

S60

theme studio

for Symbian OS

Artist's guide 3.0

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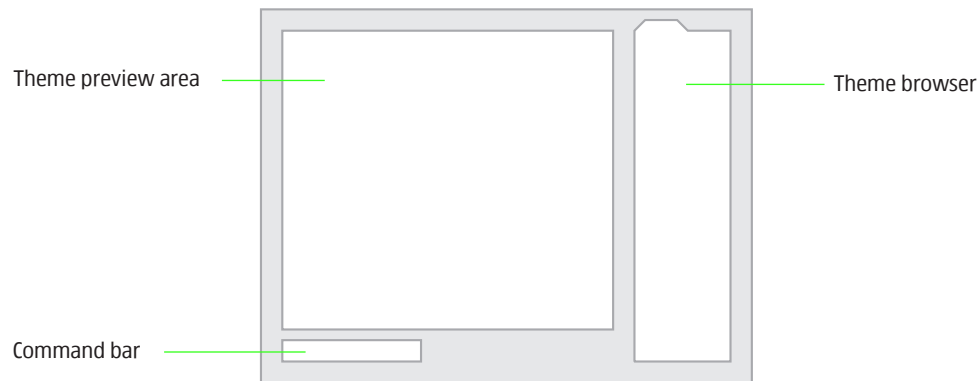
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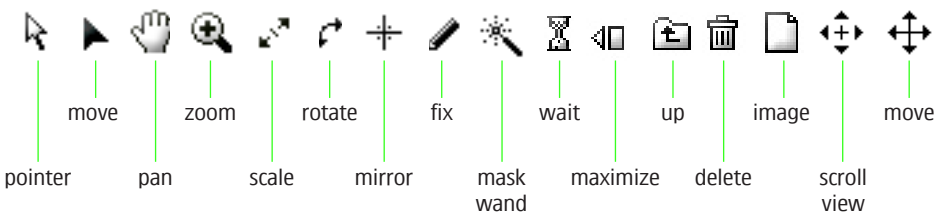
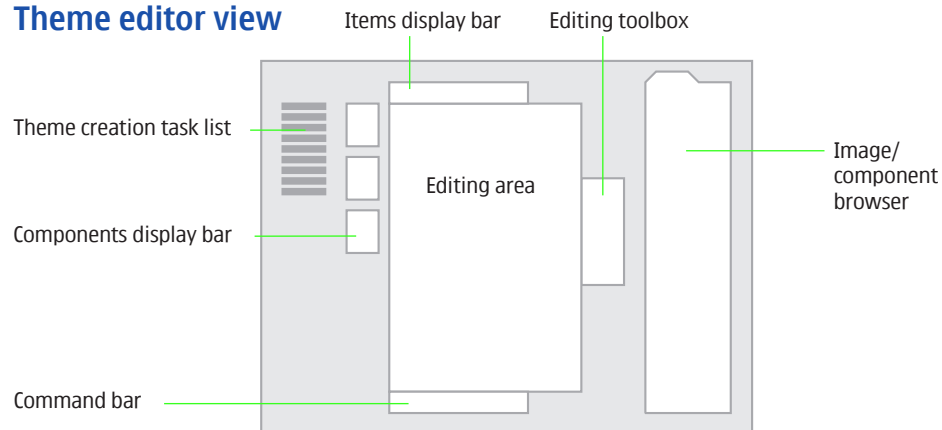
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Quick guide

Theme gallery view



Theme editor view



Shortcuts:

F1

Context sensitive help

Ctrl+n

Create a new theme

Ctrl+s

Save a component and theme

Ctrl+Shift+s

Save as a copy with a new name

Ctrl+c

Copy the image to the clipboard

Ctrl+v

Paste the image from the clipboard to the Editing area

Ctrl+z

Undo

Shift+LeftMouseKey

Select all items between the first and last item

Ctrl+LeftMouseKey

Add highlighted item to the selection

Ctrl+Spacebar+LeftMouseKey

Zoom in

Ctrl+Alt+Spacebar+LeftMouseKey

Zoom out

Ctrl+ '+' (plus)

Zoom in

Ctrl+ '-' (minus)

Zoom out

Ctrl+0

Fit the view

Ctrl+1

100% magnification

Ctrl+2

200% magnification

Ctrl+3

300% magnification

Ctrl+4

400% magnification

Ctrl+5

500% magnification

Ctrl+6

600% magnification

Spacebar

Pan

Shift+scaling

Scale the image with fixed aspect ratio

Alt+scaling

Scale the image according to the image center

Alt+Shift+scaling

Scale the image according to the image center and with fixed aspect ratio

ArrowLeft

Move the image one pixel to the left

ArrowRight

Move the image one pixel to the right

ArrowDown

Move the image one pixel down

ArrowUp

Move the image one pixel up

Ctrl+ArrowLeft

Activate the section to the left (of the active section)

