUSE_EXCL()
void MSG_META_LOST_MOUSE_EXCL()
void MSG_META_GAINED_KBD_EXCL()
void MSG_META_LOST_KBD_EXCL()
void MSG_META_GAINED_PRESSURE_EXCL()
void MSG_META_LOST_PRESSURE_EXCL()
void MSG_META_GAINED_DIRECTION_EXCL()
void MSG_META_LOST_DIRECTION_EXCL()
void MSG_META_GRAB_FOCUS_EXCL()
void MSG_META_RELEASE_FOCUS_EXCL()
Boolean MSG_META_GET_FOCUS_EXCL(optr *focusObject)
void MSG_META_GRAB_TARGET_EXCL()
void MSG_META_RELEASE_TARGET_EXCL()
Boolean MSG_META_GET_TARGET_EXCL(optr *targetObject)
void MSG_META_GRAB_MODEL_EXCL()
void MSG_META_RELEASE_MODEL_EXCL()
Boolean MSG_META_GET_MODEL_EXCL(optr *targetObj)
void MSG_META_RELEASE_FT_EXCL()
void MSG_META_MUP_ALTER_FTVMC_EXCL(
    optr objectWantingControl,
    MetaAlterFTVMCExclFlags flags)
void MSG_META_GAINED_FOCUS_EXCL()

```

```

void MSG_META_LOST_FOCUS_EXCL()
void MSG_META_GAINED_SYS_FOCUS_EXCL()
void MSG_META_LOST_SYS_FOCUS_EXCL()
void MSG_META_GAINED_TARGET_EXCL()
void MSG_META_LOST_TARGET_EXCL()
void MSG_META_GAINED_SYS_TARGET_EXCL()
void MSG_META_LOST_SYS_TARGET_EXCL()
void MSG_META_GAINED_MODEL_EXCL()
void MSG_META_LOST_MODEL_EXCL()
void MSG_META_GAINED_SYS_MODEL_EXCL()
void MSG_META_LOST_SYS_MODEL_EXCL()
void MSG_META_GAINED_DEFAULT_EXCL()
void MSG_META_LOST_DEFAULT_EXCL()
void MSG_META_MOUSE_BUMP_NOTIFICATION(
    sword xBump, sword yBump)
Boolean MSG_META_FUP_KBD_CHAR(word character,
    word flags, word state)
KbdReturnFlags MSG_META_PRE_PASSIVE_KBD_CHAR(
    word character, word flags,
    word state)
KbdReturnFlags MSG_META_POST_PASSIVE_KBD_CHAR(
    word character, word flags,
    word state)
void MSG_META_QUERY_IF_PRESS_IS_INK(
    InkReturnParams *retVal,
    sword xPosition, sword yPosition)
void MSG_META_LARGE_QUERY_IF_PRESS_IS_INK(
    InkReturnParams *retVal,
    LargeMouseData *largeMouseDataStruct)
void MSG_META_START_SELECT(
    MouseReturnParams *retVal,
    sword xPosition, sword yPosition,
    word inputState)
void MSG_META_END_SELECT(
    MouseReturnParams *retVal,
    sword xPosition, sword yPosition,
    word inputState)
void MSG_META_START_MOVE_COPY(
    MouseReturnParams *retVal,
    sword xPosition, sword yPosition,
    word inputState)
void MSG_META_END_MOVE_COPY(
    MouseReturnParams *retVal,
    sword xPosition, sword yPosition,
    word inputState)
void MSG_META_START_FEATURES(
    MouseReturnParams *retVal,
    sword xPosition, sword yPosition,
    word inputState)
void MSG_META_END_FEATURES(
    MouseReturnParams *retVal,
    sword xPosition, sword yPosition,
    word inputState)
void MSG_META_START_OTHER(
    MouseReturnParams *retVal,
    sword xPosition, sword yPosition,
    word inputState)

```





```
void MSG_META_END_OTHER(
    MouseReturnParams *retVal,
    sword xPosition, sword yPosition,
    word inputState)
void MSG_META_DRAG_SELECT(
    MouseReturnParams *retVal,
    sword xPosition, sword yPosition,
    word inputState)
void MSG_META_DRAG_MOVE_COPY(
    MouseReturnParams *retVal,
    sword xPosition, sword yPosition,
    word inputState)
void MSG_META_DRAG_FEATURES(
    MouseReturnParams *retVal,
    sword xPosition, sword yPosition,
    word inputState)
void MSG_META_DRAG_OTHER(
    MouseReturnParams *retVal,
    sword xPosition, sword yPosition,
    word inputState)
void MSG_META_PRE_PASSIVE_BUTTON(
    MouseReturnParams *retVal,
    sword xPosition, sword yPosition,
    word inputState)
void MSG_META_POST_PASSIVE_BUTTON(
    MouseReturnParams *retVal,
    sword xPosition, sword yPosition,
    word inputState)
void MSG_META_PRE_PASSIVE_START_SELECT(
    MouseReturnParams *retVal,
    sword xPosition, sword yPosition,
    word inputState)
void MSG_META_PRE_PASSIVE_END_SELECT(
    MouseReturnParams *retVal,
    sword xPosition, sword yPosition,
    word inputState)
void MSG_META_PRE_PASSIVE_START_MOVE_COPY(
    MouseReturnParams *retVal,
    sword xPosition, sword yPosition,
    word inputState)
void MSG_META_PRE_PASSIVE_END_MOVE_COPY(
    MouseReturnParams *retVal,
    sword xPosition, sword yPosition,
    word inputState)
void MSG_META_PRE_PASSIVE_START_FEATURES(
    MouseReturnParams *retVal,
    sword xPosition, sword yPosition,
    word inputState)
void MSG_META_PRE_PASSIVE_END_FEATURES(
    MouseReturnParams *retVal,
    sword xPosition, sword yPosition,
    word inputState)
void MSG_META_PRE_PASSIVE_START_OTHER(
    MouseReturnParams *retVal,
    sword xPosition, sword yPosition,
    word inputState)
void MSG_META_PRE_PASSIVE_END_OTHER(
```

```

        MouseReturnParams *retVal,
        sword xPosition, sword yPosition,
        word inputState)
void MSG_META_POST_PASSIVE_START_SELECT(
        MouseReturnParams *retVal,
        sword xPosition, sword yPosition,
        word inputState)
void MSG_META_POST_PASSIVE_END_SELECT(
        MouseReturnParams *retVal,
        sword xPosition, sword yPosition,
        word inputState)
void MSG_META_POST_PASSIVE_START_MOVE_COPY(
        MouseReturnParams *retVal,
        sword xPosition, sword yPosition,
        word inputState)
void MSG_META_POST_PASSIVE_END_MOVE_COPY(
        MouseReturnParams *retVal,
        sword xPosition, sword yPosition,
        word inputState)
void MSG_META_POST_PASSIVE_START_FEATURES(
        MouseReturnParams *retVal,
        sword xPosition, sword yPosition,
        word inputState)
void MSG_META_POST_PASSIVE_END_FEATURES(
        MouseReturnParams *retVal,
        sword xPosition, sword yPosition,
        word inputState)
void MSG_META_POST_PASSIVE_START_OTHER(
        MouseReturnParams *retVal,
        sword xPosition, sword yPosition,
        word inputState)
void MSG_META_POST_PASSIVE_END_OTHER(
        MouseReturnParams *retVal,
        sword xPosition, sword yPosition,
        word inputState)
void MSG_META_LARGE_PTR(
        MouseReturnParams *retVal,
        LargeMouseData *largeMouseDataStruct)
void MSG_META_LARGE_START_SELECT(
        MouseReturnParams *retVal,
        LargeMouseData *largeMouseDataStruct)
void MSG_META_LARGE_END_SELECT(
        MouseReturnParams *retVal,
        LargeMouseData *largeMouseDataStruct)
void MSG_META_LARGE_START_MOVE_COPY(
        MouseReturnParams *retVal,
        LargeMouseData *largeMouseDataStruct)
void MSG_META_LARGE_END_MOVE_COPY(
        MouseReturnParams *retVal,
        LargeMouseData *largeMouseDataStruct)
void MSG_META_LARGE_START_FEATURES(
        MouseReturnParams *retVal,
        LargeMouseData *largeMouseDataStruct)
void MSG_META_LARGE_END_FEATURES(
        MouseReturnParams *retVal,
        LargeMouseData *largeMouseDataStruct)
void MSG_META_LARGE_START_OTHER(

```



```

        MouseReturnParams *retVal,
        LargeMouseData *largeMouseDataStruct)
void MSG_META_LARGE_END_OTHER(
        MouseReturnParams *retVal,
        LargeMouseData *largeMouseDataStruct)
void MSG_META_LARGE_DRAG_SELECT(
        MouseReturnParams *retVal,
        LargeMouseData *largeMouseDataStruct)
void MSG_META_LARGE_DRAG_MOVE_COPY(
        MouseReturnParams *retVal,
        LargeMouseData *largeMouseDataStruct)
void MSG_META_LARGE_DRAG_FEATURES(
        MouseReturnParams *retVal,
        LargeMouseData *largeMouseDataStruct)
void MSG_META_LARGE_DRAG_OTHER(
        MouseReturnParams *retVal,
        LargeMouseData *largeMouseDataStruct)
MouseReturnFlags
MSG_META_ENSURE_MOUSE_NOT_ACTIVELY_TRESPASSING()
MouseReturnFlags
MSG_META_ENSURE_NO_MENUS_IN_STAY_UP_MODE()
void MSG_META_ENSURE_ACTIVE_FT()
void MSG_META_NOTIFY_NO_FOCUS_WITHIN_NODE()
void MSG_META_DOC_OUTPUT_IMPORT_FILE()
void MSG_META_DOC_OUTPUT_EXPORT_FILE()
void MSG_META_GRAB_KBD()
void MSG_META_FORCE_GRAB_KBD()
void MSG_META_RELEASE_KBD()
void MSG_META_VIEW_COMMAND_CHANGE_SCALE()
void MSG_META_FIELD_NOTIFY_DETACH(optr field,
        word shutdownFlag)
void MSG_META_FIELD_NOTIFY_NO_FOCUS(optr field,
        word shutdownFlag)
void MSG_META_FIELD_NOTIFY_START_LAUNCHER_ERROR(
        optr field)
void MSG_META_DELETE_RANGE_OF_CHARS(@stack
        VisTextRange rangeToDelete)
Boolean MSG_META_TEST_WIN_INTERACTIBILITY(optr inputOD,
        WindowHandle window)
Boolean MSG_META_CHECK_IF_INTERACTABLE_OBJECT(optr obj)

```

Application Messages

```

@exportMessages MetaApplicationMessages,
        DEFAULT_EXPORTED_MESSAGES_3

```

GrObj Messages

```

@exportMessages MetaGrObjMessages,
        DEFAULT_EXPORTED_MESSAGES
MSG_GROBJ_ACTION_NOTIFICATION

```

Printing Messages

```

@exportMessages MetaPrintMessages,
        DEFAULT_EXPORTED_MESSAGES
void MSG_PRINT_VERIFY_PRINT_REQUEST(optr printCtrlOD)
void MSG_PRINT_START_PRINTING(optr printCtrlOD,
        GStateHandle gstate)
void MSG_PRINT_GET_DOC_NAME(optr printCtrlOD)
void MSG_PRINT_NOTIFY_PRINT_DB(optr printCtrlOD,

```

```

        PrintControlStatus pcs)
void MSG_PRINT_NOTIFY_PRINT_JOB_CREATED(word jobId)
void MSG_PRINT_REPORT_PAGE_SIZE(PageSizeReport *psr)
void MSG_PRINTING_GET_DOC_NAME()
void MSG_PRINTING_COMPLETED()

```

Search/Spell Messages

```

@exportMessages MetaSearchSpellMessages,
    DEFAULT_EXPORTED_MESSAGES
void MSG_SPELL_CHECK(@stack
    optr replyObj,
    dword numCharsToCheck,
    SpellCheckOptions options,
    MemHandle ICbuff)
void MSG_META_EDIT_USER_DICTIONARY_COMPLETED()
void MSG_THES_REPLACE_SELECTED_WORDS (@stack
    MemHandle RSWP_string,
    word RSWP_numChars)
void MSG_THES_SELECT_WORD (@stack
    optr output, Message message,
    word numChars, word type)
void MSG_SEARCH(MemHandle searchInfo)
void MSG_REPLACE_CURRENT(MemHandle replaceInfo)
void MSG_REPLACE_ALL_OCCURRENCES(MemHandle replaceInfo,
    Boolean replaceFromBeginning)
void MSG_REPLACE_ALL_OCCURRENCES_IN_SELECTION(
    MemHandle replaceInfo)
void MSG_ABORT_ACTIVE_SPELL()
void MSG_ABORT_ACTIVE_SEARCH()
optr MSG_META_GET_OBJECT_FOR_SEARCH_SPELL(
    GetSearchSpellObjectOption option,
    optr curObject)
void MSG_META_GET_CONTEXT(@stack
    dword position,
    ContextLocation location,
    word numCharsToGet, optr replyObj)
void MSG_META_GENERATE_CONTEXT_NOTIFICATION(@stack
    dword position,
    ContextLocation location,
    word numCharsToGet, optr replyObj)
void MSG_META_CONTEXT(MemHandle data)
void MSG_META_DISPLAY_OBJECT_FOR_SEARCH_SPELL()

```

GCN Messages

```

@exportMessages MetaGCNMessages,
    DEFAULT_EXPORTED_MESSAGES
void MSG_NOTIFY_FILE_CHANGE(
    FileChangeNotificationType notifyType,
    MemHandle data)
void MSG_NOTIFY_DRIVE_CHANGE(
    GCNDriveChangeNotificationType type,
    word driveNum)
void MSG_NOTIFY_APP_STARTED()
void MSG_NOTIFY_APP_EXITED(MemHandle appExited)
void MSG_NOTIFY_DATE_TIME_CHANGE()
void MSG_NOTIFY_USER_DICT_CHANGE(
    MemHandle sendingSpellBox,
    MemHandle userDictChanged)

```

```

void MSG_DISPLAY_FLOATING_KEYBOARD()
void MSG_NOTIFY_EXPRESS_MENU_CHANGE(
    GCNExpressMenuNotificationTypes type,
    optr affectedExpressMenuControl)
void MSG_PRINTER_INSTALLED_REMOVED()
void MSG_META_CONFIRM_SHUTDOWN(
    word confirmed,
    GCNShutdownControlType type)
@alias(MSG_META_CONFIRM_SHUTDOWN) void
MSG_META_CONFIRM_SHUTDOWN_QUERY(
    optr originator,
    GCNShutdownControlType type)

```

Text Messages

```

@exportMessages MetaTextMessages,
    DEFAULT_EXPORTED_MESSAGES
MSG_VIS_TEXT_SET_FONT_ID
MSG_VIS_TEXT_SET_FONT_WEIGHT
MSG_VIS_TEXT_SET_FONT_WIDTH
void MSG_VIS_TEXT_SET_POINT_SIZE(@stack
    WWFixedAsDWord pointSize,
    dword rangeEnd,
    dword rangeStart)
MSG_VIS_TEXT_SET_SMALLER_POINT_SIZE
MSG_VIS_TEXT_SET_LARGER_POINT_SIZE
void MSG_VIS_TEXT_SET_TEXT_STYLE(@stack
    word extBitsToClear,
    word extBitsToSet,
    word styleBitsToClear,
    word styleBitsToSet,
    dword rangeEnd, dword rangeStart)
MSG_VIS_TEXT_SET_COLOR
MSG_VIS_TEXT_SET_GRAY_SCREEN
MSG_VIS_TEXT_SET_PATTERN
MSG_VIS_TEXT_SET_CHAR_BG_COLOR
MSG_VIS_TEXT_SET_CHAR_BG_GRAY_SCREEN
MSG_VIS_TEXT_SET_CHAR_BG_PATTERN
MSG_VIS_TEXT_SET_TRACK_KERNING
MSG_VIS_TEXT_SET_BORDER_COLOR
MSG_VIS_TEXT_SET_BORDER_GRAY_SCREEN
MSG_VIS_TEXT_SET_BORDER_PATTERN
void MSG_VIS_TEXT_SET_PARA_ATTRIBUTES(@stack
    word bitsToClear, word bitsToSet,
    dword rangeEnd, dword rangeStart)
void MSG_META_TEXT_USER_MODIFIED(optr obj)
void MSG_META_TEXT_CR_FILTERED(word character,
    word flags, word state)
void MSG_META_TEXT_TAB_FILTERED(word character,
    word flags, word state)
void MSG_META_TEXT_LOST_FOCUS(optr obj)
void MSG_META_TEXT_GAINED_FOCUS(optr obj)
void MSG_META_TEXT_LOST_TARGET(optr obj)
void MSG_META_TEXT_GAINED_TARGET(optr obj)
void MSG_META_TEXT_EMPTY_STATUS_CHANGED(
    optr object, Boolean hasTextFlag)
void MSG_META_TEXT_NOT_USER_MODIFIED(optr obj)
@exportMessages MetaStylesMessages,

```

```

                                DEFAULT_EXPORTED_MESSAGES
void MSG_META_STYLED_OBJECT_REQUEST_ENTRY_MONIKER()
void MSG_META_STYLED_OBJECT_UPDATE_MODIFY_BOX()
void MSG_META_STYLED_OBJECT_MODIFY_STYLE()
void MSG_META_STYLED_OBJECT_DESCRIBE_ATTRS()
void MSG_META_STYLED_OBJECT_DESCRIBE_STYLE()
void MSG_META_STYLED_OBJECT_APPLY_STYLE()
void MSG_META_STYLED_OBJECT_DELETE_STYLE()
void MSG_META_STYLED_OBJECT_DEFINE_STYLE()
void MSG_META_STYLED_OBJECT_REDEFINE_STYLE()
void MSG_META_STYLED_OBJECT_RETURN_TO_BASE_STYLE()
void MSG_META_STYLED_OBJECT_LOAD_STYLE_SHEET()
void MSG_META_STYLED_OBJECT_SAVE_STYLE()
void MSG_META_STYLED_OBJECT_RECALL_STYLE()

```

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Color Messages

```

@exportMessages MetaColorMessages,
                                DEFAULT_EXPORTED_MESSAGES
void MSG_META_COLORED_OBJECT_SET_COLOR()
void MSG_META_COLORED_OBJECT_SET_DRAW_MASK()
void MSG_META_COLORED_OBJECT_SET_PATTERN()

```

Floating-Point Messages

```

@exportMessages MetaFloatMessages,
                                DEFAULT_EXPORTED_MESSAGES
void MSG_FLOAT_CTRL_REQUEST_MONIKER(
    MemHandle formatInfoStrucHan)
void MSG_FLOAT_CTRL_UPDATE_UI(
    MemHandle formatInfoStrucHan)
void MSG_FLOAT_CTRL_FORMAT_SELECTED(
    MemHandle formatInfoStrucHan)
void MSG_FLOAT_CTRL_USER_DEF_INVOKE(
    MemHandle formatInfoStrucHan)
void MSG_FLOAT_CTRL_USER_DEF_OK(
    MemHandle formatInfoStrucHan)
void MSG_FLOAT_CTRL_FORMAT_DELETE(
    MemHandle formatInfoStrucHan)
void MSG_FLOAT_CTRL_REPLACE_NUM_FORMAT(
    MemHandle formatInfoStrucHan)
void MSG_FLOAT_CTRL_FORMAT_APPLY(
    MemHandle formatInfoStrucHan)
void MSG_FCF_FORMAT_CHANGE(MemHandle formatInfoStrucHan)
void MSG_FCT_FORMAT_CHANGE(MemHandle formatInfoStrucHan)

```

MultTextGuardianClass

```

@class MultTextGuardianClass, TextGuardianClass

```

PageSizeControlClass

```
@class PageSizeControlClass, GenControlClass
```

Instance Data

```

    PageSizeCtrlAttrs      PZCI_attrs
    dword                  PZCI_width
    dword                  PZCI_height
    PageLayout              PZCI_layout
    PCMarginParams          PZCI_margins
    @default GII_type = GIT_PROPERTIES
    @default GII_visibility = GIV_DIALOG

```

Variable Data

```

    PageSizeControlChanges
    ATTR_PAGE_SIZE_CONTROL_UI_CHANGES

```

Types and Flags

