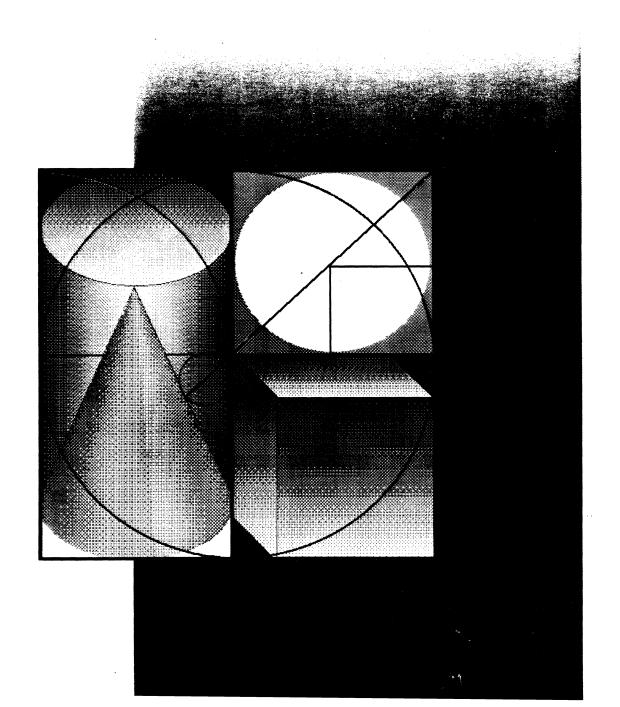# MacWorkStation™
Dialog Builder

Version 1.0B1

APDA # M0124LL/A

Apple MWS Dialog Builder
Preliminary Note

Beta—Working Draft #4

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NOTE

This document is supplied in its current state to
provide you with as much information as possible as
early as possible. Although every attempt has been
made to verify the accuracy of the information
presented, this document may contain errors and is
subject to change.

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What Is MWS Dialog Builder?

APPLE® MWS DIALOG BUILDER™ is a MacWorkStation™ utility that allows developers to easily create dialog boxes for use with MacWorkStation applications. You can add the dialog boxes to local documents or transfer the command descriptions to the client application, which will send these commands to the Macintosh® computer to draw the dialog box at the appropriate time. This preliminary note introduces Dialog Builder, discusses dialog boxes and their usage, and details how to use Dialog Builder to create dialog boxes for your MacWorkStation applications.
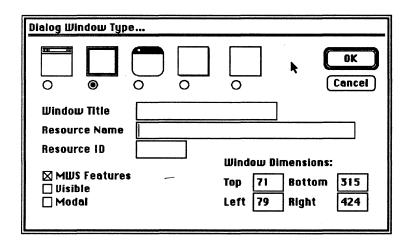
Dialog Builder greatly reduces the amount of time previously needed for constructing dialog boxes and also allows you to easily edit existing dialog boxes. MacWorkStation requires the resources DICL, DITL, and DLOG to create a dialog box, and Dialog Builder automatically creates these resources when you use it to build dialog boxes. Dialog Builder can also work with MWS Event Handler™. Event Handler is an application that associates "scripts" of MacWorkStation commands with MacWorkStation events, for example choosing a menu item or clicking a button in a dialog box. Whenever the MacWorkStation event is generated, its script is played, running the appropriate commands. MacWorkStation and Dialog Builder, along with Event Handler, complement the development tools available for prototyping and building applications.

What are dialog boxes?

Dialog boxes are an integral part of the Apple Desktop Interface. Dialog boxes offer an easy-to-understand way for an application to request data from the user. For example, a dialog box can present choices to the user or request information from the user. The user can enter several items at one time then dismiss the dialog box so that processing can begin. In contrast, a command selected from a menu performs only one immediate action. Dialog boxes are also used to warn or alert the user about some potential problem.

Dialog boxes can be modal or modeless, and Dialog Builder allows you to specify this when you create each dialog box. A modal dialog box is one that the user must dismiss before doing anything else (see *Figure 1-1*).