Ctrl+ArrowRight

Activate the section to the right

Ctrl+ArrowDown

Activate the section below the active section

Ctrl+ArrowUp

Activate the section above the active section

Alt+LeftMouseKey

Open animation frame duration pop-up window

Introduction

Introduction Themes

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This document defines the guidelines for theme creation for S60 platform mobile devices. The document is also a user manual for S60 Theme Studio version 3.0.

The document is divided into three main chapters:

- The Introduction chapter provides an overview of the theme concept.
- The Theme Studio chapter outlines the installation, functions and different views of Theme Studio.
- The Theme creation task list chapter defines theme component creation with Theme Studio as well as providing information about other dialogs of the tool.

– The side bar contains the titles and subtitles of the document. The task list titles in the third section are numbered as in the tool. The highlight indicates the current topic.

Sections may contain notes, which are tips to help you. These items have an exclamation mark graphic and a gray text box.

Sections may also contain links and references to other sections. These items have a double arrow graphic and a gray text box.



Note:
Notes contain tips to help you create themes.



See also:
Links to other sections are shown here.



What's new in version 3.0:

1. Format change - signed SIS format for S60 Platform 3rd Edition
2. Morphing theme
3. Animated highlights
4. Preview SIS file creation
5. Application specific theme - Music Player added
6. Support for generating themes for S60 2nd Edition Feature Pack 2, S60 2nd Edition Feature Pack 3 and S60 Platform 3rd Edition
7. Analogue and digital clocks can be animated in preview window
8. Themes can be renamed

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Themes

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Themes

Themes (skins) are used to change the look of your mobile phone's user interface (UI). Themes consist of display items called components. By modifying the appearance of these components you may create a whole new look for your UI.

Themes in S60

In S60, the themes enable changes to the basic look of the UI. Themes allow you to modify or change:

- The display background
- The appearance of highlights
- The appearance of pop-up windows
- The appearance of commonly used components/applications
- The colours of the fonts
- The style of icons
- Sounds

A theme package may contain graphics for one or many changeable components. The default component will be shown if it is not edited.

In S60, the UI is scalable to support different resolutions and orientations. This means that all of the components scale according to different screen resolution of the devices.

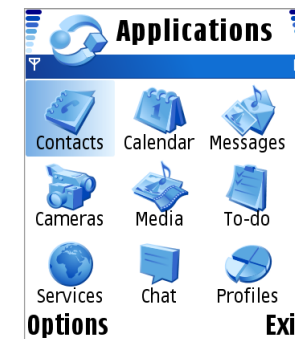
Additionally, themes may contain items specifically to individual applications, such as a background image for the Idle mode.



Component:

Components are display items that are used to build a graphical user interface. Components may consist of a single item or multiple items (options: single image, single image plus filters, two or more images plus filters, background image plus filters). Components can be either vector (.SVG) or bitmap (.BMP) graphics. Components scale according to various resolutions.

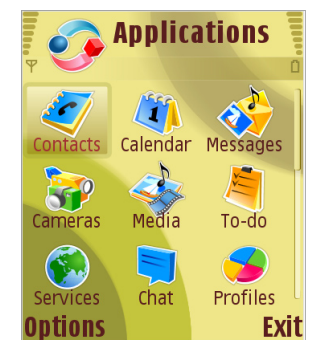
Changing a theme only affects the look and feel of the UI. The functions or features of the device are not changed.



Default User Interface



Themed User Interfaces



Theme Studio

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With S60 Theme Studio, a personalised theme can be created and deployed to the phone. Changing the appearance of a component to some extent in Theme Studio is achievable. For a complete Theme creation, other graphic editing applications are recommended, for example Adobe Illustrator for vector graphics editing, Adobe Photoshop for bitmap editing and Adobe Audition for sound editing.

S60 Theme Studio is compatible with Windows 2000 or XP operating system. Only UK English is currently supported for the UI language.