```

    MINIMUM_PAGE_WIDTH_VALUE      36
    MINIMUM_PAGE_HEIGHT_VALUE     36
    MAXIMUM_PAGE_WIDTH_VALUE      (72 * 45)
    MAXIMUM_PAGE_HEIGHT_VALUE     (72 * 45)
    MAXIMUM_LABELS_ACROSS         63
    MAXIMUM_LABELS_DOWN           63
    WordFlags    PageSizeCtrlAttrs
        PZCA_ACT_LIKE_GADGET      0x8000
        PZCA_PAPER_SIZE          0x4000
        PZCA_INITIALIZE          0x2000
        PZCA_LOAD_SAVE_OPTIONS   0x1000
    ByteFlags    PageSizeControlFeatures
        PSIZECF_MARGINS           0x0010
        PSIZECF_CUSTOM_SIZE       0x0008
        PSIZECF_LAYOUT            0x0004
        PSIZECF_SIZE_LIST         0x0002
        PSIZECF_PAGE_TYPE         0x0001
    PSIZEC_DEFAULT_FEATURES (PSIZECF_PAGE_TYPE |
        PSIZECF_SIZE_LIST | PSIZECF_LAYOUT |
        PSIZECF_CUSTOM_SIZE)
    ByteEnum     PaperOrientation
        PO_PORTRAIT              0x00
        PO_LANDSCAPE             0x01
    WordFlags    PageLayoutPaper
        PLP_ORIENTATION          0x0008
        PLP_TYPE                 0x0004
    ByteEnum     EnvelopeOrientation
        EO_PORTRAIT              0x00
        EO_LANDSCAPE             0x01
    WordFlags    PageLayoutEnvelope
        PLE_ORIENTATION          0x0010
        PLE_TYPE                 0x0004
    WordFlags    PageLayoutLabel
        PLL_ROWS                 0x7e00
        PLL_COLUMNS              0x01f8
        PLL_TYPE                 0x0004

```

Structures

```

typedef struct {
    word        unused
    word        PS_width
}

```

```

        word          PS_height
        PageLayout    PS_layout
    } PageSize
typedef struct {
    optr          PSCC_destination
    Message       PSCC_message
} PageSizeControlChanges
typedef struct {
    dword         PSR_width
    dword         PSR_height
    PageLayout    PSR_layout
} PageSizeReport
typedef union {
    PageLayoutPaper    PL_paper
    PageLayoutEnvelope PL_envelope
    PageLayoutLabel    PL_label
} PageLayout

```

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Messages

```

void MSG_PZC_SET_PAGE_SIZE(PageSizeReport *psr)
void MSG_PZC_GET_PAGE_SIZE(PageSizeReport *psr)

```

PointerClass

```
@class PointerClass, GrObjClass
```

Instance Data

```
PointerModes    PTR_modes
```

Types and Flags

```

MIN_MARQUEE_DIMENSION    7
MAX_PRIORITY_LIST_ELEMENTS    5
ByteFlags    PointerModes
    PM_HANDLES_RESIZE    0x04
    PM_HANDLES_ROTATE    0x02
    PM_POINTER_IS_ACTION_OBJECT    0x01

```

PrintControlClass

```
@class PrintControlClass, GenControlClass, master
```

Instance Data

```
PrintControlAttrs PCI_attrs = (PCA_COPY_CONTROLS |
                                PCA_PAGE_CONTROLS | PCA_QUALITY_CONTROLS |
                                PCA_USES_DIALOG_BOX | PCA_GRAPHICS_MODE |
                                PCA_TEXT_MODE)
word      PCI_startPage = 1
word      PCI_endPage = 1
word      PCI_startUserPage = 0
word      PCI_endUserPage = 0x7fff
word      PCI_defPrinter = -1
PageSizeReport PCI_docSizeInfo = {0, 0, 0, {0, 0, 0, 0}}
optr      PCI_output
optr      PCI_docNameOutput
@default  GII_visibility = GIV_SUB_GROUP
@default  GII_type = GIT_ORGANIZATIONAL
@default  GI_attrs = @default | GA_KBD_SEARCH_PATH
```

Variable Data

```
TempPrintCtrlInstance TEMP_PRINT_CONTROL_INSTANCE
optr ATTR_PRINT_CONTROL_APP_UI
@reloc ATTR_PRINT_CONTROL_APP_UI, 0, optr
TempPrintCompletionEventData
TEMP_PRINT_COMPLETION_EVENT
```

Types and Flags

```
ByteFlags PrintControlFeatures
PRINTCF_PRINT_TRIGGER 0x02
PRINTCF_FAX_TRIGGER 0x01
ByteFlags PrintControlToolboxFeatures
PRINTCTF_PRINT_TRIGGER 0x02
PRINTCTF_FAX_TRIGGER 0x01
PRINTC_DEFAULT_FEATURES (PRINTCF_PRINT_TRIGGER |
                          PRINTCF_FAX_TRIGGER)
ByteFlags PrinterOutputModes
POM_GRAPHICS_LOW 0x10
POM_GRAPHICS_MEDIUM 0x08
POM_GRAPHICS_HIGH 0x04
POM_TEXT_DRAFT 0x02
POM_TEXT_NLQ 0x01
PRINT_GRAPHICS (POM_GRAPHICS_LOW |
                 POM_GRAPHICS_MEDIUM |
                 POM_GRAPHICS_HIGH )
PRINT_TEXT (POM_TEXT_DRAFT | POM_TEXT_NLQ)
typedef enum {
    PQT_HIGH,
    PQT_MEDIUM,
    PQT_LOW
} PrintQualityEnum
WordFlags PrintControlAttrs
PCA_SEE_IF_DOC_WILL_FIT 0x4000
PCA_MARK_APP_BUSY 0x2000
PCA_VERIFY_PRINT 0x1000
PCA_SHOW_PROGRESS 0x0800
PCA_PROGRESS_PERCENT 0x0400
```

```

PCA_PROGRESS_PAGE          0x0200
PCA_FORCE_ROTATION          0x0100
PCA_COPY_CONTROLS           0x0080
PCA_PAGE_CONTROLS           0x0040
PCA_QUALITY_CONTROLS        0x0020
PCA_USES_DIALOG_BOX         0x0010
PCA_GRAPHICS_MODE           0x0008
PCA_TEXT_MODE               0x0004
PCA_DEFAULT_QUALITY         0x0002

typedef enum {
    PCS_PRINT_BOX_VISIBLE,
    PCS_PRINT_BOX_NOT_VISIBLE
} PrintControlStatus
typedef enum {
    SVA_NO_MESSAGE,
    SVA_WARNING,
    SVA_PRINTING
} SpoolVerifyAction
typedef enum {
    PCPT_PAGE,
    PCPT_UNUSED1,
    PCPT_PERCENT,
    PCPT_UNUSED2,
    PCPT_TEXT
} PCProgressType
typedef enum {
    PT_PAPER,
    PT_UNUSED1,
    PT_ENVELOPE,
    PT_UNUSED2,
    PT_LABEL
} PageType
PaperType    PageType
ByteEnum     PaperOrientation
    PO_PORTRAIT          0x00
    PO_LANDSCAPE          0x01
WordFlags    PageLayoutPaper
    PLP_ORIENTATION      0x0008
    PLP_TYPE              0x0004
ByteEnum     EnvelopePath
    EP_LEFT              0x00
    EP_CENTER             0x01
    EP_RIGHT              0x02
ByteEnum     EnvelopeOrientation
    EO_PORTRAIT_LEFT     0x00
    EO_PORTRAIT_RIGHT     0x01
    EO_LANDSCAPE_UP       0x02
    EO_LANDSCAPE_DOWN     0x03
WordFlags    PageLayoutEnvelope
    PLE_PATH              0x0040
    PLE_ORIENTATION       0x0010
    PLE_TYPE              0x0004
WordFlags    PageLayoutLabel
    PLL_ROWS              0x7e00
    PLL_COLUMNS           0x01f8
    PLL_TYPE              0x0004
typedef union {

```



```

        PageLayoutPaper          PL_paper
        PageLayoutEnvelope       PL_envelope
        PageLayoutLabel          PL_label
    } PageLayout
    ByteFlags    PrintStatusFlags
        PSF_FAX_AVAILABLE      0x80
        PSF_ABORT               0x08
        PSF_RECEIVED_COMPLETED  0x04
        PSF_RECEIVED_NAME       0x02
        PSF_VERIFIED            0x01

```

Structures

```

typedef struct {
    dword    PCDSP_width
    dword    PCDSP_height
} PCDocSizeParams
typedef struct {
    word     PCMP_left
    word     PCMP_top
    word     PCMP_right
    word     PCMP_bottom
} PCMarginParams
typedef struct {
    dword    PSR_width
    dword    PSR_height
    PageLayout PSR_layout
    PCMarginParams PSR_margins
} PageSizeReport
typedef struct {
    int      leftMargin
    int      topMargin
    int      rightMargin
    int      bottomMargin
} MarginDimensions
typedef struct {
    int      leftMargin
    int      topMargin
    int      width
    int      height
} DocumentSize
typedef struct {
    optr          TPCI_currentSummons
    optr          TPCI_progressBox
    ChunkHandle   TPCI_jobParHandle
    word          TPCI_fileHandle
    word          TPCI_gstringHandle
    word          TPCI_printBlockHan
    PrintControlAttrs TPCI_attrs
    PrintStatusFlags TPCI_status
} TempPrintCtrlInstance

```

Messages

```

void MSG_PRINT_CONTROL_INITIATE_PRINT()
void MSG_PRINT_CONTROL_PRINT()
void MSG_PRINT_CONTROL_VERIFY_COMPLETED(
    Boolean continue)
void MSG_PRINT_CONTROL_SET_DOC_NAME(char *string)
Boolean MSG_PRINT_CONTROL_REPORT_PROGRESS(

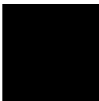
```

```

        PCProgressType progress,
        int pageOrPercent)
@alias(MSG_PRINT_CONTROL_REPORT_PROGRESS)
    Boolean MSG_PRINT_CONTROL_REPORT_STRING(
        PCProgressType progress,
        char *progressString)
void MSG_PRINT_CONTROL_PRINTING_CANCELLED()
void MSG_PRINT_CONTROL_PRINTING_COMPLETED()
void MSG_PRINT_CONTROL_SET_ATTRS(
    PrintControlAttrs attributes)
PrintControlAttrs MSG_PRINT_CONTROL_GET_ATTRS()
void MSG_PRINT_CONTROL_SET_TOTAL_PAGE_RANGE(
    int firstPage, int lastPage)
dword MSG_PRINT_CONTROL_GET_TOTAL_PAGE_RANGE()
void MSG_PRINT_CONTROL_SET_SELECTED_PAGE_RANGE(
    int firstPage, int lastPage)
dword MSG_PRINT_CONTROL_GET_SELECTED_PAGE_RANGE()
void MSG_PRINT_CONTROL_SET_DOC_SIZE(
    int width, int height)
dword MSG_PRINT_CONTROL_GET_DOC_SIZE()
void MSG_PRINT_CONTROL_SET_EXTENDED_DOC_SIZE(
    PCDocSizeParams *ptr)
void MSG_PRINT_CONTROL_GET_EXTENDED_DOC_SIZE(
    PCDocSizeParams *ptr)
void MSG_PRINT_CONTROL_SET_DOC_MARGINS(
    PCMarginParams *ptr)
void MSG_PRINT_CONTROL_GET_DOC_MARGINS(
    PCMarginParams *ptr)
void MSG_PRINT_CONTROL_SET_DOC_SIZE_INFO(
    PageSizeReport *ptr)
void MSG_PRINT_CONTROL_GET_DOC_SIZE_INFO(
    PageSizeReport *ptr)
void MSG_PRINT_CONTROL_SET_OUTPUT(optr objectPtr)
optr MSG_PRINT_CONTROL_GET_OUTPUT()
void MSG_PRINT_CONTROL_SET_DOC_NAME_OUTPUT(
    optr document)
optr MSG_PRINT_CONTROL_GET_DOC_NAME_OUTPUT()
void MSG_PRINT_CONTROL_SET_DEFAULT_PRINTER(
    int printerNum)
int MSG_PRINT_CONTROL_GET_DEFAULT_PRINTER()
byte MSG_PRINT_CONTROL_GET_PRINT_MODE()
void MSG_PRINT_CONTROL_GET_PAPER_SIZE_INFO(
    PageSizeReport *ptr)
void MSG_PRINT_CONTROL_GET_PAPER_SIZE(
    PCMarginParams *retValue)
void MSG_PRINT_CONTROL_GET_PRINTER_MARGINS(
    MarginDimensions *retValue,
    Boolean setMargins)
void MSG_PRINT_CONTROL_CALC_DOC_DIMENSIONS(
    PageSizeReport *ptr)
Boolean MSG_PRINT_CONTROL_CHECK_IF_DOC_WILL_FIT(
    Boolean warning)

```





ProcessClass

@class ProcessClass, MetaClass

Types and Flags

ByteEnum CopyChunkMode
 CCM_OPTR 0
 CCM_HPTR 1
 CCM_FPTR 2
 CCM_STRING 3
WordFlags CopyChunkFlags
 CCF_DIRTY 0x8000
 CCF_MODE 0x6000
 CCF_SIZE 0x1fff
 CCF_MODE_OFFSET 13

Messages

void MSG_PROCESS_NOTIFY_PROCESS_EXIT(
 GeodeHandle exitProcess,
 word exitCode)
void MSG_PROCESS_NOTIFY_THREAD_EXIT(
 ThreadHandle exitProcess,
 word exitCode)
void MSG_PROCESS_MEM_FULL(word type)
void MSG_PROCESS_CREATE_UI_THREAD(
 ClassStruct *class, word stackSize)
void MSG_PROCESS_CREATE_EVENT_THREAD(
 ClassStruct *class, word stackSize)

RectClass

@class RectClass, GrObjClass

RoundedRectClass

@class RoundedRectClass, RectClass

Instance Data

word RRI_radius

Messages

MSG_RR_SET_RADIUS
MSG_RR_GET_RADIUS

SpellControlClass

```
@class SpellControlClass, GenControlClass
```

Instance Data

```
MemHandle      SCI_ICBuffHan
SpellBoxState  SCI_spellState
byte           SCI_haveSelection
dword          SCI_charsLeft
word           SCI_enableFlags
@default GII_visibility = GIV_DIALOG
@default GCI_output = (TO_APP_TARGET)
```

Variable Data

```
void
ATTR_SPELL_CONTROL_INTERACT_ONLY_WITH_TARGETED_TEXT_
OBJECTS
```

Types and Flags

```
ByteEnum      SpellCheckStartOption
SCSO_BEGINNING_OF_DOCUMENT      0
SCSO_BEGINNING_OF_SELECTION     1
SCSO_WORD_BOUNDARY_BEFORE_SELECTION 2
SCSO_END_OF_SELECTION           3

WordFlags      SpellCheckOptions
SCO_CHECK_SELECTION      0x08
SCO_CHECK_NUM_CHARS      0x04

typedef enum { /* word */
    SCR_ONE_WORD_CHECKED,
    SCR_SELECTION_CHECKED,
    SCR_DOCUMENT_CHECKED
} SpellCheckResult

WordFlags      SpellFeatures
SF_CLOSE      0x2000
SF_CONTEXT    0x1000
SF_SIMPLE_MODAL_BOX 0x0800
SF_SUGGESTIONS 0x0400
SF_CHECK_ALL   0x0200
SF_CHECK_TO_END 0x0100
SF_CHECK_SELECTION 0x0080
SF_SKIP        0x0040
SF_SKIP_ALL    0x0020
SF_REPLACE_CURRENT 0x0010
SF_REPLACE_ALL  0x0008
SF_ADD_TO_USER_DICTIONARY 0x0004
SF_EDIT_USER_DICTIONARY  0x0002
SF_STATUS       0x0001

WordFlags      SpellToolboxFeatures
STF_SPELL      0x01

SC_DEFAULT_FEATURES (SF_STATUS |
    SF_EDIT_USER_DICTIONARY |
    SF_ADD_TO_USER_DICTIONARY |
    SF_REPLACE_ALL | SF_REPLACE_CURRENT
    | SF_SKIP_ALL | SF_SKIP |
    SF_CHECK_SELECTION |
    SF_CHECK_TO_END | SF_CHECK_ALL |
    SF_SUGGESTIONS | SF_CLOSE |
    SF_CONTEXT)
```

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```

SC_SUGGESTED_INTRODUCTORY_FEATURES (SF_SIMPLE_MODAL_BOX
    | SF_CONTEXT | SF_SUGGESTIONS |
    SF_SKIP | SF_REPLACE_CURRENT |
    SF_STATUS)
SC_DEFAULT_TOOLBOX_FEATURES (STF_SPELL)
ByteEnum SpellBoxState
    SBS_NO_SPELL_ACTIVE 0
    SBS_CHECKING_DOCUMENT 1
    SBS_CHECKING_SELECTION 2

```

Structures

```

typedef struct {
    dword    UWI_numChars
    word     UWI_charOffset
    char     UWI_unknownWord[SPELL_MAX_WORD_LENGTH]
} UnknownWordInfo
typedef struct {
    Boolean  NSEC_spellEnabled
} NotifySpellEnableChange

```

Messages

```

void MSG_SPELL_CHECK(@stack
    optr replyObj,
    dword numCharsToCheck,
    SpellCheckOptions options,
    MemHandle ICbuff)
void MSG_SC_UNKNOWN_WORD_FOUND(UnknownWordInfo *infoPtr)
void MSG_SC_SPELL_CHECK_COMPLETED(
    SpellCheckResult result)

```

SplineGuardianClass

```
@class SplineGuardianClass, GrObjVisGuardianClass
```

Instance Data

```

byte    SGI_splineCreateMode
byte    SGI_splineAfterCreateMode
byte    SGI_splineMode

```

Messages

```

MSG_SG_SET_SPLINE_MODE
MSG_SG_GENERATE_SPLINE_NOTIFY
MSG_SG_SWITCH_TO_SPLINE_CREATE_MODE
MSG_SG_SWITCH_TO_SPLINE_AFTER_CREATE_MODE
MSG_SG_SET_SPLINE_CREATE_AND_AFTER_CREATE_MODES

```

SplineOpenCloseControlClass

```
@class SplineOpenCloseControlClass, GenControlClass
```

SplinePointControlClass

```
@class SplinePointControlClass, GenControlClass
```

SplineSmoothnessControlClass

```
@class SplineSmoothnessControlClass, GenControlClass
```

SpoolPrintControlClass

```
@class SpoolPrintControlClass, GenInteractionClass,  
                                             master
```

Instance Data

```
ChunkHandle      SPCI_local  
word             SPCI_localRevNum = 0  
PrintControlAttrs SPCI_attrs = 0  
word            SPCI_startPage = 0  
word            SPCI_endPage = 0  
word            SPCI_startUserPage = 0  
word            SPCI_endUserPage = 0  
word            SPCI_defPrinter = 0  
word            SPCI_docWidth = 0  
word            SPCI_docHeight = 0  
word            SPCI_marginLeft = 0  
word            SPCI_marginTop = 0  
word            SPCI_marginRight = 0  
word            SPCI_marginBottom = 0  
optr            SPCI_printGroup  
optr            SPCI_output  
optr            SPCI_docNameOutput
```

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Types and Flags

```
PRINT_CONTROL_DEFAULT_PRINTER  (-1)  
PRINT_CONTROL_CURRENT_PRINTER  (-2)  
ByteFlags      PrinterOutputModes  
    POM_TEXT_NLQ          (1 << 0)  
    POM_TEXT_DRAFT         (1 << 1)  
    POM_GRAPHICS_HIGH      (1 << 2)  
    POM_GRAPHICS_MEDIUM    (1 << 3)  
    POM_GRAPHICS_LOW       (1 << 4)  
PRINT_GRAPHICS  ( POM_GRAPHICS_LOW |  
                  POM_GRAPHICS_MEDIUM | POM_GRAPHICS_HIGH)  
PRINT_TEXT      ( POM_TEXT_DRAFT | POM_TEXT_NLQ)  
ByteEnum        PrintQualityEnum  
    PQT_HIGH      0  
    PQT_MEDIUM    1  
    PQT_LOW       2  
WordFlags        PrintControlAttrs  
    PCA_MARK_APP_BUSY      0x2000  
    PCA_VERIFY_PRINT       0x1000  
    PCA_SHOW_PROGRESS      0x0800  
    PCA_PROGRESS_PERCENT   0x0400  
    PCA_PROGRESS_PAGE      0x0200  
    PCA_FORCE_ROTATION     0x0100  
    PCA_COPY_CONTROLS      0x0080  
    PCA_PAGE_CONTROLS      0x0040  
    PCA_QUALITY_CONTROLS   0x0020  
    PCA_USES_DIALOG_BOX    0x0010  
    PCA_GRAPHICS_MODE      0x0008  
    PCA_TEXT_MODE          0x0004  
    PCA_DEFAULT_QUALITY    0x0003  
typedef enum /* word */ {  
    PCS_PRINT_BOX_VISIBLE,  
    PCS_PRINT_BOX_NOT_VISIBLE  
} PrintControlStatus
```

```

typedef enum /* word */ {
    SVA_NO_MESSAGE,
    SVA_WARNING,
    SVA_PRINTING
} SpoolVerifyAction
WordFlags SpoolVerifyDocFail
    SVDF_DUE_TO_DOC_SIZE    0x0002
    SVDF_DUE_TO_MARGINS     0x0001
typedef enum /* word */ {
    PCPT_PAGE,
    PCPT_PERCENT,
    PCPT_TEXT
} PCProgressType

```

Structures

```

typedef struct {
    dword    PCDSP_width
    dword    PCDSP_height
} PCDocSizeParams
typedef struct {
    word     PCMP_left
    word     PCMP_top
    word     PCMP_right
    word     PCMP_bottom
} PCMarginParams
typedef struct {
    word     PCMS_left
    word     PCMS_top
    word     PCMS_right
    word     PCMS_bottom
} PrintControlMarginStruct