■ **Figure 1-1** Modal dialog box

A modeless dialog box allows the user to perform other operations without dismissing the dialog box (see *Figure 1-2*).

■ **Figure 1-2** Modeless dialog box

Your application should have the same "look and feel" as other Macintosh applications so that users can understand how to use it with minimal instruction. Although Dialog Builder allows you to create dialog boxes with any combination of buttons, text, lists, and icons, you should be familiar with the standard usage of these items within Macintosh applications so that your application's features are most accessible to users. Your applications should follow the established, successful guidelines for dialog boxes and their elements. Refer to the Apple publication *Human Interface Guidelines: The Apple Desktop Interface* for detailed discussions on the philosophy, design, and use of the elements of the Desktop Interface.
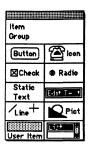
Using Dialog Builder

Dialog Builder contains a palette window of items you can import to your dialog box. You issue commands using one of four menus, which permit familiar actions like Save and Quit, as well as functions to manage items in the dialog box.

The palette window

When you create or edit a dialog box, the Dialog Builder palette window will appear (see *Figure 1-3*). The palette window contains template items for buttons, icons, check boxes, radio buttons, static text elements, edit text elements, lines, pictures, user items, and scrolling lists. You can move the palette window anywhere on the screen by dragging it by the gray title bar.

■ **Figure 1-3** The Dialog Builder palette window
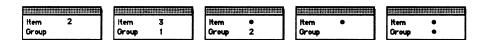
You can import any of the palette window's items to your dialog box simply by dragging the item from the palette window into the dialog box. Once an item is placed in the dialog box, you can reposition it, edit it, or set attributes to define it more specifically. You can edit the item by selecting it and typing in the new text or by double-clicking it and editing the text in its attributes window. To delete an item, select it and press the Delete key.

As an item is created in the dialog box, Dialog Builder assigns it an item number, which is simply an identifier. By default, the number assigned is one digit higher than that of the highest numbered item already in the dialog box, although you can reorder them in any manner. You can also group, or *cluster*, items as well as uncluster them. Optionally, you can have the state of one item govern the active state of a cluster; the item *oversees* the cluster. For example, the user may need to fill in a text field before a button becomes active.

The palette window displays the item and group (cluster) number of the currently selected item. If multiple items are selected, or the multiple items do not belong to the same group, then a dot (•) is displayed instead of a number (see *Figure 1-4*).
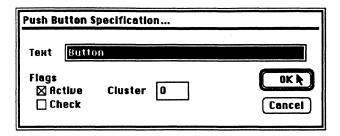
■ **Figure 1-4** Item and group numbers appear in the palette window

Buttons

Buttons cause some action to occur immediately after the user clicks them. In dialog boxes, two commonly used buttons are OK and Cancel. You may resize a button by dragging one of its handles. A button's attributes include its text display, whether it appears as active or inactive (dimmed), and the cluster it belongs to (see *Figure 1-5*). Another button attribute, Check, causes MacWorkStation to check any formatted editable text fields for valid contents when the user clicks the button. By default, buttons are active but not checked.

■ **Figure 1-5** Button attributes

```
┌─────────────────────────────────────────────┐
│ Push Button Specification...                 │
│ ═══════════════════════════════════════════  │
│                                              │
│ Text  ▐Button                        ▌       │
│                                              │
│ Flags                              ╭──────╮  │
│   ☒ Active   Cluster  ┌─┐          │ OK ▶ │  │
│   ☐ Check             │0│          ╰──────╯  │
│                       └─┘          ┌────────┐│
│                                    │ Cancel ││
│                                    └────────┘│
└─────────────────────────────────────────────┘
```
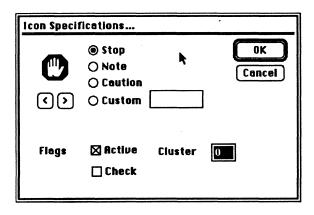
Icons

Icons in dialog boxes call the users attention to some problem, generally when continuing an action might have undesirable results. Applications use three types of icons for alerting purposes—Note, Caution, and Stop—the latter indicating the most severe problem. You may create a custom icon using a resource editor such as ResEdit™.