```

Messages

```

MSG_SPOOL_PRINT_CONTROL_INITIATE_PRINT
MSG_SPOOL_PRINT_CONTROL_PRINT
MSG_SPOOL_PRINT_CONTROL_SET_ATTRS
MSG_SPOOL_PRINT_CONTROL_GET_ATTRS
MSG_SPOOL_PRINT_CONTROL_GET_PRINT_MODE
MSG_SPOOL_PRINT_CONTROL_SET_TOTAL_PAGE_RANGE
MSG_SPOOL_PRINT_CONTROL_GET_TOTAL_PAGE_RANGE
MSG_SPOOL_PRINT_CONTROL_SET_SELECTED_PAGE_RANGE
MSG_SPOOL_PRINT_CONTROL_GET_SELECTED_PAGE_RANGE
MSG_SPOOL_PRINT_CONTROL_SET_DOC_SIZE
MSG_SPOOL_PRINT_CONTROL_GET_DOC_SIZE
MSG_SPOOL_PRINT_CONTROL_SET_PRINT_GROUP
MSG_SPOOL_PRINT_CONTROL_GET_PRINT_GROUP
MSG_SPOOL_PRINT_CONTROL_SET_OUTPUT
MSG_SPOOL_PRINT_CONTROL_GET_OUTPUT
MSG_SPOOL_PRINT_CONTROL_SET_DEFAULT_PRINTER
MSG_SPOOL_PRINT_CONTROL_SPOOLING_UPDATE
MSG_SPOOL_PRINT_CONTROL_CANCEL_PRINT_JOB
MSG_SPOOL_PRINT_CONTROL_GET_PAPER_SIZE
void MSG_SPOOL_PRINT_CONTROL_SET_DOC_NAME(char *name)
void MSG_SPOOL_PRINT_CONTROL_SET_DOC_MARGINS(word *ms)
MSG_SPOOL_PRINT_CONTROL_GET_PRINTER_MARGINS
MSG_SPOOL_PRINT_CONTROL_GET_DOCUMENT_DIMENSIONS
MSG_SPOOL_PRINT_CONTROL_VERIFY_DOC_MARGINS
MSG_SPOOL_PRINT_CONTROL_VERIFY_DOC_SIZE

```

SpreadsheetClass

@class SpreadsheetClass, VisCompClass, master

Instance Data

```
CellFunctionParameters  SSI_cellParams = {0, 0, {0}}
word                   SSI_chunk = 0
optr                   SSI_chartBody
word                   SSI_mapBlock = 0
word                   SSI_styleArray = 0
word                   SSI_rowArray = 0
word                   SSI_formatArray = 0
word                   SSI_nameArray = 0
word                   SSI_maxRow = MAX_ROW
word                   SSI_maxCol = MAX_COLUMN
PointDWord             SSI_offset = {0, 0}
CellRange              SSI_visible = {{0, 0}, {0, 0}}
CellReference          SSI_active = {0, 0}
CellRange              SSI_quickSource = {{0, 0}, {0, 0}}
CellRange              SSI_selected = {{0, 0}, {0, 0}}
word                   SSI_curAttrs = 0
word                   SSI_gstate = NullHandle
byte                   SSI_gsRefCount = 0
SpreadsheetFlags       SSI_flags = 0
SpreadsheetDrawFlags   SSI_drawFlags = 0
byte                   SSI_attributes = 0
CellRange              SSI_header = {{-1, -1}, {-1, -1}}
CellRange              SSI_footer = {{-1, -1}, {-1, -1}}
word                   SSI_circCount = 0
FloatNum               SSI_converge = 0
word                   SSI_ancestorList = 0
word                   SSI_childList = 0
word                   SSI_finalList = 0
optr                   SSI_ruler
RectDWord              SSI_bounds = {0, 0, 0, 0}
```

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Types and Flags

```
ByteFlags      NameFlags
NF_UNDEFINED           0x80
MAX_NAME_LENGTH          128
MAX_NAME_DEF_LENGTH     256
ByteFlags      SpreadsheetDoubleClickFlags
SDCF_NOTE_EXISTS        0x02
SDCF_CELL_EXISTS        0x01
WordFlags      SpreadsheetFlags
SF_MANUAL_RECALC         0x8000
SF_ALLOW_ITERATION       0x4000
SF_SUPPRESS_REDRAW       0x2000
SF_APPLICATION_FUNCTIONS 0x1000
SF_QUICK_TRANS_IN_PROGRESS 0x0800
SF_DOING_FEEDBACK        0x0400
SF_IN_VIEW               0x0200
SF_IS_SYS_TARGET         0x0008
SF_HAVE_GRAB             0x0004
SF_IS_APP_TARGET         0x0002
SF_IS_SYS_FOCUS          0x0001
SRP_FLAGS      (SF_MANUAL_RECALC | SF_ALLOW_ITERATION)
```

```

ByteFlags    SpreadsheetClearFlags
    SCF_CLEAR_ATTRIBUTES    0x80
    SCF_CLEAR_DATA          0x40
    SCF_CLEAR_NOTES         0x20
ByteFlags    SpreadsheetInsertFlags
    SIF_COLUMNS             0x80
    SIF_COMPLETE            0x40
    SIF_DELETE              0x20
WordFlags    SpreadsheetDrawFlags
    SDF_DRAW_GRAPHICS       0x0008
    SDF_DRAW_NOTE_BUTTON    0x0004
    SDF_DRAW_HEADER_FOOTER_BUTTON 0x0002
    SDF_DRAW_GRID           0x0001
WordFlags    SpreadsheetPrintFlags
    SPF_PRINT_SIDeways      0x2000
    SPF_SCALE_TO_FIT        0x1000
    SPF_PRINT_ROW_COLUMN_TITLES 0x0800
    SPF_SKIP_DRAW           0x0400
    SPF_CENTER_VERTICALLY   0x0200
    SPF_CENTER_HORIZONTALLY 0x0100
    SPF_CONTINUOUS          0x0080
    SPF_PRINT_HEADER        0x0040
    SPF_PRINT_FOOTER        0x0020
    SPF_PRINT_DOCUMENT      0x0010
    SPF_PRINT_NOTES         0x0008
    SPF_PRINT_GRAPHICS      0x0004
    SPF_DONE                0x0002
    SPF_PRINT_GRID          0x0001
typedef enum /* word */ {
    SET_ENTIRE_SHEET = 0,
    SET_NO_EMPTY_CELLS = 2,
    SET_NO_EMPTY_CELLS_NO_HDR_FTR = 4,
    SET_NEXT_DATA_CELL = 6,
    SET_LAST_DATA_CELL = 8,
    SET_PREV_DATA_CELL = 10,
    SET_FIRST_DATA_CELL = 12
} SpreadsheetExtentType
ByteFlags    SpreadsheetSearchFlags
    SSF_MATCH_CASE          0x80
    SSF_MATCH_PARTIAL_WORDS 0x40
    SSF_SEARCH_FORMULAS     0x20
    SSF_SEARCH_VALUES        0x10
    SSF_SEARCH_NOTES         0x08
    SSF_SEARCH_TEXT_OBJECTS  0x04
    SSF_SEARCH_BY_ROWS       0x02
SPREADSHEET_MAX_SEARCH_STRING_LENGTH 128
ByteEnum      SpreadsheetChartReturnType
    SCRT_TOO_MANY_CHARTS    0
    SCRT_INSUFFICIENT_MEMORY 2
    SCRT_NO_DATA             4
typedef enum /* word */ {
    SPREADSHEET_ADDRESS_ON_SCREEN = 0xf000,
    SPREADSHEET_ADDRESS_IN_SELECTION = 0xf001,
    SPREADSHEET_ADDRESS_DATA_AREA = 0xf100,
    SPREADSHEET_ADDRESS_PAST_END = 0xf101,
    SPREADSHEET_ADDRESS_USE_SELECTION = 0xf200,
    SPREADSHEET_ADDRESS_NIL = 0xffff

```

```

} SpreadsheetAddress
typedef enum /* word */ {
    SSFT_NUMBER,
    SSFT_DAY,
    SSFT_WEEKDAY,
    SSFT_MONTH,
    SSFT_YEAR
} SpreadsheetSeriesFillType
ByteFlags    SpreadsheetSeriesFillFlags
    SSFF_ROWS                0x02
    SSFF_GEOMETRIC            0x01
ByteEnum      SpreadsheetFillError
    SFE_NO_ERROR              0
    SFE_NOT_DATE_NUMER        2
    SFE_DATE_STEP_TOO_LARGE   4
SPREADSHEET_MAX_DATE_FILL_STEP  90
SPREADSHEET_MIN_DATE_FILL_STEP -90
ByteFlags    SpreadsheetAttributes
    SA_TARGETTABLE            0x80
    SA_ENGINE_MODE             0x40
MAX_ROW              (8191+MIN_ROW)
MAX_COLUMN            (255+MIN_ROW)
SSRCAF_TRANSFORM_VALID 0x80
SSRCAF_REF_COUNT       0x7f
MAX_GSTATE_REF_COUNT   (SSRCAF_REF_COUNT)
/* Border Info record */
ByteFlags    CellBorderInfo
    CBI_OUTLINE                0x80
    CBI_LEFT                    0x08
    CBI_TOP                     0x04
    CBI_RIGHT                   0x02
    CBI_BOTTOM                  0x01
ByteFlags    CellInfo
    CI_LOCKED                   0x04
    CI_JUSTIFICATION            0x03
J_GENERAL          J_FULL
ROW_HEIGHT_AUTOMATIC 0x8000
MIN_ROW            0
COLUMN_WIDTH_MIN    0
COLUMN_WIDTH_MAX    512
ROW_HEIGHT_MIN      0
ROW_HEIGHT_MAX      (792*5/4)
ByteFlags    NameFlags
    NF_UNDEFINED                0x80
MAX_NAMES                255
MAX_NAME_BLOCK_SIZE (sizeof(NameHeader) +
    (MAX_NAMES * (sizeof(NameStruct) +
        MAX_NAME_LENGTH)))
ByteFlags    NameAccessFlags
    NAF_NAME                    0x80
    NAF_DEFINITION              0x40
    NAF_BY_TOKEN                0x20
    NAF_TOKEN_DEFINITION        0x10
NAME_ROW              (LARGEST_ROW - 4)
CHART_ROW              (LARGEST_ROW - 3)
FORMATTED_RANGE_BUFFER_SIZE 14
PSEE_RESULT_SHOULD_BE_CELL_OR_RANGE (PSEE_SSHEET_BASE)

```



```

PSEE_NO_NAME_GIVEN          (PSEE_SSHEET_BASE + 1)
PSEE_NO_DEFINITION_GIVEN    (PSEE_SSHEET_BASE + 2)
PSEE_NAME_ALREADY_DEFINED   (PSEE_SSHEET_BASE + 3)
PSEE_BAD_NAME_DEFINITION    (PSEE_SSHEET_BASE + 4)
PSEE_REALLOC_FAILED         (PSEE_SSHEET_BASE + 5)
PSEE_LAST_SPREADSHEET_ERROR 230
PSEE_SSHEET_ERRORS          PSEE_PARSER_ERRORS,
    PSEE_RESULT_SHOULD_BE_CELL_OR_RANGE,
    PSEE_NO_NAME_GIVEN,
    PSEE_NO_DEFINITION_GIVEN,
    PSEE_NAME_ALREADY_DEFINED,
    PSEE_BAD_NAME_DEFINITION,
    PSEE_REALLOC_FAILED
NAME_LIST_INCREMENT          2048
CELL_GOTO_MAX_TEXT          15
CELL_MAX_TEXT                255
CELL_TEXT_BUFFER_SIZE        (CELL_MAX_TEXT +
    size CellText)
CELL_MAX_FORMULA             256
CELL_FORMULA_BUFFER_SIZE     (CELL_MAX_FORMULA +
    size CellFormula)
SPREADSHEET_LIB_FUNCTIONID_ERRORS
    FUNCTION_ID_SPREADSHEET_CELL,
    FUNCTION_ID_LAST_SPREADSHEET_FUNCTION

```

Structures

```

typedef struct {
    optr      SSD_output
    Message    SSD_message
    optr      SSD_chartBody
} SpreadsheetSetupData
typedef struct {
    word      GNI_token
    word      GNI_entryNum
    word      GNI_numDefinedNames
    word      GNI_numUndefinedNames
} GetNameInfo
typedef struct {
    byte      SNP_flags
    word      SNP_listEntry
    word      SNP_textLength
    char      SNP_text[MAX_NAME_LENGTH]
    word      SNP_defLength
    byte      SNP_definition[MAX_NAME_DEF_LENGTH * 2]
    word      SNP_token
    byte      SNP_unused
} SpreadsheetNameParams
typedef struct {
    word      GNI_unused
    word      GNI_unused2
    word      GNI_numDefinedNames
    word      GNI_numUndefinedNames
} GetNumNamesInfo
typedef struct {
    word      GNI_textSize
    word      GNI_blockHandle
} GetNoteInfo

```

```

typedef struct {
    optr          GTO_textObject
} GetTextObject
typedef struct {
    SpreadsheetFlags  SRP_flags
    word              SRP_circCount
    FloatNum          SRP_converge
} SpreadsheetRecalcParams
typedef struct {
    word            GFC_unused
    word            GFC_unused2
    word            GFC_numPreDefined
    word            GFC_numUserDefined
} GetFormatCount
typedef struct {
    SpreadsheetPrintFlags  SDP_flags
    word                   SDP_gstate
    CellReference           SDP_topLeft
    RectDWord               SDP_drawArea
    CellRange               SDP_limit
    Point                   SDP_margins
    PointDWord              SDP_translation
    PointDWord              SDP_titleTrans
    WWFixed                 SDP_scale
    CellRange               SDP_range
    RectDWord               SDP_rangeArea
} SpreadsheetDrawParams
typedef struct {
    word            GC_unused
    word            GC_unused2
    word            GC_cellRow
    word            GC_cellColumn
} GetActiveCell
typedef struct {
    SpreadsheetSearchFlags  SSP_flags
    char                    SSP_string[128]
    SpreadsheetSearchFlags  SSP_found
    Point                   SSP_cell
    word                    SSP_startPos
    word                    SSP_endPos
} SpreadsheetSearchParams
typedef struct {
    word            GC_unused
    word            GC_errorCode
    word            GC_row
    word            GC_column
} GetCell
typedef struct {
    word            SEFP_stacksSeg
    word            SEFP_opStackPtr
    word            SEFP_argStackPtr
    word            SEFP_funcID
    word            SEFP_nArgs
} SpreadsheetEvalFuncParams
typedef struct {
    CellRange        SRP_selection
    CellReference    SRP_active

```



```

    } SpreadsheetRangeParams
typedef struct {
    SpreadsheetSeriesFillType    SRP_type
    SpreadsheetSeriesFillFlags   SRP_flags
    FloatNum                     SRP_stepValue
} SpreadsheetSeriesFillParams
typedef struct {
    char                SSFPRP_text[MAX_RANGE_REF_SIZE]
    CellRange           SSFPRP_range
} SpreadsheetFormatParseRangeParams
typedef struct {
    word                SIFD_file
    word                SIFD_numRows
    word                SIFD_numCols
    SpreadsheetDrawFlags SIFD_drawFlags
} SpreadsheetInitFileData
typedef struct {
    ColorQuad           AI_color
    SystemDrawMask      AI_grayScreen
} AreaInfo
typedef struct {
    RefElementHeader    CA_refCount
    AreaInfo             CA_textAttrs
    AreaInfo             CA_bkgrndAttrs
    FontID              CA_font
    word                CA_pointsize
    byte                CA_style
    CellBorderInfo       CA_border
    AreaInfo             CA_borderAttrs
    CellInfo             CA_info
    word                CA_format
    BBFixed              CA_trackKern
    byte                CA_fontWeight
    byte                CA_fontWidth
    byte                CA_reserved[9]
} CellAttrs
typedef struct {
    word                NH_blockSize
    word                NH_definedCount
    word                NH_undefinedCount
    word                NH_nextToken
} NameHeader
typedef struct {
    byte                NS_flags
    word                NS_token
    word                NS_length
} NameStruct
typedef struct {
    byte                SNP_flags
    word                SNP_listEntry
    word                SNP_textLength
    byte                SNP_text[MAX_NAME_LENGTH]
    word                SNP_defLength
    byte                SNP_definition[MAX_NAME_DEF_LENGTH*2]
    word                SNP_token
    byte                SNP_nameFlags
    byte                SNP_unused

```

```

} SpreadsheetNameParameters
typedef struct {
    FormatParameters      SFP_formatParams
    dword                 SFP_expression
    dword                 SFP_text
    word                  SFP_length
} SpreadsheetFormatParams
typedef struct {
    ParserParameters      SPP_parserParams
    dword                 SPP_text
    dword                 SPP_expression
    word                  SPP_exprLength
} SpreadsheetParserParams
typedef struct {
    EvalParameters        SEP_evalParams
    dword                 SEP_expression
    dword                 ArgumentStackElement
} SpreadsheetEvalParams
typedef struct {
    word                  NLH_endOfData
    word                  NLH_blockSize
} NameListHeader
typedef struct {
    word                  NLE_token
    byte                  NLE_flags
    byte                  NLE_unused
    word                  NLE_textLength
    word                  NLE_defLength
} NameListEntry

```

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Messages

```

void MSG_SPREADSHEET_READ_CACHED_DATA(
    FileHandle fileHandle,
    word mapBlockHandle)
void MSG_SPREADSHEET_WRITE_CACHED_DATA(
    FileHandle fileHandle)
void MSG_SPREADSHEET_ATTACH_UI(
    word handle, FileHandle fileHandle)
void MSG_SPREADSHEET_ATTACH_FILE(
    word handle, FileHandle fileHandle)
void MSG_SPREADSHEET_MOVE_ACTIVE_CELL(
    word row, word column)
void MSG_SPREADSHEET_GOTO_CELL()
word MSG_SPREADSHEET_ENTER_DATA(
    word textBlk, word textLen)
void MSG_SPREADSHEET_SET_ROW_HEIGHT(word rowHeight)
void MSG_SPREADSHEET_SET_COLUMN_WIDTH(word rowWidth)
word MSG_SPREADSHEET_GET_ROW_HEIGHT(word rowNum)
word MSG_SPREADSHEET_GET_COLUMN_WIDTH(word colNum)
word MSG_SPREADSHEET_MAKE_FOCUS()
MSG_SPREADSHEET_ADD_NAME_WITH_PARAM_BLK
void MSG_SPREADSHEET_ADD_NAME(
    GetNameInfo *retValue,
    SpreadsheetNameParams *ssNameParams)
void MSG_SPREADSHEET_VALIDATE_NAME(
    GetNameInfo *retValue,
    SpreadsheetNameParams *ssNameParams)

```

```

MSG_SPREADSHEET_DELETE_NAME_WITH_LIST_ENTRY
void MSG_SPREADSHEET_DELETE_NAME(
    GetNameInfo *retValue,
    SpreadsheetNameParams *ssNameParams)
MSG_SPREADSHEET_CHANGE_NAME_WITH_PARAM_BLK
void MSG_SPREADSHEET_CHANGE_NAME(
    GetNameInfo *retValue,
    SpreadsheetNameParams *ssNameParams)
void MSG_SPREADSHEET_GET_NAME_COUNT(
    GetNumNamesInfo *retValue)
void MSG_SPREADSHEET_GET_NAME_INFO(
    SpreadsheetNameParams *ssNameParams)
void MSG_SPREADSHEET_FORMAT_EXPRESSION(
    SpreadsheetFormatParams *ssFormatParams)
byte MSG_SPREADSHEET_PARSE_EXPRESSION(
    SpreadsheetParserParams *ssParserParams)
MSG_SPREADSHEET_EVAL_EXPRESSION
void MSG_SPREADSHEET_ERROR()
void MSG_SPREADSHEET_SET_NOTE(word *textBlockHandle,
    word row, word column)
void MSG_SPREADSHEET_SET_NOTE_FOR_ACTIVE_CELL(
    word *textBlockHandle)
void MSG_SPREADSHEET_GET_NOTE(GetNoteInfo *retValue,
    word row, word column)
void MSG_SPREADSHEET_GET_NOTE_FOR_ACTIVE_CELL(
    GetNoteInfo *retValue)
void MSG_SPREADSHEET_DISPLAY_NOTE(word data)
void MSG_SPREADSHEET_CHANGE_RECALC_PARAMS(
    SpreadsheetRecalcParams *ssRecalcParams)
void MSG_SPREADSHEET_GET_RECALC_PARAMS(
    SpreadsheetRecalcParams *ssRecalcParams)
void MSG_SPREADSHEET_RECALC()
void MSG_SPREADSHEET_CLEAR_SELECTED(
    SpreadsheetClearFlags ssClearFlags)
void MSG_SPREADSHEET_INSERT_SPACE(
    SpreadsheetInsertFlags ssInsertFlags)
void MSG_SPREADSHEET_SET_NUM_FORMAT(word formatToken)
void MSG_SPREADSHEET_DRAW_RANGE(
    SpreadsheetDrawParams *ssDrawParams)
void MSG_SPREADSHEET_GET_EXTENT(
    CellRange *retValue,
    SpreadsheetExtentType ssExtentType)
MSG_SPREADSHEET_GET_RANGE_BOUNDS
void MSG_SPREADSHEET_SET_HEADER_RANGE(word flag)
void MSG_SPREADSHEET_SET_FOOTER_RANGE(word flag)
void MSG_SPREADSHEET_GET_HEADER_RANGE(
    CellRange *retValue)
void MSG_SPREADSHEET_GET_FOOTER_RANGE(
    CellRange *retValue)
void MSG_SPREADSHEET_COMPLETE_REDRAW()
MSG_SPREADSHEET_NOTES_ENUM
void MSG_SPREADSHEET_ALTER_DRAW_FLAGS(
    word bitsToSet, word bitsToClear)
SpreadsheetDrawFlags MSG_SPREADSHEET_GET_DRAW_FLAGS()
MSG_SPREADSHEET_HANDLE_SPECIAL_FUNCTION
void MSG_SPREADSHEET_CHANGE_COLUMN_WIDTH(
    word change, word column)

```

```

void MSG_SPREADSHEET_CHANGE_ROW_HEIGHT(
    word change, word row)
FileHandle MSG_SPREADSHEET_GET_FILE()
word MSG_SPREADSHEET_SORT_RANGE(
    RangeSortFlags rangeSortFlags)
MSG_SPREADSHEET_FUNCTION_TO_TOKEN
MSG_SPREADSHEET_FUNCTION_TO_CELL
MSG_SPREADSHEET_FORMAT_FUNCTION
MSG_SPREADSHEET_EVAL_FUNCTION
void MSG_SPREADSHEET_CHART_RANGE(word chartNum)
void MSG_SPREADSHEET_CHART_RANGE(word chartNum)
void MSG_SPREADSHEET_DELETE_CHART(word chartNum)
void MSG_SPREADSHEET_START_MOVE_COPY()
void MSG_SPREADSHEET_END_MOVE_COPY()
void MSG_SSHEET_INIT_FOR_EXPORT()
void MSG_SPREADSHEET_SET_SELECTION(
    SpreadsheetRangeParams *ssRangeParams)
void MSG_SPREADSHEET_EXTEND_CONTRACT_SELECTION(
    SpreadsheetRangeParams *ssRangeParams)
void MSG_SPREADSHEET_GET_SELECTION(
    SpreadsheetRangeParams *ssRangeParams)
void MSG_SSHEET_PASTE_FROM_DATA_FILE()
void MSG_SSHEET_EXPORT_FROM_DATA_FILE()
MSG_SPREADSHEET_INIT_NAME_LIST
MSG_SPREADSHEET_INIT_CHOOSE_NAME_LIST
MSG_SPREADSHEET_NAME_REQUEST_ENTRY_MONIKER
MSG_SPREADSHEET_NAME_UPDATE_DEFINITION
MSG_SPREADSHEET_NAME_UPDATE_NAME
MSG_SPREADSHEET_GET_NAME_WITH_LIST_ENTRY
MSG_SPREADSHEET_REPLACE_TEXT_SELECTION
void MSG_SPREADSHEET_GET_ROW_AT_POSITION(sdword yPos)
void MSG_SPREADSHEET_GET_COLUMN_AT_POSITION(sdword xPos)
void MSG_SPREADSHEET_SET_CELL_BORDERS(
    CellBorderInfo border)
void MSG_SPREADSHEET_SET_CELL_BORDER_COLOR(
    ColorQuad color)
void MSG_SPREADSHEET_SET_CELL_BORDER_GRAY_SCREEN(
    SystemDrawMask drawMask)
void MSG_SPREADSHEET_SET_CELL_BORDER_PATTERN(
    GraphicPattern pattern)
SpreadsheetFillError MSG_SPREADSHEET_FILL_SERIES(
    SpreadsheetSeriesFillParams *fillParams)
void MSG_SPREADSHEET_FILL_RANGE(SeriesFillFlags flags)
void MSG_SPREADSHEET_PARSE_RANGE_REFERENCE(
    SpreadsheetFormatParseRangeParams *params)
void MSG_SPREADSHEET_FORMAT_RANGE_REFERENCE(
    SpreadsheetFormatParseRangeParams *params)

```

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Routines

```

VMBlockHandle SpreadsheetInitFile(
    SpreadsheetInitFileData *ifd)
void SpreadsheetParseNameToToken(
    C_CallbackStruct *cb_s)
void SpreadsheetParseCreateCell(C_CallbackStruct *cb_s)
void SpreadsheetParseEmptyCell(C_CallbackStruct *cb_s)
void SpreadsheetParseDerefCell(C_CallbackStruct *cb_s)
word SpreadsheetNameTextFromToken(

```

```

        SpreadsheetInstance *ssheet,
        word nameToken,
        char *destinationPtr,
        word maxCharsToWrite)
Boolean SpreadsheetNameTokenFromText(
    SpreadsheetInstance *ssheet,
    char *nameText,
    word nameLen,
    word *tokenDest,
    NameFlags *flagsDest)
word SpreadsheetNameLockDefinition(
    SpreadsheetInstance *ssheet,
    word nameToken,
    void **defaddr)
void SpreadsheetCellAddRemoveDeps(
    SpreadsheetInstance *spreadsheetInstance,
    dword cellParams,
    PCB(void, callback, (C_CallbackStruct *)),
    word addOrRemoveDeps,
    word eval_flags,
    word row, word column, word maxRow,
    word maxColumn)
void SpreadsheetRecalcDependents(
    SpreadsheetInstance *spreadsheetInstance,
    PCB(void, callback, (optr oself,
        word row, word column))),
    word row, word column)

```

SpreadsheetRulerClass

```
@class SpreadsheetRulerClass, VisRulerClass
```

Instance Data

```

SpreadsheetRulerFlags    SRI_flags
optr                     SRI_spreadsheet
word                     SRI_resizeRC
dword                    SRI_startRCPos

```

Types and Flags

```

SPREADSHEET_RULER_WIDTH  40
SPREADSHEET_RULER_HEIGHT 12
ByteFlags    SpreadsheetRulerFlags
    SRF_SSHEET_IS_FOCUS          0x8
    SRF_NO_INTERACTIVE_RESIZE    0x4
    SRF_SSHEET_IS_TARGET         0x2
    SRF_HAVE_GRAB                0x1

```

Messages

```

void MSG_SPREADSHEET_RULER_DRAW_RANGE(
    SpreadsheetDrawParams *ssDrawParams)
void MSG_SPREADSHEET_RULER_SET_FLAGS(
    SpreadsheetRulerFlags setFlags,
    SpreadsheetRulerFlags clearFlags)

```

StyleSheetControlClass

```
@class StyleSheetControlClass, GenControlClass
```

Instance Data

```
ClassStruct * SSCI_targetClass = NullClass  
ClassStruct * SSCI_styledClass = NullClass  
@default GCI_output = (TO_APP_TARGET)
```

Variable Data

```
GenFilePath ATTR_STYLE_SHEET_LOAD_STYLE_SHEET_PATH  
GeodeToken ATTR_STYLE_SHEET_LOAD_STYLE_SHEET_TOKEN  
optr TEMP_STYLE_SHEET_MANAGE_UI  
optr TEMP_STYLE_SHEET_DEFINE_UI  
SSCTempAttrInfo TEMP_SYTLE_SHEET_ATTR_TOKENS  
MemHandle TEMP_SYTLE_SHEET_SAVED_STYLE
```

Types and Flags

```
WordFlags      SSCFeatures  
                SSCF_DEFINE          0x0080  
                SSCF_REDEFINE        0x0040  
                SSCF_RETURN_TO_BASE  0x0020  
                SSCF_APPLY           0x0010  
                SSCF_MANAGE          0x0008  
                SSCF_LOAD            0x0004  
                SSCF_SAVE_STYLE      0x0002  
                SSCF_RECALL_STYLE    0x0001  
WordFlags      SSCToolboxFeatures  
                SSCTF_REDEFINE       0x0010  
                SSCTF_RETURN_TO_BASE 0x0008  
                SSCTF_STYLE_LIST     0x0004  
                SSCTF_SAVE_STYLE     0x0002  
                SSCTF_RECALL_STYLE   0x0001  
SSC_DEFAULT_FEATURES (SSCF_DEFINE | SSCF_REDEFINE  
                    | SSCF_RETURN_TO_BASE | SSCF_APPLY |  
                    | SSCF_MANAGE | SSCF_LOAD | SSCF_SAVE_STYLE |  
                    | SSCF_RECALL_STYLE)  
SSC_DEFAULT_TOOLBOX_FEATURES (SSCTF_STYLE_LIST |  
                             | SSCTF_SAVE_STYLE | SSCTF_RECALL_STYLE)
```

Structures

```
typedef struct {  
    NameArrayMaxElement NSC_style  
    word NSC_styleToken  
    word NSC_usedIndex  
    word NSC_usedToolIndex  
    word NSC_styleSize  
    word NSC_attrTokens[MAX_STYLE_SHEET_ATTRS]  
    dword NSC_attrChecksums[MAX_STYLE_SHEET_ATTRS]  
    byte NSC_indeterminate  
    byte NSC_differsFromBase  
    byte NSC_canReturnToBase  
    word NSC_styleCounter  
} NotifyStyleChange  
typedef struct {  
    StyleChunkDesc NSSHC_styleArray  
    word NSSHC_counter  
    word NSSHC_styleCount  
    word NSSHC_toolStyleCount
```

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```

    } NotifyStyleSheetChange
    typedef struct {
        word      SSCTAI_attrTokens[MAX_STYLE_SHEET_ATTRS]
        word      SSCTAI_baseStyle
        byte      SSCTAI_differsFromBase
        byte      SSCTAI_indeterminate
    } SSCTempAttrInfo

```

Messages

```

void MSG_STYLE_SHEET_GET_MODIFY_UI()
void MSG_STYLE_SHEET_GET_DEFINE_UI()
void MSG_STYLE_SHEET_SET_SAVED_STYLE()
void MSG_SSC_SELECT_STYLE()
void MSG_SSC_STATUS_STYLE()
void MSG_SSC_QUERY_STYLE()
void MSG_SSC_QUERY_BASE_STYLE()
void MSG_SSC_APPLY_STYLE()
void MSG_SSC_APPLY_BOX_STYLE()
void MSG_SSC_APPLY_TOOLBOX_STYLE()
void MSG_SSC_INITIATE_MODIFY_STYLE()
void MSG_SSC_MODIFY_STYLE()
void MSG_SSC_DELETE_STYLE()
void MSG_SSC_DELETE_REVERT_STYLE()
void MSG_SSC_DEFINE_STYLE()
void MSG_SSC_REDEFINE_STYLE()
void MSG_SSC_RETURN_TO_BASE_STYLE()
void MSG_SSC_LOAD_STYLE_SHEET()
void MSG_SSC_LOAD_STYLE_SHEET_FILE_SELECTED()
void MSG_SSC_SAVE_STYLE()
void MSG_SSC_RECALL_STYLE()

```

TextGuardianClass

```
@class TextGuardianClass, GrObjVisGuardianClass
```

Instance Data

```

TextGuardianFlags  TGI_flags
word               TGI_desiredMinHeight
word               TGI_desiredMaxHeight

```

Types and Flags

```

ByteFlags          TextGuardianFlags
                    TGF_ENFORCE_DESIRED_MIN_HEIGHT          0x10
                    TGF_ENFORCE_DESIRED_MAX_HEIGHT          0x08
                    TGF_DISABLE_ENFORCED_DESIRED_MAX_HEIGHT_WHILE_EDITING
                                                                0x04
                    TGF_ENFORCE_MIN_DISPLAY_SIZE             0x02
                    TGF_SHRINK_WIDTH_TO_MIN_AFTER_EDIT       0x01

```

Messages

```

MSG_TG_CALC_DESIRED_MIN_HEIGHT
MSG_TG_SET_DESIRED_MIN_HEIGHT
MSG_TG_HEIGHT_NOTIFY
MSG_TG_GENERATE_TEXT_NOTIFY
MSG_TG_CALC_DESIRED_MAX_HEIGHT
MSG_TG_SET_DESIRED_MAX_HEIGHT
void MSG_TG_SET_TEXT_GUARDIAN_FLAGS(
    TextGuardianFlags flagsToSet,

```

```
TextGuardianFlags flagsToReset)
```

ThesControlClass

```
@class ThesControlClass, GenControlClass
```

Instance Data

```
void      *TCI_meanings
void      *TCI_synonyms
void      *TCI_grammars
void      *TCI_backups
word      TCI_status
char      TCI_lastWord[MAX_ENTRY_LENGTH]
@default  GCI_output = (TO_APP_TARGET)
@default  GII_visibility = GIV_DIALOG
@default  GI_states = (@default | GS_ENABLED)
```

Variable Data

```
void
ATTR_THES_CONTROL_INTERACT_ONLY_WITH_TARGETED_TEXT_
OBJECTS
```

Types and Flags

```
MAX_BACKUP_LIST_SIZE      30
MAX_ENTRY_LENGTH          26
MAX_GRAMMAR_STRING        7
MAX_DEFINITIONS           30
MAX_DEFINITION_SIZE       200
MAX_MEANINGS_ARRAY_SIZE   3000
MAX_SYNONYM_SIZE          26
MAX_SYNONYMS              80
MAX_SYNONYMS_ARRAY_SIZE   500
WordFlags ThesDictFeatures
    TDF_THESDICT          0x01
    TC_GCM_FEATURES       TDF_THESDICT
WordFlags ThesDictToolboxFeatures
    TDTF_THESDICT        0x01
TD_GCM_TOOLBOX_FEATURES   (TDTF_THESDICT)
```

Structures

```
typedef struct {
    word      RSWP_numChars
    MemHandle RSWP_string
} ReplaceSelectedWordParameters
typedef struct {
    word      SWP_type
    word      SWP_numChars
    word      SWP_message
    optr      SWP_output
} SelectWordParameters
```

Messages

```
void MSG_THES_REPLACE_SELECTED_WORDS (@stack
    MemHandle RSWP_string,
    word RSWP_numChars)
void MSG_THES_SELECT_WORD (@stack
    optr output, Message message,
    word numChars, word type)
```

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VisClass

```
@class VisClass, MetaClass, master
```

Instance Data

```
Rectangle    VI_bounds = {0, 0, 0, 0}
VisTypeFlags VI_typeFlags = 0
VisAttrs     VI_attrs = (VA_MANAGED|VA_DRAWABLE|
                        VA_DETECTABLE|VA_FULLY_ENABLED)
VisOptFlags  VI_optFlags = (VOF_GEOMETRY_INVALID|
                        VOF_GEO_UPDATE_PATH| VOF_WINDOW_INVALID|
                        VOF_WINDOW_UPDATE_PATH| VOF_IMAGE_INVALID|
                        VOF_IMAGE_UPDATE_PATH)
VisGeoAttrs  VI_geoAttrs = 0
SpecAttrs    VI_specAttrs = 0
@link        VI_link
```

Variable Data

```
Rectangle TEMP_VIS_OLD_BOUNDS
VarGeoData ATTR_VIS_GEOMETRY_DATA
word TEMP_VIS_INVALID_REGION
```

Types and Flags

```
ByteFlags    DrawFlags
              DF_EXPOSED                0x80
              DF_OBJECT_SPECIFIC         0x40
              DF_PRINT                   0x20
              DF_DONT_DRAW_CHILDREN      0x10
              DF_DISPLAY_TYPE            0x0f
ByteFlags    ColorScheme
              CS_lightColor              0xf0
              CS_darkColor              0x0f
CS_lightColor_OFFSET    4
typedef enum {
    TO_VIS_PARENT = _FIRST_VisClass
} VisTravelOption
ByteEnum     VisUpdateMode
              VUM_MANUAL                 0
              VUM_NOW                    1
              VUM_DELAYED_VIA_UI_QUEUE  2
              VUM_DELAYED_VIA_APP_QUEUE  3
ByteFlags    VisAttrs
              VA_VISIBLE                 0x80
              VA_FULLY_ENABLED           0x40
              VA_MANAGED                 0x20
              VA_DRAWABLE                0x10
              VA_DETECTABLE              0x08
              VA_BRANCH_NOT_MINIMIZABLE  0x04
              VA_OLD_BOUNDS_SAVED        0x02
              VA_REALIZED                0x01
ByteFlags    VisOptFlags
              VOF_GEOMETRY_INVALID       0x80
              VOF_GEO_UPDATE_PATH        0x40
              VOF_IMAGE_INVALID          0x20
              VOF_IMAGE_UPDATE_PATH      0x10
              VOF_WINDOW_INVALID         0x08
              VOF_WINDOW_UPDATE_PATH     0x04
              VOF_UPDATE_PENDING         0x02
```

	VOF_EC_UPDATING	0x01
ByteFlags	VisGeoAttrs	
	VGA_GEOMETRY_CALCULATED	0x80
	VGA_NO_SIZE_HINTS	0x40
	VGA_NOTIFY_GEOMETRY_VALID	0x20
	VGA_DONT_CENTER	0x10
	VGA_USE_VIS_SET_POSITION	0x08
	VGA_USE_VIS_CENTER	0x04
	VGA_ONLY_RECALC_SIZE_WHEN_INVALID	0x02
	VGA_ALWAYS_RECALC_SIZE	0x01
ByteFlags	VisTypeFlags	
	VTF_IS_COMPOSITE	0x80
	VTF_IS_WINDOW	0x40
	VTF_IS_PORTAL	0x20
	VTF_IS_WIN_GROUP	0x10
	VTF_IS_CONTENT	0x08
	VTF_IS_INPUT_NODE	0x04
	VTF_IS_GEN	0x02
	VTF_CHILDREN_OUTSIDE_PORTAL_WIN	0x01
ByteFlags	SpecAttrs	
	SA_ATTACHED	0x80
	SA_REALIZABLE	0x40
	SA_BRANCH_MINIMIZED	0x20
	SA_USES_DUAL_BUILD	0x10
	SA_CUSTOM_VIS_PARENT	0x08
	SA_SIMPLE_GEN_OBJ	0x04
	SA_CUSTOM_VIS_PARENT_FOR_CHILD	0x02
	SA_TREE_BUILT_BUT_NOT_REALIZED	0x01
ByteFlags	VisUpdateImageFlags	
	VUIF_ALREADY_INVALID	0x80
	VUIF_ALWAYS_INVALIDATE	0x40
ByteFlags	VisAddRectFlags	
	VARF_NOT_IF_ALREADY_INVALID	0x80
	VARF_ONLY_REDRAW_MARGINS	0x40
ByteFlags	VisInputFlowGrabFlags	
	VIFGF_NOT_HERE	0x80
	VIFGF_FORCE	0x20
	VIFGF_GRAB	0x10
	VIFGF_KBD	0x08
	VIFGF_MOUSE	0x04
	VIFGF_LARGE	0x02
	VIFGF_PTR	0x01
ByteEnum	VisInputFlowGrabType	
	VIFGT_ACTIVE	0
	VIFGT_PRE_PASSIVE	1
	VIFGT_POST_PASSIVE	2
ByteFlags	DrawMonikerFlags	
	DMF_UNDERLINE_ACCELERATOR	0x40
	DMF_CLIP_TO_MAX_WIDTH	0x20
	DMF_NONE	0x10
	DMF_Y_JUST_MASK	0x0c
	DMF_X_JUST_MASK	0x03
	DMF_Y_JUST_OFFSET	2
	DMF_X_JUST_OFFSET	0
WordFlags	VisMonikerSearchFlags	
	VMSF_STYLE	0xf000
	VMSF_COPY_CHUNK	0x0400



VMSF_REPLACE_LIST		0x0200
VMSF_GSTRING		0x0100
VMSF_STYLE_OFFSET	12	
WordFlags	SpecSizeSpec	
SSS_TYPE		0x8c00
SSS_DATA		0x03ff
WordFlags	SpecWidth	
SW_TYPE		0x8c00
SW_DATA		0x03ff
WordFlags	SpecHeight	
SH_TYPE		0x8c00
SH_DATA		0x03ff
SSS_TYPE_OFFSET	10	
SSS_DATA_OFFSET	0	
ByteEnum	SpecSizeType	
SST_PIXELS		0x0000
SST_COUNT		0x0400
SST_PCT_OF_FIELD_WIDTH		0x0800
SST_PCT_OF_FIELD_HEIGHT		0x0c00
SST_AVG_CHAR_WIDTHS		0x1000
SST_WIDE_CHAR_WIDTHS		0x1400
SST_LINES_OF_TEXT		0x1800
PCT_0	0x000	
PCT_5	0x033	
PCT_10	0x066	
PCT_15	0x099	
PCT_20	0x0cc	
PCT_25	0x100	
PCT_30	0x133	
PCT_35	0x166	
PCT_40	0x199	
PCT_45	0x1cc	
PCT_50	0x200	
PCT_55	0x233	
PCT_60	0x266	
PCT_65	0x299	
PCT_70	0x2cc	
PCT_75	0x300	
PCT_80	0x333	
PCT_85	0x366	
PCT_90	0x399	
PCT_95	0x3cc	
PCT_100	0x3ff	
WordFlags	SpecWinSizeSpec	
SWSS_RATIO		0x8000
SWSS_SIGN		0x4000
SWSS_MANTISSA		0x3c00
SWSS_FRACTION		0x03ff
WordFlags	RecalcSizeArgs	
RSA_CHOOSE_OWN_SIZE		0x8000
RSA_SUGGESTED_SIZE		0x7fff
ByteEnum	WinPositionType	
WPT_AT_RATIO		0
WPT_STAGGER		1
WPT_CENTER		2
WPT_TILED		3
WPT_AT_MOUSE_POSITION		4

WPT_AS_REQUIRED	5
ByteEnum WinSizeType	
WST_AS_RATIO_OF_PARENT	0
WST_AS_RATIO_OF_FIELD	1
WST_AS_DESIRED	2
WST_EXTEND_TO_BOTTOM_RIGHT	3
WST_EXTEND_NEAR_BOTTOM_RIGHT	4
ByteEnum WinConstrainType	
WCT_NONE	0
WCT_KEEP_PARTIALLY_VISIBLE	1
WCT_KEEP_VISIBLE	2
WCT_KEEP_VISIBLE_WITH_MARGIN	3
WordFlags WinPosSizeFlags	
WPSF_PERSIST	0x8000
WPSF_HINT_FOR_ICON	0x4000
WPSF_NEVER_SAVE_STATE	0x2000
WPSF_SHRINK_DESIRED_SIZE_TO_FIT_IN_PARENT	0x1000
WPSF_CONSTRAIN_TYPE	0x00c0
WPSF_POSITION_TYPE	0x0038
WPSF_SIZE_TYPE	0x0007
dword SizeAsDWord	
ByteEnum VMStyle	
VMS_TEXT	0
VMS_ABBREV_TEXT	1
VMS_GRAPHIC_TEXT	2
VMS_ICON	3
VMS_TOOL	4
WordFlags VisMonikerListEntryType	
VMLET_GS_SIZE	0x0300
VMLET_STYLE	0x0f00
VMLET_MONIKER_LIST	0x0080
VMLET_GSTRING	0x0040
VMLET_GS_ASPECT_RATIO	0x0030
VMLET_GS_COLOR	0x000f
VMT_GS_SIZE_OFFSET	12
VMLET_STYLE_OFFSET	8
VMT_GS_ASPECT_RATIO_OFFSET	4
VMT_GS_COLOR_OFFSET	0
ByteFlags VisMonikerType	
VMT_MONIKER_LIST	0x80
VMT_GSTRING	0x40
VMT_GS_ASPECT_RATIO	0x30
VMT_GS_COLOR	0x0f
WordFlags VisMonikerCachedWidth	
VMCW_HINTED	0x8000
VMCW_BERKELEY_9	0x7f00
VMCW_BERKELEY_10	0x00ff
VMCW_BERKELEY_9_OFFSET	8
VMCW_BERKELEY_10_OFFSET	0
VMO_CANCEL	0xfd
VMO_MNEMONIC_NOT_IN_MKR_TEXT	0xfe
VMO_NO_MNEMONIC	0xff
ByteFlags CreateVisMonikerFlags	
CVMF_DIRTY	0x80
ByteEnum VisMonikerSourceType	
VMST_FPTR	0
VMST_OPTR	1

VMST_HPTR	2	
ByteEnum	VisMonikerDataType	
VMDT_NULL	0	
VMDT_VIS_MONIKER	1	
VMDT_TEXT	2	
VMDT_GSTRING	3	
VMDT_TOKEN	4	
WordFlags	SpecBuildFlags	
SBF_IN_UPDATE_WIN_GROUP		0x8000
SBF_WIN_GROUP		0x4000
SBF_TREE_BUILD		0x2000
SBF_VIS_PARENT_WITHIN_SCOPE_OF_TREE_BUILD		0x1000
SBF_SKIP_CHILD		0x0800
SBF_FIND_LAST		0x0400
SBF_VIS_PARENT_UNBUILDING		0x0200
SBF_VIS_PARENT_FULLY_ENABLED		0x0100
SBF_UPDATE_MODE		0x0003
WordFlags	NavigationFlags	
NF_COMPLETED_CIRCUIT		0x8000
NF_REACHED_ROOT		0x4000
NF_NAV_MENU_BAR		0x0020
NF_INITIATE_QUERY		0x0008
NF_SKIP_NODE		0x0004
NF_TRAVEL_CIRCUIT		0x0002
NF_BACKTRACK_AFTER_TRAVELING		0x0001
ByteFlags	NavigateCommonFlags	
NCF_IS_COMPOSITE		0x80
NCF_IS_FOCUSABLE		0x40
NCF_IS_MENU_RELATED		0x20
NCF_IS_INPUT_NODE		0x10
ByteFlags	MenuSepFlags	
MSF_SEP		0x80
MSF_USABLE		0x40
MSF_FROM_CHILD		0x20
WordFlags	GenBranchInfo	
GBI_USABLE		0x8000
GBI_BRANCH_MINIMIZED		0x4000

Structures