The icon attribute choices are Stop, Note, Caution, or custom (see *Figure 1-6*). Custom icons are identified by icon number ID (ICN# ID). You can browse through the available custom icons by clicking the left and right arrows in the Icon Specifications dialog box. Icons are active (default) or inactive and can also belong to a cluster. When the Check attribute is selected, any formatted editable text fields are checked for validity when the user clicks the active icon.

■ **Figure 1-6** Icon attributes

```
┌──────────────────────────────────────────────┐
│ Icon Specifications...                        │
│ ═══════════════════════════════════════════   │
│                                               │
│          ◉ Stop            ▶   ╭──────────╮   │
│   ╭───╮  ○ Note                │   OK     │   │
│   │✋ │  ○ Caution            ╰──────────╯   │
│   ╰───╯                       ┌──────────┐   │
│   ┌─┐┌─┐  ○ Custom  ┌──────┐  │  Cancel  │   │
│   │<││>│            │      │  └──────────┘   │
│   └─┘└─┘            └──────┘                  │
│                                               │
│   Flags   ☒ Active   Cluster  ▐0▌             │
│           ☐ Check                             │
│                                               │
└──────────────────────────────────────────────┘
```

When you select a custom icon in the dialog box and double-click, the custom icon appears in the attributes window. Double-clicking on the custom icon in the attributes window brings up another dialog box with the custom icon enlarged. Here, you can edit the custom icon and save it for use in the dialog box.

Check boxes and radio buttons

Check boxes and radio buttons function similarly in that both give the user several options to choose from and both act as toggles between two states, on and off. The primary difference between them is that radio buttons are mutually exclusive. At any given time, only one radio button in a cluster is on, and turning on a radio button turns off the radio button that was on previously. Because check boxes are independent, the user can click any combination of them.

A check box's or radio button's attributes are the text display, whether it appears as active or inactive, its cluster number, and the number of a cluster it oversees (see *Figure 1-7*). Optionally, the Report attribute causes MacWorkStation to send an event to the host when the user changes the radio button or check box.

- **Figure 1-7**   Check box and radio button attributes

```
┌─────────────────────────────────────────────────────┐
│ CheckBox and Radio Button Specs...                   │
│ ═══════════════════════════════════════════════════  │
│                                                       │
│   Text  │Check Box                              │     │
│                                                       │
│                                  ▶                    │
│   Flags         Initial Value                         │
│   ☒ Active      ◉ Off        Cluster  │0│    ╭──────╮ │
│                                              │  OK  │ │
│   ☐ Report      ○ On         Oversee  │0│    ╰──────╯ │
│                                              ( Cancel )│
│                                                       │
└─────────────────────────────────────────────────────┘
```
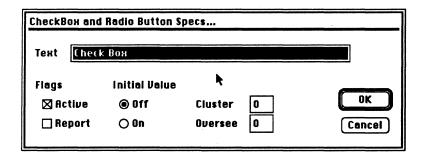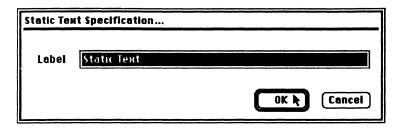
◆ *Note:* The initial value of a check box or radio button is not a saveable attribute with MacWorkStation 3.0.

Static text and edit text fields

Static text is informational only; the user cannot change the text in any way. It is most often used to title items or clusters in a dialog box. A static text field can be used for messaging purposes. In this case, the host application changes the text in the static text field based on the status of the application. Or, depending on the application, some users may be allowed to change a text field while others may only view it.