```

typedef struct {
    byte    DS_colorScheme
    byte    DS_displayType
    word    DS_unused
    FontID  DS_fontID
    sword   DS_pointSize
} DisplayScheme
typedef struct {
    word    GCP_aboveCenter
    word    GCP_belowCenter
    word    GCP_leftOfCenter
    word    GCP_rightOfCenter
} GetCenterParams
typedef struct {
    word    OAGP_grabFlags
    word    OAGP_unused
    optr    OAGP_object
} ObjectAndGrabParams

```

```

typedef struct {
    word        VMLE_type
    optr        VMLE_moniker
} VisMonikerListEntry
typedef struct {
    byte        VM_type
    word        VM_width
} VisMoniker
typedef struct {
    VisMoniker   VMWGS_common
    word        VMWGS_height
} VisMonikerWithGString
VMWGS_gString   (sizeof(VisMonikerWithGString))
typedef struct {
    VisMoniker   VMWT_common
    char        VMWT_mnemonicOffset
} VisMonikerWithText
VMWT_text       (sizeof(VisMonikerWithText))
typedef struct {
    word        ESP_extraWidth
    word        ESP_extraHeight
    word        ESP_leftoverChildren
    word        ESP_unused
} ExtraSizeParams
typedef struct {
    word        WSIP_windowWidth
    word        WSIP_windowHeight
    byte        WSIP_bottomArea
    byte        WSIP_rightArea
    word        WSIP_unused
} WinSizeInfoParams
typedef struct {
    optr        NCP_object
    NavigationFlags  NCP_navFlags
    NavigateCommonFlags  NCP_navCommonFlags
    ChunkHandle    NCP_genericData
} NavigateCommonParams
typedef struct {
    word        VCCIBF_data1
    word        VCCIBF_data2
    word        VCCIBF_data3
    word        VCCIBF_data4
    word        VCCIBF_data5
    Rectangle   VCCIBF_bounds
} VisCallChildrenInBoundsFrame
typedef struct {
    SpecWinSizeSpec SWSP_x
    SpecWinSizeSpec SWSP_y
} SpecWinSizePair
typedef struct {
    word        VGD_lineWidth
    word        VGD_centerOffset
    word        VGD_secondWidth
} VarGeoData

```



Macros

```

visParent @parent word_offsetof(VisBase, Vis_offset),
                        word_offsetof(VisInstance, VI_link)
visChildren @children
                        word_offsetof(VisBase, Vis_offset),
                        word_offsetof(
                            VisCompInstance, VCI_comp),
                        word_offsetof(VisInstance, VI_link)
DWORD_WIDTH(val) ((word) (val))
DWORD_HEIGHT(val) ((word) (val >> 16))
MAKE_SIZE_DWORD(width,height)
(((dword) (height)) << 16) | (word) (width))

```

Messages

```

@exportMessages VisSpecMessages,
                DEFAULT_EXPORTED_MESSAGES
@exportMessages VisAppMessages,
                DEFAULT_EXPORTED_MESSAGES
void MSG_VIS_DRAW(DrawFlags drawFlags,
                  GStateHandle gstate)
void MSG_VIS_REDRAW_ENTIRE_OBJECT()
GStateHandle MSG_VIS_VUP_CREATE_GSTATE()
void MSG_VIS_VUP_QUERY()
optr MSG_VIS_VUP_FIND_OBJECT_OF_CLASS(
    ClassStruct *class)
void MSG_VIS_VUP_CALL_OBJECT_OF_CLASS(EventHandle event)
void MSG_VIS_VUP_SEND_TO_OBJECT_OF_CLASS(
    EventHandle event)
Boolean MSG_VIS_VUP_TEST_FOR_OBJECT_OF_CLASS(
    ClassStruct *class)
void MSG_VIS_VUP_CALL_WIN_GROUP(EventHandle event)
void MSG_VIS_VUP_SEND_TO_WIN_GROUP(EventHandle event)
void MSG_VIS_SET_ATTRS(VisAttrs attrsToSet,
                      VisAttrs attrsToClear,
                      VisUpdateMode updateMode)
void MSG_VIS_SET_GEO_ATTRS(VisGeoAttrs attrsToSet,
                          VisGeoAttrs attrsToClear,
                          VisUpdateMode updateMode)
byte MSG_VIS_GET_GEO_ATTRS()
VisOptFlags MSG_VIS_GET_OPT_FLAGS()
void MSG_VIS_SET_TYPE_FLAGS(
    byte flagsToSet, byte flagsToClear)
VisTypeFlags MSG_VIS_GET_TYPE_FLAGS()
VisAttrs MSG_VIS_GET_ATTRS()
XYValueAsDWord MSG_VIS_GET_POSITION()
void MSG_VIS_SET_POSITION(word xOrigin, word yOrigin)
void MSG_VIS_GET_BOUNDS(Rectangle *retValue)
SizeAsDWord MSG_VIS_GET_SIZE()
void MSG_VIS_SET_SIZE(word width, word height)
void MSG_VIS_GET_CENTER(GetCenterParams *retValue)
SizeAsDWord MSG_VIS_RECALC_SIZE(word width, word height)
void MSG_VIS_POSITION_BRANCH(word xOrigin, word yOrigin)
void MSG_VIS_NOTIFY_GEOMETRY_VALID()
void MSG_VIS_BOUNDS_CHANGED(@stack
    word bottom, word right,
    word top, word left)
void MSG_VIS_RESET_TO_INITIAL_SIZE(

```

```

        VisUpdateMode updateMode)
SizeAsDWord MSG_VIS_RECALC_SIZE_AND_INVALID_IF_NEEDED(
    word width, word height)
Boolean MSG_VIS_POSITION_AND_INVALID_IF_NEEDED(
    word xPosition, word yPosition)
void MSG_VIS_MARK_INVALID(
    VisOptFlags flagsToSet,
    VisUpdateMode updateMode)
Boolean MSG_VIS_VUP_UPDATE_WIN_GROUP(
    VisUpdateMode updateMode)
void MSG_VIS_UPDATE_WIN_GROUP(VisUpdateMode updateMode)
void MSG_VIS_UPDATE_GEOMETRY()
void MSG_VIS_UPDATE_WINDOWS_AND_IMAGE(
    VisUpdateImageFlags updateImageFlags)
void MSG_VIS_INVALIDATE()
void MSG_VIS_ADD_RECT_TO_UPDATE_REGION(@stack
    byte unused,
    VisAddRectFlags addRectFlags,
    word bottom, word right,
    word top, word left)
void MSG_VIS_INVALID_TREE()
void MSG_VIS_OPEN(WindowHandle window)
void MSG_VIS_CLOSE()
void MSG_VIS_DESTROY(VisUpdateMode updateMode)
void MSG_VIS_REMOVE(VisUpdateMode updateMode)
WindowHandle MSG_VIS_QUERY_WINDOW()
void MSG_VIS_OPEN_WIN(WindowHandle parentWindow)
void MSG_VIS_CLOSE_WIN()
void MSG_VIS_WIN_ABOUT_TO_BE_CLOSED()
void MSG_VIS_MOVE_RESIZE_WIN()
void MSG_VIS_ADD_CHILD(optr child, CompChildFlags flags)
void MSG_VIS_REMOVE_CHILD(optr child,
    CompChildFlags flags)
void MSG_VIS_MOVE_CHILD(optr child,
    CompChildFlags flags)
word MSG_VIS_FIND_CHILD(optr object)
optr MSG_VIS_FIND_CHILD_AT_POSITION(word position)
word MSG_VIS_COUNT_CHILDREN()
optr MSG_VIS_FIND_PARENT()
void MSG_VIS_CALL_PARENT(EventHandle event)
void MSG_VIS_SEND_TO_PARENT(EventHandle event)
void MSG_VIS_SEND_TO_CHILDREN(EventHandle event)
void MSG_VIS_GRAB_MOUSE()
void MSG_VIS_FORCE_GRAB_MOUSE()
void MSG_VIS_GRAB_LARGE_MOUSE()
void MSG_VIS_FORCE_GRAB_LARGE_MOUSE()
void MSG_VIS_RELEASE_MOUSE()
void MSG_VIS_ADD_BUTTON_PRE_PASSIVE()
void MSG_VIS_REMOVE_BUTTON_PRE_PASSIVE()
void MSG_VIS_ADD_BUTTON_POST_PASSIVE()
void MSG_VIS_REMOVE_BUTTON_POST_PASSIVE()
void MSG_VIS_TAKE_GADGET_EXCL(optr child)
void MSG_VIS_RELEASE_GADGET_EXCL(optr child)
void MSG_VIS_LOST_GADGET_EXCL()
void MSG_VIS_VUP_QUERY_FOCUS_EXCL(
    ObjectAndGrabParams *retValue)
void MSG_VIS_FUP_QUERY_FOCUS_EXCL(

```



```

        ObjectAndGrabParams *retValue)
void MSG_VIS_VUP_ALTER_INPUT_FLOW(@stack
    PointDWord translation,
    WindowHandle window, optr object,
    word grabTypeAndFlags)
void MSG_VIS_VUP_SET_MOUSE_INTERACTION_BOUNDS(@stack
    word bottom, word right,
    word top, word left)
word MSG_VIS_VUP_GET_MOUSE_STATUS()
void MSG_VIS_VUP_TERMINATE_ACTIVE_MOUSE_FUNCTION()
void MSG_VIS_VUP_BUMP_MOUSE(word xBump, word yBump)
void MSG_VIS_VUP_ALLOW_GLOBAL_TRANSFER()
void MSG_VIS_DRAW_MONIKER(@stack
    DrawMonikerFlags monikerFlags,
    ChunkHandle visMoniker,
    word textHeight,
    GStateHandle gstate,
    word yMaximum, word xMaximum,
    word yInset, word xInset)
XYValueAsDWord MSG_VIS_GET_MONIKER_POS(@stack
    DrawMonikerFlags monikerFlags,
    ChunkHandle visMoniker,
    word textHeight,
    GStateHandle gstate,
    word yMaximum, word xMaximum,
    word yInset, word xInset)
SizeAsDWord MSG_VIS_GET_MONIKER_SIZE(@stack
    byte monikerFlags,
    ChunkHandle visMoniker,
    word textHeight,
    GStateHandle gstate,
    word yMaximum, word xMaximum,
    word yInset, word xInset)
optr MSG_VIS_FIND_MONIKER(@stack
    VisMonikerSearchFlags searchFlags,
    Handle destBlock,
    ChunkHandle monikerList,
    DisplayType displayType)
ChunkHandle MSG_VIS_CREATE_VIS_MONIKER(@stack
    CreateVisMonikerFlags flags,
    word height, word width,
    word length,
    VisMonikerDataType dataType,
    VisMonikerSourceType sourceType,
    dword source)
void MSG_VIS_VUP_EC_ENSURE_WINDOW_NOT_REFERENCED(
    WindowHandle window)
void MSG_VIS_VUP_EC_ENSURE_OBJ_BLOCK_NOT_REFERENCED(
    MemHandle objBlock)
void MSG_VIS_VUP_EC_ENSURE_OD_NOT_REFERENCED(
    optr object)
void MSG_VIS_LAYER_SET_DOC_BOUNDS(@stack
    sdword bottom, sdword right,
    sdword top, sdword left)
void MSG_VIS_LAYER_GET_DOC_BOUNDS(RectDWord *bounds)
void MSG_VIS_QUERY_IF_OBJECT_HANDLES_INK(
    VisCallChildrenInBoundsFrame *data)

```

```

void MSG_VIS_RECREATE_CACHED_GSTATES()
void MSG_VIS_LAYER_INSERT_OR_DELETE_SPACE()
void MSG_VIS_CREATE_CACHED_GSTATES()
void MSG_VIS_DESTROY_CACHED_GSTATES()
void MSG_VIS_ADD_NON_DISCARDABLE_VM_CHILD(
    optr child, CompChildFlags flags)
void MSG_VIS_REMOVE_NON_DISCARDABLE_VM_CHILD(optr child)
void MSG_VIS_REMOVE_NON_DISCARDABLE(
    VisUpdateMode updateMode)
void MSG_VIS_INVALID_ALL_GEOMETRY(
    VisUpdateMode updateMode)
void MSG_SPEC_BUILD(SpecBuildFlags flags = bp) /*XXX*/
void MSG_SPEC_BUILD_BRANCH(SpecBuildFlags flags)
void MSG_SPEC_UNBUILD_BRANCH(SpecBuildFlags flags)
void MSG_SPEC_UNBUILD(SpecBuildFlags flags)
optr MSG_SPEC_GET_VIS_PARENT(SpecBuildFlags flags)
optr MSG_SPEC_DETERMINE_VIS_PARENT_FOR_CHILD(optr child)
optr MSG_SPEC_GUP_QUERY_VIS_PARENT(word parentType)
optr MSG_SPEC_GET_SPECIFIC_VIS_OBJECT(word flags)
void MSG_SPEC_ADD_CHILD_RELATIVE_TO_GEN(@stack
    word buildFlags, optr parent,
    optr child)
void MSG_SPEC_RESOLVE_MONIKER_LIST(
    ChunkHandle monikerList)
void MSG_SPEC_RESOLVE_TOKEN_MONIKER(
    ChunkHandle monikerChunk)
void MSG_SPEC_SET_ATTRS(SpecAttrs attrsToSet,
    SpecAttrs attrsToClear,
    VisUpdateMode updateMode)
SpecAttrs MSG_SPEC_GET_ATTRS()
void MSG_SPEC_SET_USABLE(byte updateMode)
void MSG_SPEC_SET_NOT_USABLE(byte updateMode)
Boolean MSG_SPEC_NOTIFY_ENABLED(
    byte updateMode, byte flags)
Boolean MSG_SPEC_NOTIFY_NOT_ENABLED(
    byte updateMode, byte flags)
void MSG_SPEC_UPDATE_VIS_MONIKER(byte updateMode,
    word oldMonikerWidth,
    word oldMonikerHeight)
void MSG_SPEC_UPDATE_VISUAL(byte updateMode)
void MSG_SPEC_GET_EXTRA_SIZE(word childCount,
    ExtraSizeParams *retValue)
SizeAsDWord MSG_SPEC_CONVERT_DESIRED_SIZE_HINT(
    word desiredWidth,
    word desiredHeight,
    word childCount)
word MSG_SPEC_CONVERT_SIZE(
    word specSize, GStateHandle gstate)
void MSG_SPEC_VUP_GET_WIN_SIZE_INFO(
    WinSizeInfoParams *retValue)
void MSG_SPEC_NAVIGATE_TO_NEXT_FIELD()
void MSG_SPEC_NAVIGATE_TO_PREVIOUS_FIELD()
void MSG_SPEC_NAVIGATE_COMMON(
    NavigateCommonParams *navCommonParams)
Boolean MSG_SPEC_ACTIVATE_INTERACTION_DEFAULT()
optr MSG_SPEC_NAVIGATE(word navigateFlags)

```

```
void MSG_SPEC_NAVIGATION_QUERY(optr queryOrigin,
                                NavigationFlags navFlags,
                                NavigationQueryParams *retValue)
void MSG_SPEC_NOTIFY_NAVIGATION_COMPLETE(
                                NavigationFlags navigateFlags)
Boolean MSG_SPEC_ACTIVATE_OBJECT_WITH_MNEMONIC(
    word character, byte flags,
    word state)
Boolean MSG_SPEC_CHECK_MNEMONIC(word character,
                                byte flags, word state)
byte MSG_SPEC_MENU_SEP_QUERY(byte flags)
void MSG_SPEC_UPDATE_MENU_SEPARATORS()
optr MSG_SPEC_START_BROADCAST_FOR_DEFAULT_FOCUS()
void MSG_SPEC_BROADCAST_FOR_DEFAULT_FOCUS(
    ObjectAndGrabParams *retValue)
void MSG_SPEC_SCAN_GEOMETRY_HINTS()
void MSG_SPEC_RESCAN_GEO_AND_UPDATE(
    VisUpdateMode updateMode)
void MSG_SPEC_UPDATE_SPECIFIC_OBJECT()
void MSG_SPEC_VIS_OPEN_NOTIFY()
void MSG_SPEC_VIS_CLOSE_NOTIFY()
dword MSG_SPEC_GET_MENU_CENTER()
void MSG_SPEC_UPDATE_KBD_ACCELERATOR(
    VisUpdateMode updateMode)
void MSG_SPEC_RESET_SIZE_TO_STAY_ONSCREEN(
    VisUpdateMode updateMode)
```

VisCompClass