You can resize the static text field by dragging its handles. Its text display is the static text field's only attribute (see *Figure 1-8*).
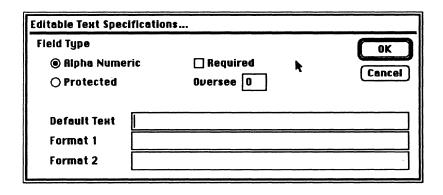
■ **Figure 1-8** Static text attributes

```
┌─────────────────────────────────────────────────┐
│ ┌─────────────────────────────────────────────┐ │
│ │ Static Text Specification...                │ │
│ │ ─────────────────────────────────────────── │ │
│ │                                             │ │
│ │  Label  ┌─────────────────────────────────┐ │ │
│ │         │ Static Text                     │ │ │
│ │         └─────────────────────────────────┘ │ │
│ │                                             │ │
│ │                        ┌────────┐ ┌────────┐│ │
│ │                        │  OK ▶  │ │ Cancel ││ │
│ │                        └────────┘ └────────┘│ │
│ │                                             │ │
│ └─────────────────────────────────────────────┘ │
└─────────────────────────────────────────────────┘
```

Edit text items receive and display information typed by the user, such as names and passwords. You can resize edit text fields by dragging their handles. Edit text attributes indicate whether the field is alphanumeric (default) or protected, meaning that asterisks are displayed as the user types (see *Figure 1-9*). Other attributes indicate if the field is required, the number of the cluster the field oversees, and the default text display.

The fields Format 1 and Format 2 are used for validation. If the field type is alphanumeric, Format 1 and Format 2 give the valid ASCII range of the edit field. For protected field types, the text typed in by the user is matched against Format 1, and Format 2 is unused.

■ **Figure 1-9** Edit text attributes

```
┌─────────────────────────────────────────────────┐
│ ┌─────────────────────────────────────────────┐ │
│ │ Editable Text Specifications...             │ │
│ │ ─────────────────────────────────────────── │ │
│ │  Field Type                      ┌────────┐ │ │
│ │                                  │   OK   │ │ │
│ │   ◉ Alpha Numeric    ☐ Required  └────────┘ │ │
│ │                               ▶  ┌────────┐ │ │
│ │   ○ Protected        Oversee │0│ │ Cancel │ │ │
│ │                                  └────────┘ │ │
│ │                                             │ │
│ │   Default Text  ┌─────────────────────────┐ │ │
│ │                 │                         │ │ │
│ │   Format 1      ┌─────────────────────────┐ │ │
│ │                 │                         │ │ │
│ │   Format 2      ┌─────────────────────────┐ │ │
│ │                 │                         │ │ │
│ └─────────────────────────────────────────────┘ │
└─────────────────────────────────────────────────┘
```

Lines

Lines are decorative, and you can use them anywhere in the dialog box. By default, dragging the line item from the palette window into the dialog box produces a horizontal line. You can resize lines by dragging the handles on either end. Lines do not have attributes, but they may belong to a cluster.

Pictures

You can bring pictures into the dialog box simply by pasting them from the Scrapbook. A picture acts much like a button, performing some action when the user clicks it. You can resize pictures by dragging the handles. A picture's attributes include whether it is active (default) or inactive, its cluster number, and its resource ID (see *Figure 1-10*). The Check attribute indicates whether MacWorkStation should check any editable text fields for validity.

■ **Figure 1-10** Picture attributes

```
┌────────────────────────────────────────────┐
│ Picture Specifications...                  │
├────────────────────────────────────────────┤
│  ☒ Active    Cluster    [0  ]    ┌────────┐ │
│                                  │  OK ▶  │ │
│  ☐ Check     Resource ID [0  ]   └────────┘ │
│                                  ( Cancel ) │
└────────────────────────────────────────────┘
```
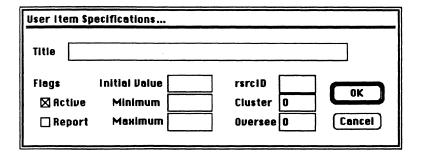
User items

A user item is a custom control item that may be designed and coded by you to suit the needs of your application. Control items typically can be set within a range of values, much like a switch or dial. The control is set up with minimum, maximum, and initial values. Within a dialog box, the user item acts as a placeholder for your custom control item.

To use a custom control, you must first create it on your Macintosh computer and save it as a resource of a MacWorkStation document. Only then can you add the custom control item to a dialog box.