```
@class VisCompClass, VisClass
```

Instance Data

```
@composite          VCI_comp = VI_link
optr                VCI_gadgetExcl
WindowHandle        VCI_window = 0
VisCompGeoAttrs     VCI_geoAttrs = 0
VisCompGeoDimensionAttrs VCI_geoDimensionAttrs = 0
@default VI_typeFlags = VTF_IS_COMPOSITE
```

Types and Flags

```
dword SpacingAsDWord
WordFlags    VisCompSpacingMarginsInfo
              VCSMI_USE_THIS_INFO          0x8000
              VCSMI_LEFT_MARGIN            0x7000
              VCSMI_TOP_MARGIN              0x0e00
              VCSMI_RIGHT_MARGIN           0x01c0
              VCSMI_BOTTOM_MARGIN          0x0038
              VCSMI_CHILD_SPACING          0x0007
VCSMI_LEFT_MARGIN_OFFSET    12
VCSMI_TOP_MARGIN_OFFSET    9
VCSMI_RIGHT_MARGIN_OFFSET  6
VCSMI_BOTTOM_MARGIN_OFFSET 3
VCSMI_CHILD_SPACING_OFFSET 0
ByteEnum     WidthJustification
              WJ_LEFT_JUSTIFY_CHILDREN     0x00
              WJ_RIGHT_JUSTIFY_CHILDREN    0x40
              WJ_CENTER_CHILDREN_HORIZONTALLY 0x80
              WJ_FULL_JUSTIFY_CHILDREN_HORIZONTALLY 0xc0
ByteEnum     HeightJustification
              HJ_TOP_JUSTIFY_CHILDREN       0x00
              HJ_BOTTOM_JUSTIFY_CHILDREN    0x04
              HJ_CENTER_CHILDREN_VERTICALLY 0x08
              HJ_FULL_JUSTIFY_CHILDREN_VERTICALLY 0x0c
ByteFlags    VisCompGeoDimensionAttrs
              VCGDA_WIDTH_JUSTIFICATION     0xc0
              VCGDA_EXPAND_WIDTH_TO_FIT_PARENT 0x20
              VCGDA_DIVIDE_WIDTH_EQUALLY    0x10
              VCGDA_HEIGHT_JUSTIFICATION    0x0c
              VCGDA_EXPAND_HEIGHT_TO_FIT_PARENT 0x02
              VCGDA_DIVIDE_HEIGHT_EQUALLY   0x01
ByteFlags    VisCompGeoAttrs
              VCGA_ORIENT_CHILDREN_VERTICALLY 0x80
              VCGA_INCLUDE_ENDS_IN_CHILD_SPACING 0x40
              VCGA_ALLOW_CHILDREN_TO_WRAP    0x20
              VCGA_ONE_PASS_OPTIMIZATION    0x10
              VCGA_CUSTOM_MANAGE_CHILDREN    0x08
              VCGA_HAS_MINIMUM_SIZE          0x04
              VCGA_WRAP_AFTER_CHILD_COUNT    0x02
              VCGA_ONLY_DRAWS_IN_MARGINS     0x01
```

Structures

```
typedef struct {
    word    CSP_childSpacing
    word    CSP_wrapSpacing
} ChildSpacingParams
```



Macros

```
DWORD_CHILD_SPACING(val) ((word) (val))
DWORD_WRAP_SPACING(val) ((word) (val >> 16))
MAKE_SPACING_DWORD(width,height)
    (((dword) (height)) << 16) | (width))
```

Messages

```
word MSG_VIS_COMP_GET_GEO_ATTRS()
void MSG_VIS_COMP_SET_GEO_ATTRS(
    word attrsToSet, word attrsToClear)
SpacingAsDWord MSG_VIS_COMP_GET_CHILD_SPACING()
SizeAsDWord MSG_VIS_COMP_GET_MINIMUM_SIZE()
void MSG_VIS_COMP_GET_MARGINS(Rectangle *retValue)
word MSG_VIS_COMP_GET_WRAP_COUNT()
```

VisContentClass

```
@class VisContentClass, VisCompClass
```

Instance Data

```
optr          VCNI_view
WindowHandle  VCNI_window = 0
word          VCNI_viewHeight = 0
word          VCNI_viewWidth = 0
VisContentAttrs VCNI_attrs = 0
PointDWord    VCNI_docOrigin = {0, 0}
PointWFixed   VCNI_scaleFactor = {{0, 1}, {0, 1}}
ChunkHandle   VCNI_prePassiveMouseGrabList = 0
VisMouseGrab  VCNI_impliedMouseGrab =
                {0, 0, {0, 0},
                (VIFGF_MOUSE | VIFGF_PTR), 0}
VisMouseGrab  VCNI_activeMouseGrab =
                {0, 0, {0, 0}, 0, 0}
ChunkHandle   VCNI_postPassiveMouseGrabList = 0
KbdGrab       VCNI_kbdGrab = {0, 0}
FTVMCGrab     VCNI_focusExcl = {0, MAEF_FOCUS}
FTVMCGrab     VCNI_targetExcl = {0, MAEF_TARGET}
Handle        VCNI_holdUpInputQueue = 0
word          VCNI_holdUpInputCount = 0
byte          VCNI_holdUpInputFlags = 0
@default VI_typeFlags = VTF_IS_COMPOSITE |
                VTF_IS_WINDOW | VTF_IS_CONTENT |
                VTF_IS_WIN_GROUP | VTF_IS_INPUT_NODE
```

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Types and Flags

ByteFlags	VisContentAttrs	
	VCNA_SAME_WIDTH_AS_VIEW	0x80
	VCNA_SAME_HEIGHT_AS_VIEW	0x40
	VCNA_LARGE_DOCUMENT_MODEL	0x20
	VCNA_WINDOW_COORDINATE_MOUSE_EVENTS	0x10
	VCNA_ACTIVE_MOUSE_GRAB_REQUIRES_LARGE_EVENTS	0x08
	VCNA_VIEW_DOC_BOUNDS_SET_MANUALLY	0x04
	VCNA_VIEW_DOES_NOT_WIN_SCROLL	0x02

Structures

```
typedef struct {
    optr          VMG_object
    WindowHandle  VMG_gWin
    PointDWord    VMG_translation
    VisInputFlowGrabFlags VMG_flags
    byte          VMG_unused
} VisMouseGrab
```

Messages

```
SizeAsDWord MSG_VIS_CONTENT_GET_WIN_SIZE()
void MSG_VIS_CONTENT_SET_ATTRS(
    VisContentAttrs attrsToSet,
    VisContentAttrs attrsToClear)
VisContentAttrs MSG_VIS_CONTENT_GET_ATTRS()
SizeAsDWord MSG_VIS_CONTENT_RECALC_SIZE_BASED_ON_VIEW()
void MSG_VIS_CONTENT_HOLD_UP_INPUT_FLOW()
void MSG_VIS_CONTENT_RESUME_INPUT_FLOW()
void MSG_VIS_CONTENT_DISABLE_HOLD_UP()
void MSG_VIS_CONTENT_ENABLE_HOLD_UP()
```

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```
Boolean MSG_VIS_CONTENT_TEST_IF_ACTIVE_OR IMPLIED_WIN(  
    WinHandle window)  
void MSG_VIS_CONTENT_UNWANTED_MOUSE_EVENT(  
    VisMouseGrab *mouseGrab,  
    word inputState)  
void MSG_VIS_CONTENT_UNWANTED_KBD_EVENT(  
    word character, word flags,  
    word state)  
  
void  
MSG_VIS_CONTENT_REMOTE_OBJ_MESSAGE_VIA_HOLD_UP_QUEUE()  
void MSG_VIS_CONTENT_SET_DOC_BOUNDS(@stack  
    sdword bottom, sdword right,  
    sdword top, sdword left)  
  
void  
MSG_VIS_CONTENT_NOTIFY_ACTIVE_MOUSE_GRAB_WIN_CHANGED()
```

VisHorizRulerClass

```
@class VisHorizRulerClass, VisRulerClass
```

VisLargeTextClass

```
@class VisLargeTextClass, VisTextClass
```

Instance Data

```
ChunkHandle          VLTl_regionArray
VisLargeTextDisplayModes VLTl_displayMode
word                 VLTl_regionSpacing
XYSize               VLTl_draftRegionSize
dword                VLTl_totalHeight
word                 VLTl_displayModeWidth
VisLargeTextFlags    VLTl_flags
VisLargeTextAttrs    VLTl_attrs
```

Types and Flags

```
WordFlags    VisLargeTextRegionFlags
              VLTRF_ENDED_BY_COLUMN_BREAK    0x8000
              VLTRF_EMPTY                    0x4000
typedef enum {
    VLTDM_PAGE,
    VLTDM_CONDENSED,
    VLTDM_GALLEY,
    VLTDM_DRAFT_WITH_STYLES,
    VLTDM_DRAFT_WITHOUT_STYLES
} VisLargeTextDisplayModes
WordFlags    VisLargeTextFlags
              VLTF_HEIGHT_NOTIFY_PENDING    0x8000
WordFlags    VisLargeTextAttrs
              VLTA_EXACT_HEIGHT              0x8000
```

Structures

```
typedef struct {
    dword          VLTRAe_charCount
    dword          VLTRAe_lineCount
    word           VLTRAe_section
    PointDWord     VLTRAe_spatialPosition
    XYSize         VLTRAe_size
    WBFixed        VLTRAe_calcHeight
    dword          VLTRAe_region
    VisLargeTextRegionFlags VLTRAe_flags
    byte           VLTRAe_reserved[3]
} VisLargeTextRegionArrayElement
```

Messages

```
void MSG_VIS_LARGE_TEXT_CREATE_DATA_STRUCTURES()
void MSG_VIS_LARGE_TEXT_APPEND_REGION(word region)
void MSG_VIS_LARGE_TEXT_REGION_IS_LAST(word region)
void MSG_VIS_LARGE_TEXT_CURRENT_REGION_CHANGED(
    word region)
void MSG_VIS_LARGE_TEXT_REGION_CHANGED(word region)
void MSG_VIS_LARGE_TEXT_SET_DISPLAY_MODE(
    VisLargeTextDisplayModes mode)
void MSG_VIS_LARGE_TEXT_SET_DRAFT_REGION_SIZE(
    word width, word height)
XYValueAsDWord
MSG_VIS_LARGE_TEXT_GET_DRAFT_REGION_SIZE(word region)
word MSG_VIS_LARGE_TEXT_GET_REGION_COUNT()
void MSG_VIS_LARGE_TEXT_GET_REGION_POS()
void MSG_VIS_LARGE_TEXT_REGION_FROM_POINT()
```

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VisRulerClass

```
@class VisRulerClass, VisCompClass, master
```

Instance Data

```
VisRulerType      VRI_type
MinIncrementType  VRI_minIncrement
WWFixed           VRI_scale
sdword            VRI_offset
sdword            VRI_margin
```

Types and Flags

```
VIS_RULER_HEIGHT      10
CUSTOM_RULER_DEFINITION 0xfd
NO_RULERS              0xfe
SYSTEM_DEFAULT        0xff

ByteEnum VisRulerType
    VRT_INCHES          0
    VRT_CENTIMETERS     1
    VRT_POINTS          2
    VRT_PICAS           3
    VRT_CUSTOM          CUSTOM_RULER_DEFINITION
    VRT_NONE            NO_RULERS
    VRT_DEFAULT         SYSTEM_DEFAULT

ByteEnum MinUSMeasure
    MUSM_EIGHTH_INCH   0
    MUSM_QUARTER_INCH  1
    MUSM_HALF_INCH     2
    MUSM_ONE_INCH      3

ByteEnum MinMetricMeasure
    MMM_MILLIMETER     0
    MMM_HALF_CENTIMETER 1
    MMM_CENTIMETER     2

ByteEnum MinPointMeasure
    MPM_25_POINT       0
    MPM_50_POINT       1
    MPM_100_POINT      2

ByteEnum MinPicaMeasure
    MPM_PICA           0
    MPM_INCH           1
```

Structures

```
typedef union {
    MinUSMeasure      MIT_US
    MinMetricMeasure   MIT_METRIC
    MinPointMeasure    MIT_POINT
    MinPicaMeasure     MIT_PICA
} MinIncrementType
```

Messages

```
void MSG_VIS_RULER_SET_TYPE(VisRulerType rulerType)
void MSG_VIS_RULER_SET_MIN_INCREMENT(
    MinIncrementType minIncrementType)
void MSG_VIS_RULER_SET_SCALE(WWFixed scaleFactor)
void MSG_VIS_RULER_SET_OFFSET(sdword offset)
void MSG_VIS_RULER_SET_MARGIN(sdword margin)
```

VisTextClass

```
@class VisTextClass, VisClass
```

Instance Data

```
ChunkHandle      VTI_text
word             VTI_charAttrRuns =
                  VIS_TEXT_INITIAL_CHAR_ATTR
word            VTI_paraAttrRuns =
                  VIS_TEXT_INITIAL_PARA_ATTR
VMFileHandle     VTI_vmFile = NullHandle
word            VTI_lines = 0
VisTextStorageFlags VTI_storageFlags =
                  (VTSF_DEFAULT_CHAR_ATTR |
                   VTSF_DEFAULT_PARA_ATTR)
VisTextFeatures  VTI_features = 0
VisTextStates    VTI_state = 0
VisTextIntFlags  VTI_intFlags = 0
VisTextIntSelFlags VTI_intSelFlags = 0
GSRefCountAndFlags VTI_gsRefCount = 0
GStateHandle     VTI_gstate = NullHandle
word            VTI_gstateRegion = -1
dword           VTI_selectStart = 0
dword           VTI_selectEnd = 0
PointDWord       VTI_startEventPos = {0,0}
dword           VTI_selectMinStart = 0
dword           VTI_selectMinEnd = 0
dword           VTI_lastOffset = 0
word            VTI_goalPosition = 0
Point           VTI_cursorPos = {0,0}
word            VTI_cursorRegion = 0
word            VTI_leftOffset = 0
byte            VTI_lrMargin = 0
byte            VTI_tbMargin = 0
ColorQuad       VTI_washColor = {
                  C_WHITE, CF_INDEX, 0, 0}
word            VTI_maxLength = 10000
VisTextFilters   VTI_filters = 0
optr            VTI_output
WBFixed         VTI_height = {0,0}
word            VTI_lastWidth = -1
TimerHandle     VTI_timerHandle = NullHandle
word            VTI_timerID = 0
```

Variable Data

```
word ATTR_VIS_TEXT_TYPE_RUNS
word ATTR_VIS_TEXT_GRAPHIC_RUNS
word ATTR_VIS_TEXT_STYLE_ARRAY
word ATTR_VIS_TEXT_NAME_ARRAY
VisTextSuspendData ATTR_VIS_TEXT_SUSPEND_DATA
void ATTR_VIS_TEXT_NOTIFY_CONTENT
word ATTR_VIS_TEXT_SELECTED_TAB
void ATTR_VIS_TEXT_DO_NOT_INTERACT_WITH_SEARCH_CONTROL
VisTextExtendedFilterType ATTR_VIS_TEXT_EXTENDED_FILTER
word ATTR_VIS_TEXT_CHAR_ATTR_INSERTION_TOKEN
word ATTR_VIS_TEXT_TYPE_INSERTION_TOKEN
word ATTR_VIS_TEXT_TYPE_INSERTION_TOKEN
VisTextCachedRunInfo TEMP_VIS_TEXT_CACHED_RUN_INFO
```

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```

void TEMP_VIS_TEXT_FORCE_SEND_IS_LAST_REGION
VisTextCachedUndoInfo TEMP_VIS_TEXT_CACHED_UNDO_INFO
ChunkHandle ATTR_VIS_TEXT_CUSTOM_FILTER
void ATTR_VIS_TEXT_UPDATE_VIA_PROCESS
void ATTR_VIS_TEXT_DOES_NOT_ACCEPT_INK
WBFixed ATTR_VIS_TEXT_MINIMUM_SINGLE_LINE_HEIGHT
void TEMP_VIS_TEXT_SYS_TARGET

```

Types and Flags

```

SEARCH_REPLACE_TEXT_MAXIMUM      65
ByteFlags    SearchOptions
    SO_NO_WILDCARDS                0x20
    SO_IGNORE_SOFT_HYPHENS         0x10
    SO_BACKWARD_SEARCH             0x08
    SO_IGNORE_CASE                 0x04
    SO_PARTIAL_WORD                0x02
    SO_PRESERVE_CASE_OF_DOCUMENT_STRING 0x01
ByteEnum     WildCard
    WC_MATCH_SINGLE_CHAR           0x10
    WC_MATCH_MULTIPLE_CHARS        0x11
    WC_MATCH_WHITESPACE_CHAR       0x12
    TEXT_ADDRESS_PAST_END          0x00ffffff
    VIS_TEXT_RANGE_SELECTION       0xffff0000
    VIS_TEXT_RANGE_PARAGRAPH_SELECTION 0xfffe0000
WordFlags    VisTextRangeContext
    VTRC_PARAGRAPH_CHANGE          0x8000
    VTRC_CHAR_ATTR_CHANGE          0x4000
    VTRC_PARA_ATTR_BORDER_CHANGE   0x2000
ByteEnum     TextArrayType
    TAT_CHAR_ATTRS                 0
    TAT_PARA_ATTRS                 1
    TAT_GRAPHICS                   2
    TAT_TYPES                      3
WordFlags    TextStyleFlags
    TSF_APPLY_TO_SELECTION_ONLY    0x8000
    TSF_POINT_SIZE_RELATIVE        0x4000
    TSF_MARGINS_RELATIVE           0x2000
    TSF_SPACING_RELATIVE           0x1000
WordFlags    VisTextCharAttrFlags
    VTCAF_MULTIPLE_FONT_IDS        0x8000
    VTCAF_MULTIPLE_POINT_SIZES     0x4000
    VTCAF_MULTIPLE_COLORS          0x2000
    VTCAF_MULTIPLE_GRAY_SCREEN     0x1000
    VTCAF_MULTIPLE_PATTERNS        0x0800
    VTCAF_MULTIPLE_TRACK_KERNINGS  0x0400
    VTCAF_MULTIPLE_FONT_WEIGHTS    0x0200
    VTCAF_MULTIPLE_FONT_WIDTHS     0x0100
    VTCAF_MULTIPLE_BG_COLORS       0x0080
    VTCAF_MULTIPLE_BG_GRAY_SCREEN  0x0040
    VTCAF_MULTIPLE_BG_PATTERNS     0x0020
    VTCAF_MULTIPLE_STYLES          0x0010
WordFlags    VisTextGetAttrFlags
    VTGAF_MERGE_WITH_PASSED        0x8000
WordFlags    VisTextParaAttrFlags
    VTPAF_MULTIPLE_LEFT_MARGINS    0x8000
    VTPAF_MULTIPLE_RIGHT_MARGINS   0x4000
    VTPAF_MULTIPLE_PARA_MARGINS    0x2000

```

VTPAF_MULTIPLE_LINE_SPACINGS	0x1000
VTPAF_MULTIPLE_DEFAULT_TABS	0x0800
VTPAF_MULTIPLE_TOP_SPACING	0x0400
VTPAF_MULTIPLE_BOTTOM_SPACING	0x0200
VTPAF_MULTIPLE_LEADINGS	0x0100
VTPAF_MULTIPLE_BG_COLORS	0x0080
VTPAF_MULTIPLE_BG_GRAY_SCREEN	0x0040
VTPAF_MULTIPLE_BG_PATTERNS	0x0020
VTPAF_MULTIPLE_TAB_LISTS	0x0010
VTPAF_MULTIPLE_STYLES	0x0008
VTPAF_MULTIPLE_PREPEND_CHARS	0x0004
VTPAF_MULTIPLE_PARA_NUMBERS	0x0002
WordFlags	VisTextParaAttrBorderFlags
VTPABF_MULTIPLE_BORDER_LEFT	0x8000
VTPABF_MULTIPLE_BORDER_TOP	0x4000
VTPABF_MULTIPLE_BORDER_RIGHT	0x2000
VTPABF_MULTIPLE_BORDER_BOTTOM	0x1000
VTPABF_MULTIPLE_BORDER_DOUBLES	0x0800
VTPABF_MULTIPLE_BORDER_DRAW_INNERS	0x0400
VTPABF_MULTIPLE_BORDER_ANCHORS	0x0200
VTPABF_MULTIPLE_BORDER_WIDTHS	0x0100
VTPABF_MULTIPLE_BORDER_SPACINGS	0x0080
VTPABF_MULTIPLE_BORDER_SHADOWS	0x0040
VTPABF_MULTIPLE_BORDER_COLORS	0x0020
VTPABF_MULTIPLE_BORDER_GRAY_SCREEN	0x0010
VTPABF_MULTIPLE_BORDER_PATTERNS	0x0008
VTTF_MULTIPLE_HYPERLINKS	0x8000
VTTF_MULTIPLE_CONTEXTS	0x4000
ByteEnum	VisTextNameType
VTNT_CONTEXT	0
VTNT_FILE	1
ByteEnum	VisTextContextType
VTCT_TEXT	0
VTCT_CATEGORY	1
VTCT_QUESTION	2
VTCT_ANSWER	3
VTCT_DEFINITION	4
VTCT_FILE	255
VIS_TEXT_GRAPHIC_OPAQUE_SIZE	16
ByteEnum	VisTextGraphicType
VTGT_GSTRING	0
VTGT_VARIABLE	1
VTGF_DRAW_FROM_BASELINE	0x8000
VTGF_HANDLES_POINTER	0x4000
ByteEnum	VisTextSaveType
VTST_NONE	0
VTST_SINGLE_CHUNK	1
VTST_RUNS_ONLY	2
VTST_RUNS_AND_ELEMENTS	3
WordFlags	VisTextSaveDBFlags
VTSDBF_TEXT	0x8000
VTSDBF_CHAR_ATTR	0x6000
VTSDBF_PARA_ATTR	0x1800
VTSDBF_TYPE	0x0600
VTSDBF_GRAPHIC	0x0180
VTSDBF_STYLE	0x0040
VTSDBF_REGION	0x0020