The custom control item attributes include the title and whether the control is active (see *Figure 1-11*). Report indicates whether to generate an event when the user clicks the control. The initial, minimum, and maximum values determine the control parameters. RsrcID is the control item's resource ID. Cluster and oversee give the item's cluster number and the number of the cluster the control item oversees.

■ **Figure 1-11** User item attributes

```
┌──────────────────────────────────────────────────────┐
│ User Item Specifications...                          │
├──────────────────────────────────────────────────────┤
│                                                        │
│  Title  ┌──────────────────────────────────────┐      │
│         └──────────────────────────────────────┘      │
│                                                        │
│  Flags      Initial Value ┌─────┐   rsrcID ┌─────┐    │
│                           └─────┘          └─────┘  ┌───────┐ │
│  ☒ Active   Minimum ┌─────┐   Cluster │0│    │  OK   │ │
│                     └─────┘            └───────┘ │
│  ☐ Report   Maximum ┌─────┐   Oversee │0│   ┌────────┐ │
│                     └─────┘            └─────┘ │ Cancel │ │
│                                                └────────┘ │
└──────────────────────────────────────────────────────┘
```
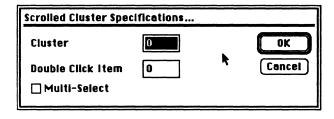
Scrolling lists

Scrolling lists present the user with a number of text items to choose from. A common example of this is the scrolling list that appears after choosing the Open command from the File menu. When you drag the scrolling list item from the palette to the dialog box, sample items are displayed in the scrolling list to help you judge the size of the box you want to use. You can resize the scrolling list box by dragging its handles, and the number of items in the list is adjusted according to the box size.

Scrolling list attributes include its cluster number, whether the user is allowed to double-click an item in the list to select it, and whether multiple selections within the list are permitted (see *Figure 1-12*).

■ **Figure 1-12** Scrolling list attributes

```
┌──────────────────────────────────────────────────┐
│ Scrolled Cluster Specifications...                │
├──────────────────────────────────────────────────┤
│                                                    │
│  Cluster          ┌──────┐          ┌────────┐    │
│                   │0█████│          │   OK   │    │
│                   └──────┘          └────────┘    │
│  Double Click Item ┌─────┐   ▶     ┌────────┐    │
│                    │0│           │ Cancel │    │
│                    └─────┘           └────────┘    │
│  ☐ Multi-Select                                   │
│                                                    │
└──────────────────────────────────────────────────┘
```
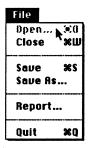
The menus

Dialog Builder consists of four menus: the standard Apple, File, and Edit menus, plus an Options menu. The Apple menu brings up all your available desk accessories as well as an "About Dialog Builder" menu. The Edit and File menus offer standard operations as well as some file and edit functions specific to Dialog Builder. The Options menu contains most of the item manipulation commands unique to Dialog Builder.

The File menu

The File menu brings up the dialog box file manipulation commands Open, Close, Save, and Report, as well as the Quit command used to quit Dialog Builder (see *Figure 1-13*).
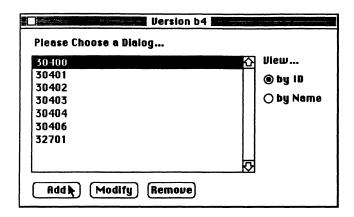
■ **Figure 1-13** The File menu

```
┌─────────────┐
│ File        │
├─────────────┤
│ Open...   ⌘O│
│ Close     ⌘W│
├─────────────┤
│ Save      ⌘S│
│ Save As...  │
├─────────────┤
│ Report...   │
├─────────────┤
│ Quit      ⌘Q│
└─────────────┘
```