```

        VTSDBF_NAME                                0x0010
VTSDBF_CHAR_ATTR_OFFSET                          13
VTSDBF_PARA_ATTR_OFFSET                          11
VTSDBF_TYPE_OFFSET                               9
VTSDBF_GRAPHIC_OFFSET                            7
typedef enum {
    TCO_COPY,
    TCO_RETURN_TRANSFER_FORMAT,
    TCO_RETURN_TRANSFER_ITEM,
    TCO_RETURN_NOTHING
} TextClipboardOption
WordFlags    VisTextNotificationFlags
    VTNF_SELECT_STATE                            0x8000
    VTNF_CHAR_ATTR                              0x4000
    VTNF_PARA_ATTR                              0x2000
    VTNF_TYPE                                    0x1000
    VTNF_SELECTION                              0x0800
    VTNF_COUNT                                  0x0400
    VTNF_STYLE_SHEET                            0x0200
    VTNF_STYLE                                  0x0100
    VTNF_SEARCH_ENABLE                          0x0080
    VTNF_SPELL_ENABLE                           0x0040
WordFlags    VisTextNotifySendFlags
    VTNSF_UPDATE_APP_TARGET_GCN_LISTS           0x8000
    VTNSF_UPDATE_OUTPUT                         0x4000
    VTNSF_NULL_STATUS                           0x2000
    VTNSF_STRUCTURE_INITIALIZED                 0x1000
    VTNSF_SEND_AFTER_GENERATION                 0x0800
    VTNSF_SEND_ONLY                             0x0400
    VTNSF_RELAYED_TO_LIKE_TEXT_OBJECTS          0x0200
    SS_DRAGGING                                 0x8000
    SS_CURSOR_HEIGHT                            0x7fff
ByteEnum     VisTextExtendedFilterType
    VTEFT_REPLACE_PARAMS 0
    VTEFT_CHARACTER_LEVELER_LEVEL 1
    VTEFT_BEFORE_AFTER 2
enum {
    GSSOT_FIRST_OBJECT,
    GSSOT_LAST_OBJECT,
    GSSOT_NEXT_OBJECT,
    GSSOT_PREV_OBJECT
} GetSearchSpellObjectOption
WordFlags    GetSearchSpellObjectParam
    GSSOP_RELAYED_FLAG                          0x8000
enum {
    CL_STARTING_AT_POSITION,
    CL_ENDING_AT_POSITION,
    CL_CENTERED_AROUND_POSITION,
    CL_CENTERED_AROUND_SELECTION,
    CL_CENTERED_AROUND_SELECTION_START,
    CL_GET_SELECTED_WORD
} ContextLocation
ByteFlags    SpellCheckFromOffsetFlags
    SCFOF_CHECK_NUM_CHARS                      0x01
ByteFlags    SpellCheckFromOffsetFlags
    SFOF_STOP_AT_STARTING_POINT               0x01
WordFlags    ReplaceAllFromOffsetFlags

```

```

        RAFOF_CONTINUING_REPLACE      0x8000
        RAFOF_HAS_UNDO                0x4000
ByteEnum      VisTextFilterClass
    VTFC_NO_FILTER                    0
    VTFC_ALPHA                        1
    VTFC_NUMERIC                      2
    VTFC_SIGNED_NUMERIC               3
    VTFC_SIGNED_DECIMAL               4
    VTFC_FLOAT_DECIMAL                5
    VTFC_ALPHA_NUMERIC                6
    VTFC_FILENAMES                    7
    VTFC_DOS_FILENAMES                8
    VTFC_DOS_PATH                     9
    VTFC_DATE                         10
    VTFC_TIME                         11
    VTFC_DASHED_ALPHA_NUMERIC         12
    VTFC_NORMAL_ASCII                 13
    VTFC_DOS_VOLUME_NAMES             14
    VTFC_DOS_CHARACTER_SET            15
    VTFC_ALLOW_COLUMN_BREAKS          16
ByteFlags     VisTextFilters
    VTF_NO_SPACES                     0x80
    VTF_NO_TABS                       0x40
    VTF_UPCASE_CHARS                  0x20
    VTF_FILTER_CLASS                   0x1f
typedef enum /* word */ {
    VTKF_FORWARD_LINE=0,
    VTKF_BACKWARD_LINE=6,
    VTKF_SELECT_ADJUST_FORWARD_LINE=12,
    VTKF_SELECT_ADJUST_BACKWARD_LINE=18,
    VTKF_INSERT=24,
    VTKF_FORWARD_CHAR=30,
    VTKF_BACKWARD_CHAR=36,
    VTKF_FORWARD_WORD=42,
    VTKF_BACKWARD_WORD=48,
    VTKF_FORWARD_PARAGRAPH=54,
    VTKF_BACKWARD_PARAGRAPH=60,
    VTKF_START_OF_LINE=66,
    VTKF_END_OF_LINE=72,
    VTKF_START_OF_TEXT=78,
    VTKF_END_OF_TEXT=84,
    VTKF_SELECT_WORD=90,
    VTKF_SELECT_LINE=96,
    VTKF_SELECT_PARAGRAPH=102,
    VTKF_SELECT_OBJECT=108,
    VTKF_SELECT_ADJUST_FORWARD_CHAR=114,
    VTKF_SELECT_ADJUST_BACKWARD_CHAR=120,
    VTKF_SELECT_ADJUST_FORWARD_WORD=126,
    VTKF_SELECT_ADJUST_BACKWARD_WORD=132,
    VTKF_SELECT_ADJUST_FORWARD_PARAGRAPH=138,
    VTKF_SELECT_ADJUST_BACKWARD_PARAGRAPH=144,
    VTKF_SELECT_ADJUST_TO_START=150,
    VTKF_SELECT_ADJUST_TO_END=156,
    VTKF_SELECT_ADJUST_START_OF_LINE=162,
    VTKF_SELECT_ADJUST_END_OF_LINE=168,
    VTKF_DELETE_BACKWARD_CHAR=174,
    VTKF_DELETE_BACKWARD_WORD=180,

```



```

VTKF_DELETE_BACKWARD_LINE=186,
VTKF_DELETE_BACKWARD_PARAGRAPH=192,
VTKF_DELETE_TO_START=198,
VTKF_DELETE_CHAR=204,
VTKF_DELETE_WORD=210,
VTKF_DELETE_LINE=216,
VTKF_DELETE_PARAGRAPH=222,
VTKF_DELETE_TO_END=228,
VTKF_DELETE EVERYTHING=234,
VTKF_DESELECT=240,
VTKF_TOGGLE_OVERSTRIKE_MODE=246,
VTKF_TOGGLE_SMART_QUOTES=252,
} VisTextKeyFunction
typedef enum /* word */ {
    TRT_POINTER,
    TRT_SEGMENT_CHUNK,
    TRT_BLOCK_CHUNK,
    TRT_BLOCK,
    TRT_VM_BLOCK,
    TRT_DB_ITEM,
    TRT_HUGE_ARRAY,
} TextReferenceType
INSERT_COMPUTE_TEXT_LENGTH      0x01ff
/* Bitfield VisTextGetTextRangeFlags */
    VTGTRF_ALLOCATE                0x80
    VTGTRF_ALLOCATE_ALWAYS          0x40
    VTGTRF_RESIZE_DEST              0x20
WordFlags    VisTextHWRFlags
    VTHWRF_NO_CONTEXT              0x8000
    VTHWRF_USE_PASSED_CONTEXT      0x4000
OFFSET_FOR_TYPE_RUNS              0
OFFSET_FOR_GRAPHIC_RUNS          1
WordFlags    VisTextFeatures
    VTF_NO_WORD_WRAPPING          0x8000
    VTF_AUTO_HYPHENATE            0x4000
    VTF_ALLOW_SMART_QUOTES         0x2000
    VTF_ALLOW_UNDO                 0x1000
    VTF_SHOW_HIDDEN_TEXT          0x0800
    VTF_OUTLINE_MODE              0x0400
    VTF_DONT_SHOW_SOFT_PAGE_BREAKS 0x0200
    VTF_DONT_SHOW_GRAPHICS        0x0100
    VTF_TRANSPARENT               0x0080
ByteFlags    VisTextStates
    VTS_EDITABLE                  0x80
    VTS_SELECTABLE                0x40
    VTS_TARGETABLE                0x20
    VTS_ONE_LINE                  0x10
    VTS_SUBCLASS_VIRT_PHYS_TRANSLATION 0x08
    VTS_OVERSTRIKE_MODE           0x04
    VTS_USER_MODIFIED             0x02
ByteEnum      SelectionType
    ST_DOING_CHAR_SELECTION        0
    ST_DOING_WORD_SELECTION        1
    ST_DOING_LINE_SELECTION        2
    ST_DOING_PARA_SELECTION        3
ByteFlags    VisTextIntSelFlags
    VTISF_IS_TARGET               0x80

```

VTISF_IS_FOCUS	0x40
VTISF_CURSOR_ON	0x20
VTISF_CURSOR_ENABLED	0x10
VTISF_DOING_SELECTION	0x08
VTISF_DOING_DRAG_SELECTION	0x04
VTISF_SELECTION_TYPE	0x03
ByteEnum AdjustType	
AT_NORMAL	0
AT_NO_ADJUST	1
AT_PASTE	2
AT_QUICK	3
AT_ENTIRE_RANGE	4
ByteEnum ActiveSearchSpellType	
ASST_NOTHING_ACTIVE	0
ASST_SPELL_ACTIVE	0
ASST_SEARCH_ACTIVE	0
ByteFlags VisTextIntFlags	
VTIF_HAS_LINES	0x80
VTIF_SUSPENDED	0x40
VTIF_UPDATE_PENDING	0x20
VTIF_ACTIVE_SEARCH_SPELL	0x18
VTIF_HILITED	0x04
VTIF_ADJUST_TYPE	0x03
ByteFlags GSRefCountAndFlags	
GSRCF_USE_DOC_CLIP_REGION	0x80
GSRCF_REF_COUNT	0x7f

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Structures

```

typedef struct {
    dword VTR_start
    dword VTR_end
} VisTextRange
typedef struct {
    ChunkArrayHeader TRAH_meta
    word TRAH_elementVMBlock
    ChunkHandle TRAH_elementArray
} TextRunArrayHeader
typedef struct {
    WordAndAHalf TRAE_position
    word TRAE_token
} TextRunArrayElement
typedef struct {
    ElementArrayHeader TEAH_meta
    TextArrayType TEAH_arrayType
    byte TEAH_unused
} TextElementArrayHeader
typedef struct {
    TextStyleFlags TSPD_flags
    byte TSPD_unused[2]
} TextStylePrivateData
typedef struct {
    NameArrayElement TSEH_meta
    word TSEH_baseStyle
    StyleElementFlags TSEH_flags
    TextStylePrivateData TSEH_privateData
    word TSEH_charAttrToken
    word TSEH_paraAttrToken

```

```

    } TextStyleElementHeader
typedef struct {
    VisTextCharAttrFlags      VTCAD_diffs
    VisTextExtendedStyles     VTCAD_extendedStyles
    TextStyle                 VTCAD_textStyles
    byte                      VTCAD_unused
} VisTextCharAttrDiffs
typedef struct {
    VisTextParaAttrFlags      VTPAD_diffs
    VisTextParaAttrBorderFlags VTPAD_borderDiffs
    VisTextParaAttrAttributes VTPAD_attributes
    VisTextHyphenationInfo    VTPAD_hyphenationInfo
    VisTextKeepInfo           VTPAD_keepInfo
    VisTextDropCapInfo        VTPAD_dropCapInfo
} VisTextParaAttrDiffs
typedef struct {
    RefElementHeader          VTT_meta
    word                      VTT_attributes
    word                      VTT_hyperlinkName
    word                      VTT_hyperlinkFile
    word                      VTT_context
    byte                      VTT_unused[1]
} VisTextType
typedef struct {
    word                      VTTD_diffs
    word                      VTTD_attributes
} VisTextTypeDiffs
typedef struct {
    VisTextNameType           VTND_type
    VisTextContextType        VTND_contextType
    word                      VTND_file
    DBGroupAndItem            VTND_helpText
} VisTextNameData
typedef struct {
    TransMatrix               VTGG_tmatrix
} VisTextGraphicGString
typedef struct {
    ManufacturerID            VTGV_manufacturerID
    VisTextVariableType        VTGV_type
    byte                      VTGV_privateData[
        VIS_TEXT_GRAPHIC_OPAQUE_SIZE-4]
} VisTextGraphicVariable
typedef union {
    VisTextGraphicGString      VTGD_gstring
    VisTextGraphicVariable     VTGD_variable
    byte                      VTGD_opaque[
        VIS_TEXT_GRAPHIC_OPAQUE_SIZE]
} VisTextGraphicData
typedef struct {
    RefElementHeader          VTG_meta
    VMBlockHandle             VTG_vmChain
    dword                    VTG_dbItem
    XYSize                   VTG_size
    VisTextGraphicType        VTG_type
    word                     VTG_flags
    byte                     VTG_reserved[4]
    VisTextGraphicData        VTG_data

```

```

} VisTextGraphic
typedef struct {
    StyleSheetParams    VTSSSP_common
    word                VTSSSP_graphicsElements
    word                VTSSSP_treeBlock
    word                VTSSSP_graphicTreeOffset
} VisTextSaveStyleSheetParams
typedef struct {
    VMChainTree         TTBH_meta
    word                TTBH_reservedOther[20]
    VMChain             TTBH_text
    VMChain             TTBH_charAttrRuns
    VMChain             TTBH_paraAttrRuns
    VMChain             TTBH_typeRuns
    VMChain             TTBH_graphicRuns
    VMChain             TTBH_charAttrElements
    VMChain             TTBH_paraAttrElements
    VMChain             TTBH_typeElements
    VMChain             TTBH_graphicElements
    VMChain             TTBH_styles
    VMChain             TTBH_names
    VMChain             TTBH_pageSetup
    VMChain             TTBH_reservedVM[10]
} TextTransferBlockHeader
typedef struct {
    VMChainLink         PSI_meta
    XYSIZE              PSI_page
    PageLayout          PSI_layout
    word                PSI_numColumns
    word                PSI_columnSpacing
    word                PSI_ruleWidth
    word                PSI_leftMargin
    word                PSI_rightMargin
    word                PSI_topMargin
    word                PSI_bottomMargin
} PageSetupInfo
typedef struct {
    VisTextCharAttr     VTNCAC_charAttr
    word                VTNCAC_charAttrToken
    VisTextCharAttrDiffs VTNCAC_charAttrDiffs
} VisTextNotifyCharAttrChange
typedef struct {
    VisTextMaxParaAttr  VTNPAC_paraAttr
    word                VTNPAC_paraAttrToken
    VisTextParaAttrDiffs VTNPAC_paraAttrDiffs
    sdword              VTNPAC_regionOffset
    sword               VTNPAC_regionWidth
    word                VTNPAC_selectedTab
} VisTextNotifyParaAttrChange
typedef struct {
    VisTextType         VTNTC_type
    word                VTNTC_typeToken
    VisTextTypeDiffs    VTNTC_typeDiffs
} VisTextNotifyTypeChange
typedef struct {
    dword               VTNSC_selectStart
    dword               VTNSC_selectEnd

```



```

        dword          VTNSC_lineNumber
        dword          VTNSC_lineStart
        word           VTNSC_region
        dword          VTNSC_regionStartLine
        dword          VTNSC_regionStartOffset
    } VisTextNotifySelectionChange
typedef struct {
    dword          VTNCC_charCount
    dword          VTNCC_wordCount
    dword          VTNCC_lineCount
    dword          VTNCC_paraCount
} VisTextNotifyCountChange
typedef struct {
    VisTextNotificationFlags    VTGNP_notificationTypes
    VisTextNotifySendFlags      VTGNP_sendFlags
    MemHandle                   VTGNP_notificationBlocks[16]
} VisTextGenerateNotifyParams
typedef struct {
    WBFixed                 VTMDP_height
    WBFixed                 VTMDP_width
} VisTextMinimumDimensionsParameters
typedef struct {
    word                    searchSize
    word                    replaceSize
    byte                   params
    optr                   replyObject
    Message                replyMsg
} SearchReplaceStruct
typedef struct {
    optr                   CD_object
    dword                  CD_numChars
    dword                  CD_startPos
    VisTextRange           CD_selection
} ContextData
typedef struct {
    optr                   SFORS_object
    dword                  SFORS_offset
    dword                  SFORS_len
} SearchFromOffsetReturnStruct
typedef struct {
    VisTextNameData        VTNCP_data
    word                   VTNCP_index
    optr                   VTNCP_object
} VisTextNameCommonParams
typedef struct {
    dword                  VTGLOAFP_line
    dword                  VTGLOAFP_offset
    word                   VTGLOAFP_flags
} VisTextGetLineOffsetAndFlagsParameters
typedef struct {
    word                   VTSD_count
    VisTextRange           VTSD_recalcRange
    VisTextRange           VTSD_selectRange
    WordFlags              VTSD_notifications
    byte                   VTSD_needsRecalc
} VisTextSuspendData
typedef struct {

```

```

        dword          VTCRI_lastCharAttrRun
        dword          VTCRI_lastParaAttrRun
        dword          VTCRI_lastTypeRun
        dword          VTCRI_lastGraphicRun
    } VisTextCachedRunInfo
    typedef struct {
        VMChain          VTCUI_vmChain
        VMFileHandle     VTCUI_file
    } VisTextCachedUndoInfo
    typedef struct {
        wchar            VTCFD_startOfRange
        wchar            VTCFD_endOfRange
    } VisTextCustomFilterData

```

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Messages

```

void MSG_VIS_TEXT_GET_RANGE(
    VisTextRange *range, word context)
void MSG_VIS_TEXT_SET_CHAR_ATTR_BY_DEFAULT(@stack
    VisTextDefaultCharAttr defCharAttrs,
    dword rangeEnd, dword rangeStart)
void MSG_VIS_TEXT_SET_CHAR_ATTR(@stack
    VisTextCharAttr *attrs,
    dword rangeEnd, dword rangeStart)
MSG_VIS_TEXT_SET_CHAR_ATTR_BY_TOKEN
MSG_VIS_TEXT_SET_FONT_ID
MSG_VIS_TEXT_SET_FONT_WEIGHT
MSG_VIS_TEXT_SET_FONT_WIDTH
void MSG_VIS_TEXT_SET_POINT_SIZE(@stack
    WWFixedAsDWord pointSize,
    dword rangeEnd, dword rangeStart)
MSG_VIS_TEXT_SET_SMALLER_POINT_SIZE
MSG_VIS_TEXT_SET_LARGER_POINT_SIZE
void MSG_VIS_TEXT_SET_TEXT_STYLE(@stack
    word extBitsToClear,
    word extBitsToSet,
    word styleBitsToClear,
    word styleBitsToSet,
    dword rangeEnd, dword rangeStart)
MSG_VIS_TEXT_SET_COLOR
MSG_VIS_TEXT_SET_GRAY_SCREEN
MSG_VIS_TEXT_SET_PATTERN
MSG_VIS_TEXT_SET_CHAR_BG_COLOR
MSG_VIS_TEXT_SET_CHAR_BG_GRAY_SCREEN
MSG_VIS_TEXT_SET_CHAR_BG_PATTERN(
MSG_VIS_TEXT_SET_TRACK_KERNING
word MSG_VIS_TEXT_GET_CHAR_ATTR(@stack
    VisTextGetAttrFlags flags,
    VisTextCharAttrDiffs *diffs,
    VisTextCharAttr *attrs,
    dword rangeEnd, dword rangeStart)
MSG_VIS_TEXT_ADD_CHAR_ATTR
MSG_VIS_TEXT_REMOVE_CHAR_ATTR
void MSG_VIS_TEXT_SET_PARA_ATTR_BY_DEFAULT(@stack
    VisTextDefaultParaAttr defParaAttrs,
    dword rangeEnd, dword rangeStart)

```