To create a new dialog box or edit an existing one, choose the Open command to bring up a scrolling list from which you select the MacWorkStation document in which you want to work. After you choose the document, another dialog box appears listing all the dialog boxes currently in that document (see *Figure 1-14*). You may view the list by name or by resource ID.
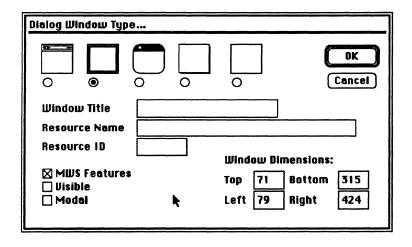
■ **Figure 1-14** Opening a dialog box in an application

At this point, you can modify or remove an existing dialog box or add a new dialog box. If you select Modify, the dialog box will appear for you to edit. If you select Add, a Dialog Window Type box appears along with an empty dialog box window for you to begin creating the new dialog box (see *Figure 1-15*).

■ **Figure 1-15** Dialog Window Type box

From within the Dialog Window Type box, you can select the type of window that will be displayed. You type the window's title, resource name, and resource ID, and set the dialog box to be visible or not visible and modal or modeless. The resource ID must be a number between 1 and 29,999; all others are reserved for MacWorkStation or the System. (You can also select Cancel, create the dialog box, then save it and bring up the Dialog Window Type box again, entering this information later.)
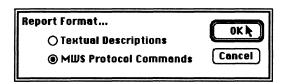
After dismissing the Dialog Window Type box, you can create the new dialog box by dragging items from the palette window, positioning and editing them as needed.

Once you have finished the new dialog box, you can save it. Saving the dialog box will automatically cause the Dialog Window Type box to appear if you did not fill in the window's information previously. You can also use the Save As command to save the dialog box, but doing so will bring up the Dialog Window Type box regardless of whether the window's information was saved previously.

You can close the dialog box at any time by clicking the close box or selecting Close from the File menu. (You will be prompted to Save if you try to Close the dialog box and have modified it since it was last saved.)
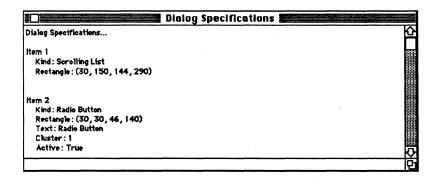
The Report command offers a descriptive specifications list of the dialog box and its contents. Selecting Report brings up a dialog box from which you can select the report format—either text descriptions or MWS protocol commands (see *Figure 1-16*).

■ **Figure 1-16** Report command dialog box

```
┌────────────────────────────────────────┐
│ Report Format...                        │
│                          ┌──────────┐   │
│    ○ Textual Descriptions │   OK  ▶ │   │
│                          └──────────┘   │
│    ◉ MWS Protocol Commands  ┌────────┐  │
│                             │ Cancel │  │
│                             └────────┘  │
└────────────────────────────────────────┘
```
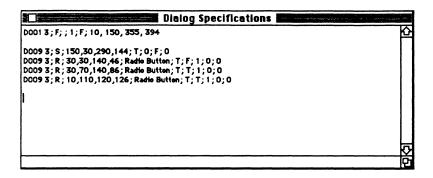
Selecting Textual Descriptions generates a window that describes the contents of the dialog box. Each item is listed separately, and described in terms of its size and attributes. The example in *Figure 1-17* shows a Textual Descriptions report for a dialog box containing a scrolling list and three radio buttons.

■ **Figure 1-17** Textual Descriptions report

```
┌─────────────────────────────────────────────────┐
│ ▢   ══════════ Dialog Specifications ══════════ │
├─────────────────────────────────────────────┬───┤
│ Dialog Specifications...                     │ ⬆ │
│                                              │ ▢ │
│ Item 1                                       │ ▨ │
│    Kind: Scrolling List                      │ ▨ │
│    Rectangle: (30, 150, 144, 290)            │ ▨ │
│                                              │ ▨ │
│                                              │ ▨ │
│ Item 2                                       │ ▨ │
│    Kind: Radio Button                        │ ▨ │
│    Rectangle: (30, 30, 46, 140)              │ ▨ │
│    Text: Radio Button                        │ ▨ │
│    Cluster: 1                                │ ⬇ │
│    Active: True                              │   │
├─────────────────────────────────────────────┴───┤
└─────────────────────────────────────────────────┘
```

Selecting MWS protocol generates a window displaying the MWS commands necessary to create the dialog box and its contents. This protocol report can be copied to the Clipboard or saved as a text file for uploading to the host program, so that the host program can generate an identical dialog box. The example in *Figure 1-18* shows an MWS protocol report for the same dialog box used in the previous example; it contains a scrolling list and three radio buttons.

■ **Figure 1-18**   MWS Protocol Commands report

```
▓■▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒ Dialog Specifications ▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒
D001 3;F;;1;F;10,150,355,394

D009 3;S;150,30,290,144;T;0;F;0
D009 3;R;30,30,140,46;Radio Button;T;F;1;0;0
D009 3;R;30,70,140,86;Radio Button;T;T;1;0;0
D009 3;R;10,110,120,126;Radio Button;T;T;1;0;0

|
```
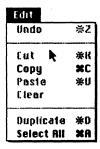
The last command in the File menu, Quit, allows you to quit from Dialog Builder.

The Edit menu

You use the Edit menu to access editing operations when creating or modifying a dialog box (see *Figure 1-19*).

■ **Figure 1-19**   The Edit menu

```
┌──────────────┐
│ Edit         │
├──────────────┤
│ Undo      ⌘Z │
├──────────────┤
│ Cut   ▶   ⌘K │
│ Copy      ⌘C │
│ Paste     ⌘U │
│ Clear        │
├──────────────┤
│ Duplicate ⌘D │
│ Select All ⌘A│
└──────────────┘
```

Undo, Cut, and Copy are available only when a desk accessory is active; there are currently no facilities in Dialog Builder to support these commands.

Paste copies the contents of the Clipboard and pastes them into the dialog box. Using Paste, you can open the Scrapbook, copy a graphic, then paste it into your dialog box. Clear removes all selected objects from the dialog box (as does selecting items and pressing the Delete key).

△ Important   Clear cannot be undone, since there is no Undo command available.

Duplicate copies a selected item and places the copy in the dialog box. Select All selects every item in the dialog box. Remember, you can select multiple items by holding down the Shift key and clicking the items you want to select, or by dragging through multiple items.

The Options menu

The commands specific to Dialog Builder are contained in the Options menu (see *Figure 1-20*). Dialog Specs brings up the Dialog Window Type box, where you can change information such as the dialog box window type or name, resource name, or resource ID. The command Item Attributes functions the same as if you had double-clicked an item in the dialog box: its attributes window appears so you can specify certain characteristics for that item. Remember that attributes vary depending on the type of dialog box item.
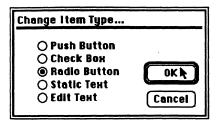
■ **Figure 1-20** The Options menu

The Cluster command creates a group identifier for any currently selected objects. Uncluster breaks up a previously created cluster. Reorder renumbers the currently selected objects in the order you selected them. Align To Grid snaps the selected items to the invisible grid.

Change Type brings up a dialog box in which you can change certain types of items to other types (see *Figure 1-21*). This command is functional only for buttons, check boxes, radio buttons, and static and edit text fields.

■ **Figure 1-21** The Change Type command dialog box

```
┌──────────────────────────────────────┐
│ Change Item Type...                   │
│ ────────────────────────────         │
│    ○ Push Button                      │
│    ○ Check Box                        │
│    ◉ Radio Button     ┌──────────┐    │
│    ○ Static Text      │   OK ▶   │    │
│    ○ Edit Text        └──────────┘    │
│                       ┌──────────┐    │
│                       │  Cancel  │    │
│                       └──────────┘    │
└──────────────────────────────────────┘
```

The Use Actual Window command allows you to edit the dialog box while it appears on the screen in its actual shape and its title shows in the title bar. This command is useful when you want to see how items will look with respect to the actual shape of the dialog box. By default, the dialog box shape is that of a rectangular window. Normally, dialog boxes and alerts use other standard shapes. Refer to the *Human Interface Guidelines* for a complete discussion on window shapes and their usage.