```

void MSG_VIS_TEXT_SET_PARA_ATTR(@stack
                                VisTextParaAttr *newParaAttrs,
                                dword rangeEnd, dword rangeStart)
MSG_VIS_TEXT_SET_PARA_ATTR_BY_TOKEN
MSG_VIS_TEXT_SET_BORDER_BITS
MSG_VIS_TEXT_SET_BORDER_WIDTH
MSG_VIS_TEXT_SET_BORDER_SPACING
MSG_VIS_TEXT_SET_BORDER_SHADOW
MSG_VIS_TEXT_SET_BORDER_COLOR
MSG_VIS_TEXT_SET_BORDER_GRAY_SCREEN
MSG_VIS_TEXT_SET_BORDER_PATTERN
void MSG_VIS_TEXT_SET_PARA_ATTRIBUTES(@stack
                                      word bitsToClear, word bitsToSet,
                                      dword rangeEnd, dword rangeStart)
MSG_VIS_TEXT_SET_LINE_SPACING
MSG_VIS_TEXT_SET_DEFAULT_TABS
MSG_VIS_TEXT_SET_LEFT_MARGIN
MSG_VIS_TEXT_SET_RIGHT_MARGIN
MSG_VIS_TEXT_SET_PARA_MARGIN
MSG_VIS_TEXT_SET_LEFT_AND_PARA_MARGIN
MSG_VIS_TEXT_SET_SPACE_ON_TOP
MSG_VIS_TEXT_SET_SPACE_ON_BOTTOM
MSG_VIS_TEXT_SET_LEADING
MSG_VIS_TEXT_SET_PARA_BG_COLOR
MSG_VIS_TEXT_SET_PARA_BG_GRAY_SCREEN
MSG_VIS_TEXT_SET_PARA_BG_PATTERN
MSG_VIS_TEXT_SET_TAB
MSG_VIS_TEXT_CLEAR_TAB
MSG_VIS_TEXT_MOVE_TAB
MSG_VIS_TEXT_CLEAR_ALL_TABS
MSG_VIS_TEXT_SET_PREPEND_CHARS
MSG_VIS_TEXT_SET_HYPHENATION_PARAMS
MSG_VIS_TEXT_SET_DROP_CAP_PARAMS
MSG_VIS_TEXT_SET_KEEP_PARAMS
MSG_VIS_TEXT_SET_PARAGRAPH_NUMBER
word MSG_VIS_TEXT_GET_PARA_ATTR(@stack
                                VisTextGetAttrFlags flags,
                                VisTextParaAttrDiffs *diffs,
                                VisTextParaAttr *attrs,
                                dword rangeEnd, dword rangeStart)
word MSG_VIS_TEXT_ADD_PARA_ATTR(
                                VisTextMaxParaAttr *paraAttr)
MSG_VIS_TEXT_REMOVE_PARA_ATTR
MSG_VIS_TEXT_SUBST_ATTR_TOKEN
MSG_VIS_TEXT_RECALC_FOR_ATTR_CHANGE
MSG_VIS_TEXT_SET_HYPERLINK
MSG_VIS_TEXT_SET_CONTEXT
word MSG_VIS_TEXT_GET_TYPE(@stack
                           VisTextGetAttrFlags flags,
                           VisTextTypeDiffs *diffs,
                           VisTextType *attrs,
                           dword rangeEnd, dword rangeStart)
MSG_VIS_TEXT_ADD_TYPE
MSG_VIS_TEXT_REMOVE_TYPE
MSG_VIS_TEXT_ADD_NAME
MSG_VIS_TEXT_FIND_NAME
MSG_VIS_TEXT_FIND_NAME_BY_TOKEN

```

```

MSG_VIS_TEXT_ADD_REF_FOR_NAME
MSG_VIS_TEXT_REMOVE_NAME*/
MSG_VIS_TEXT_REPLACE_WITH_GRAPHIC
void MSG_VIS_TEXT_GET_GRAPHIC_AT_POSITION(@stack
    VisTextGraphic *retPtr,
    dword position)
MSG_VIS_TEXT_GRAPHIC_VARIABLE_SIZE
MSG_VIS_TEXT_GRAPHIC_VARIABLE_DRAW
MSG_VIS_TEXT_GRAPHIC_VARIABLE_START_SELECT
MSG_VIS_TEXT_GRAPHIC_VARIABLE_OPEN
MSG_VIS_TEXT_GRAPHIC_VARIABLE_CLOSE
DBGroupAndItem MSG_VIS_TEXT_SAVE_TO_DB_ITEM(
    DBGroupAndItem item,
    VisTextSaveDBFlags flags)
@alias (MSG_VIS_TEXT_SAVE_TO_DB_ITEM) DBGroupAndItem
MSG_VIS_TEXT_SAVE_TO_DB_GROUP_ITEM(
    DBGroup group, DBItem item,
    VisTextSaveDBFlags flags)
DBGroupAndItem
MSG_VIS_TEXT_SAVE_TO_DB_ITEM_WITH_STYLES(@stack
    FileHandle xferFile,
    VisTextSaveDBFlags flags,
    DBGroupAndItem item,
    StyleSheetParams *params)
void MSG_VIS_TEXT_LOAD_FROM_DB_ITEM(DBGroupAndItem item,
    VMFileHandle file)
@alias (MSG_VIS_TEXT_LOAD_FROM_DB_ITEM) void
MSG_VIS_TEXT_LOAD_FROM_DB_GROUP_ITEM(
    DBGroup group, DBItem item,
    VMFileHandle file)
void MSG_VIS_TEXT_LOAD_FROM_DB_ITEM_WITH_STYLES(@stack
    FileHandle file,
    DBGroupAndItem item,
    StyleSheetParams *params)
void MSG_VIS_TEXT_SET_VM_FILE(VMFileHandle file)
MSG_VIS_TEXT_CREATE_STORAGE
MSG_VIS_TEXT_CHANGE_ELEMENT_ARRAY
MSG_VIS_TEXT_FREE_STORAGE
MSG_VIS_TEXT_REPLACE_WITH_TEXT_TRANSFER_FORMAT(@stack
    VMBlockHandle block,
    VMFileHandle file, word pasteFrame,
    dword end, dword start)
MSG_VIS_TEXT_CREATE_TRANSFER_FORMAT
void MSG_VIS_TEXT_REPLACE_ALL_PTR(
    const char *text, word textLen)
void MSG_VIS_TEXT_REPLACE_ALL_OPTR(optr o, word textLen)
void MSG_VIS_TEXT_REPLACE_ALL_BLOCK(
    word block, word textLen)
void MSG_VIS_TEXT_REPLACE_ALL_VM_BLOCK(
    VMFileHandle file,
    VMBlockHandle block, word textLen)
void MSG_VIS_TEXT_REPLACE_ALL_DB_ITEM(VMFileHandle file,
    DBGroup group, DBItem item)
void MSG_VIS_TEXT_REPLACE_ALL_HUGE_ARRAY(
    VMFileHandle file,
    VMBlockHandle hugeArrayBlock,
    word textLen)

```



```

void MSG_VIS_TEXT_REPLACE_SELECTION_PTR(
    const char *text, word textLen)
void MSG_VIS_TEXT_REPLACE_SELECTION_OPTR(
    optr o, word textLen)
void MSG_VIS_TEXT_REPLACE_SELECTION_BLOCK(
    word block, word textLen)
void MSG_VIS_TEXT_REPLACE_SELECTION_VM_BLOCK(
    VMFileHandle file,
    VMBlockHandle block, word textLen)
void MSG_VIS_TEXT_REPLACE_SELECTION_DB_ITEM(
    VMFileHandle file,
    DBGGroup group, DBItem item)
void MSG_VIS_TEXT_REPLACE_SELECTION_HUGE_ARRAY(
    VMFileHandle file,
    VMBlockHandle hugeArrayBlock,
    word textLen)
void MSG_VIS_TEXT_APPEND_PTR(
    const char *text, word textLen)
void MSG_VIS_TEXT_APPEND_OPTR(optr o, word textLen)
void MSG_VIS_TEXT_APPEND_BLOCK(word block, word textLen)
void MSG_VIS_TEXT_APPEND_VM_BLOCK(VMFileHandle file,
    VMBlockHandle block, word textLen)
void MSG_VIS_TEXT_APPEND_DB_ITEM(VMFileHandle file,
    DBGGroup group, DBItem item)
void MSG_VIS_TEXT_APPEND_HUGE_ARRAY(VMFileHandle file,
    VMBlockHandle hugeArrayBlock,
    word textLen)
word MSG_VIS_TEXT_GET_ALL_PTR(const char *text)
word MSG_VIS_TEXT_GET_ALL_OPTR(optr o)
word MSG_VIS_TEXT_GET_ALL_BLOCK(word block)
word MSG_VIS_TEXT_GET_ALL_VM_BLOCK(VMFileHandle file,
    VMBlockHandle block)
DBGGroupAndItem MSG_VIS_TEXT_GET_ALL_DB_ITEM(
    VMFileHandle file,
    DBGGroup group, DBItem item)
word MSG_VIS_TEXT_GET_ALL_HUGE_ARRAY(VMFileHandle file,
    VMBlockHandle hugeArrayBlock,
    word textLen)
word MSG_VIS_TEXT_GET_SELECTION_PTR(char *text)
word MSG_VIS_TEXT_GET_SELECTION_OPTR(optr o)
word MSG_VIS_TEXT_GET_SELECTION_BLOCK(word block)
word MSG_VIS_TEXT_GET_SELECTION_VM_BLOCK(
    VMFileHandle file,
    VMBlockHandle block)
DBGGroupAndItem MSG_VIS_TEXT_GET_SELECTION_DB_ITEM(
    VMFileHandle file,
    DBGGroup group, DBItem item)
word MSG_VIS_TEXT_GET_SELECTION_HUGE_ARRAY(
    VMFileHandle file,
    VMBlockHandle hugeArrayBlock,
    word textLen)
void MSG_VIS_TEXT_DELETE_ALL()
void MSG_VIS_TEXT_DELETE_SELECTION()
void MSG_VIS_TEXT_GET_SELECTION_RANGE(VisTextRange *vtr)
void MSG_VIS_TEXT_SELECT_RANGE_SMALL(
    word start, word end)
void MSG_VIS_TEXT_SELECT_ALL()

```

```

void MSG_VIS_TEXT_SELECT_START()
void MSG_VIS_TEXT_SELECT_END()
void MSG_VIS_TEXT_SELECT_RELATIVE(
    word newStart, word newEnd)
VisTextStates MSG_VIS_TEXT_GET_STATE()
VisTextFeatures MSG_VIS_TEXT_GET_FEATURES()
void MSG_VIS_TEXT_SET_FEATURES(
    VisTextFeatures bitsToSet,
    VisTextFeatures bitsToClear)
void MSG_VIS_TEXT_SET_MAX_LENGTH(word newMaxLength)
word MSG_VIS_TEXT_GET_MAX_LENGTH()
word MSG_VIS_TEXT_GET_USER_MODIFIED_STATE()
void MSG_VIS_TEXT_SET_NOT_USER_MODIFIED()
void MSG_VIS_TEXT_SET_USER_MODIFIED()
MSG_VIS_TEXT_SET_WASH_COLOR
MSG_VIS_TEXT_GET_WASH_COLOR
void MSG_VIS_TEXT_MODIFY_EDITABLE_SELECTABLE(
    VisTextStates setBits,
    VisTextStates clearBits)
MSG_VIS_TEXT_UPDATE_GENERIC
void MSG_VIS_TEXT_GENERATE_NOTIFY(
    VisTextGenerateNotifyParams *params)
MSG_VIS_TEXT_CHAR_ATTR_VIRTUAL_TO_PHYSICAL
MSG_VIS_TEXT_PARA_ATTR_VIRTUAL_TO_PHYSICAL
void MSG_META_TEXT_USER_MODIFIED(optr obj)
void MSG_META_TEXT_CR_FILTERED(
    word character, word flags,
    word state)
void MSG_META_TEXT_TAB_FILTERED(
    word character, word flags,
    word state)
void MSG_META_TEXT_LOST_FOCUS(optr obj)
void MSG_META_TEXT_GAINED_FOCUS(optr obj)
void MSG_META_TEXT_LOST_TARGET(optr obj)
void MSG_META_TEXT_GAINED_TARGET(optr obj)
void MSG_META_TEXT_EMPTY_STATUS_CHANGED(
    optr object, Boolean hasTextFlag)
void MSG_META_TEXT_NOT_USER_MODIFIED(optr obj)
MSG_VIS_TEXT_EDIT_DRAW
MSG_VIS_TEXT_SHOW_SELECTION
void MSG_VIS_TEXT_HEIGHT_NOTIFY(word newHeight)
MSG_VIS_TEXT_ENTER_OVERSTRIKE_MODE
void MSG_VIS_TEXT_ENTER_INSERT_MODE(
    Boolean calledFromTextObject)
void MSG_VIS_TEXT_GET_MINIMUM_DIMENSIONS(
    VisTextMinimumDimensionsParameters *params)
MSG_VIS_TEXT_FILTER_VIA_REPLACE_PARAMS
word MSG_VIS_TEXT_FILTER_VIA_CHARACTER(
    word charToFilter)
MSG_VIS_TEXT_FILTER_VIA_BEFORE_AFTER
MSG_VIS_TEXT_LOAD_STYLE_SHEET
MSG_VIS_TEXT_LOAD_STYLE_SHEET_PARAMS
word MSG_VIS_TEXT_GET_MIN_WIDTH()
word MSG_VIS_TEXT_GET_AVERAGE_CHAR_WIDTH()
MSG_VIS_TEXT_CALC_HEIGHT
word MSG_VIS_TEXT_GET_LINE_HEIGHT()
void MSG_VIS_TEXT_RECALC_AND_DRAW()

```



```

word MSG_VIS_TEXT_GET_ONE_LINE_WIDTH(word charsToCalc)
word MSG_VIS_TEXT_GET_SIMPLE_MIN_WIDTH()
optr MSG_META_GET_OBJECT_FOR_SEARCH_SPELL(G
    etSearchSpellObjectOption option,
    optr curObject)
void MSG_META_GET_CONTEXT(@stack
    dword position,
    ContextLocation location,
    word numCharsToGet, optr replyObj)
void MSG_META_GENERATE_CONTEXT_NOTIFICATION (@stack
    dword position,
    ContextLocation location,
    word numCharsToGet, optr replyObj)
void MSG_META_CONTEXT(MemHandle data)
void MSG_META_DISPLAY_OBJECT_FOR_SEARCH_SPELL()
MSG_VIS_TEXT_SCROLL_ONE_LINE
MSG_VIS_TEXT_GET_SCROLL_AMOUNT
MSG_VIS_TEXT_SCROLL_PAGE_UP
MSG_VIS_TEXT_SCROLL_PAGE_DOWN
MSG_VIS_TEXT_SCREEN_UPDATE
MSG_VIS_TEXT_FLASH_CURSOR_ON
MSG_VIS_TEXT_FLASH_CURSOR_OFF
void MSG_VIS_TEXT_SPELL_CHECK_FROM_OFFSET(@stack
    optr replyObject, dword startOffset,
    dword numCharsToCheck,
    byte spellCheckFlags,
    MemHandle icBuff)
void MSG_VIS_TEXT_SEARCH_FROM_OFFSET(@stack
    SearchFromOffsetReturnStruct *retStruct,
    byte searchFromOffsetFlags,
    dword currentOffset, dword startOffset,
    dword startObject,
    MemHandle searchReplaceStruct)
word MSG_VIS_TEXT_REPLACE_ALL_OCCURRENCES_FROM_OFFSET(
    @stack
    ReplaceAllFromOffsetFlags flags,
    dword offset, MemHandle infoHan)
word MSG_VIS_TEXT_REPLACE_ALL_OCCURRENCES_IN_RANGE(
    @stack
    VisTextRange range,
    MemHandle infoHan)
void MSG_VIS_TEXT_DO_KEY_FUNCTION()
MSG_VIS_TEXT_REPLACE_TEXT
void MSG_VIS_TEXT_GET_TEXT_RANGE()
void MSG_VIS_TEXT_SELECT_RANGE(@stack
    dword end, dword start)
void MSG_VIS_TEXT_SHOW_POSITION(dword position)
void MSG_VIS_TEXT_SET_FILTER(byte filter)
byte MSG_VIS_TEXT_GET_FILTER()
void MSG_VIS_TEXT_SET_OUTPUT(optr newOutput)
optr MSG_VIS_TEXT_GET_OUTPUT()
void MSG_VIS_TEXT_SET_LR_MARGIN(byte lrMargin)
byte MSG_VIS_TEXT_GET_LR_MARGIN()
void MSG_VIS_TEXT_SET_TB_MARGIN(byte tbMargin)
byte MSG_VIS_TEXT_GET_TB_MARGIN()

```

```

void MSG_VIS_TEXT_REPLACE_WITH_HWR(@stack
    HWRContext context, MemHandle ink,
    VisTextHWRFlags flags,
    VisTextRange range)
void MSG_VIS_TEXT_SET_HWR_CONTEXT()
void MSG_VIS_TEXT_SET_HWR_FILTER()
void MSG_VIS_TEXT_SET_SELECTED_TAB(word position)
dword MSG_VIS_TEXT_GET_TEXT_SIZE()
void MSG_VIS_TEXT_INVALIDATE_RANGE(VisTextRange *vtr)
void MSG_VIS_TEXT_ATTRIBUTE_CHANGE()
word MSG_VIS_TEXT_GET_LINE_INFO(
    VisTextGetLineInfoParameters *vtgclip)
void MSG_VIS_TEXT_DEFINE_NAME(
    VisTextNameCommonParams *data)
void MSG_VIS_TEXT_DELETE_NAME(
    VisTextNameCommonParams *data)
void MSG_VIS_TEXT_RENAME_NAME(
    VisTextNameCommonParams *data)
void MSG_VIS_TEXT_UPDATE_NAME_LIST(
    VisTextNameCommonParams *data)
void MSG_VIS_TEXT_GET_NAME_LIST_MONIKER(
    VisTextNameCommonParams *data)
void MSG_VIS_TEXT_FOLLOW_HYPERLINK(
    VisTextNameCommonParams *data)
dword MSG_VIS_TEXT_GET_LINE_FROM_OFFSET(dword offset)
Boolean MSG_VIS_TEXT_GET_LINE_OFFSET_AND_FLAGS(
    VisTextGetLineOffsetAndFlagsParameters *params)
dword MSG_VIS_TEXT_GET_TEXT_POSITION_FROM_COORD(@stack
    PointDWord coord)
void MSG_VIS_TEXT_GET_NAME_LIST_NAME_TYPE(
    VisTextNameCommonParams *data)
void MSG_VIS_TEXT_CROSS_SECTION_REPLACE_ABORTED()
void MSG_VIS_TEXT_SET_SPELL_IN_PROGRESS()
void MSG_VIS_TEXT_SET_SEARCH_IN_PROGRESS()
void MSG_VIS_TEXT_LOAD_FROM_DB_ITEM_FORMAT(void *data)
void MSG_VIS_TEXT_GET_RUN_BOUNDS(@stack
    VisTextRange *retVal,
    word runOffset, dword position)
void MSG_SEARCH(MemHandle searchInfo)
void MSG_REPLACE_CURRENT(MemHandle replaceInfo)
void MSG_REPLACE_ALL_OCCURRENCES(MemHandle replaceInfo,
    Boolean replaceFromBeginning)
void MSG_REPLACE_ALL_OCCURRENCES_IN_SELECTION(
    MemHandle replaceInfo)
void MSG_ABORT_ACTIVE_SPELL()
void MSG_ABORT_ACTIVE_SEARCH()

```

Macros

```

TRAE(pos, base, type)    {{pos-base, 0}, type}
TRAE_ABS(pos, type)      {{pos, 0}, type}
TRAE_ALL(type)           {{0, 0}, type}
TRAE_END                 {{TEXT_ADDRESS_PAST_END&0xffff,
    TEXT_ADDRESS_PAST_END>>16},
    CA_NULL_ELEMENT}
#define CHAR_ATTR_ELEMENT_ARRAY_HEADER
    @elementArray VisTextCharAttr
    (TextElementArrayHeader (TAT_CHAR_ATTRS))

```



```

#define RUN_ARRAY_HEADER(elements)
    @chunkArray TextRunArrayElement
        (TextRunArrayHeader (0,
            (ChunkHandle)@elements))

```

Routines

```

char * TextSearchInString(const char *str1,
    const char *startPtr,
    const char *endPtr, word strSize,
    const char *str2, word str2Size,
    word searchOptions, word *matchLen)
dword TextSearchInHugeArray(char *str2, word str2Size,
    dword str1Size, dword curOffset,
    dword endOffset,
    FileHandle hugeArrayFile,
    VMBlockHandle hugeArrayBlock,
    word searchOptions, dword *matchLen)
void TextMapDefaultCharAttr()
void TextFindDefaultCharAttr()
void TextMapDefaultParaAttr()
void TextFindDefaultParaAttr()
void TextGetSystemCharAttrRun()
MemHandle TextSetHyphenationCall(
    HyphenationCallback *callback)
void VisTextFormatNumber(char *buf, dword num,
    VisTextNumberType type)
optr TextAllocClipboardObject(VMFileHandle file,
    word storageFlags, word regionFlag)
VMBlockHandle TextFinishWithClipboardObject(optr obj,
    TextClipboardOption opt,
    optr owner, const char *name)

```

VisVertRulerClass

```
@class VisVertRulerClass, VisRulerClass
```

ZoomPointerClass

```
@class ZoomPointerClass, PointerClass
```