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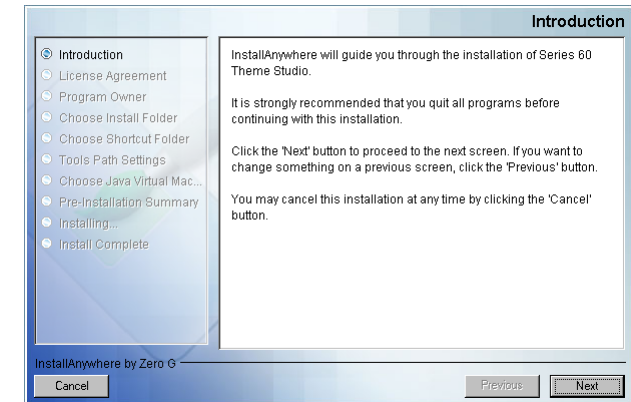
Installation

To install the application:

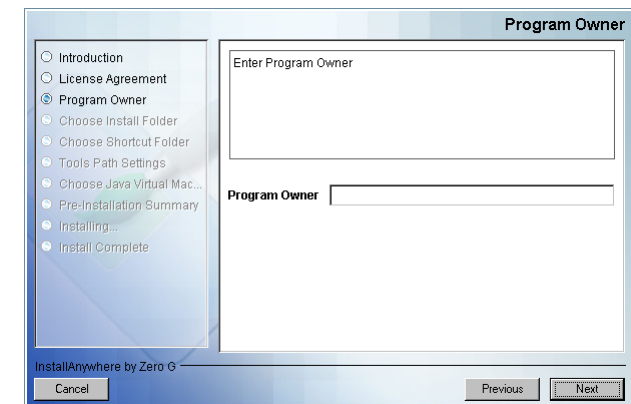
1. Double-click the executable (.exe) icon in the zip-file.
2. Read the instructions on the introduction screen.
3. Read the End User Licensing Agreement text and accept the terms. In case if you do not agree with the terms, select the 'I do NOT accept the terms of the License Agreement' option. In this case, the program installation will be cancelled.
4. Enter a Program Owner name. This name is the default value used as the author for themes.
5. Specify the installation directory:
 - To change the default directory, type the absolute path in the edit area or click the Choose... button and select the desired directory.
 - To return to the default values, click the Restore Default Folder button.



System requirements:
 Windows 2000 or XP, System recommendation
 Processor 1.5GHz or higher
 512MB memory or higher
 200MB empty space on hard disk
 Display card with 16bit colour at least on 1280x1024 resolution



Installation step 2



Installation step 4

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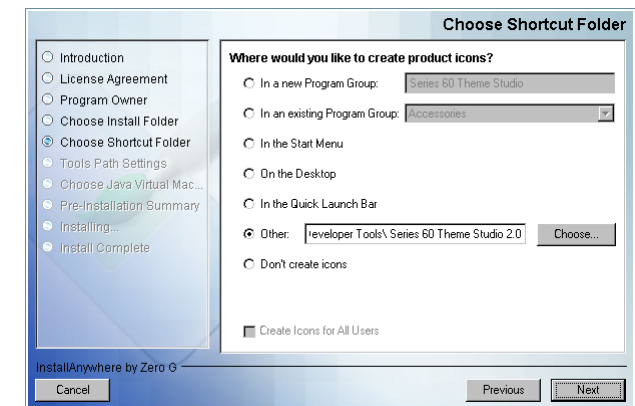
Other dialogs

6. On the next screen, select a location to add the program shortcut icon.

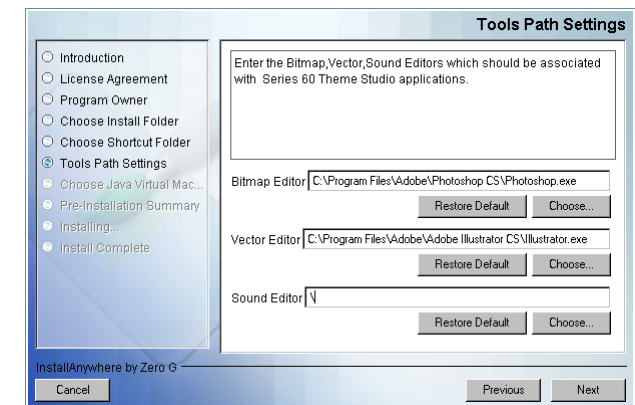
Choose one of the following options:

- **In a new Program Group:**
Select this option to create a shortcut in the Program option in the Start menu. Specify the program group name by typing the required name in the edit box next to the option.
- **In the existing Program Group:**
Select this option to create a shortcut in an existing list (program group) in the Program option in the Start menu. Select your preferred group by choosing an option from the list next to the option.
- **In the Start Menu:**
Select this option to create a shortcut in the Start menu.
- **On the Desktop:**
Select this option to create a shortcut on the Windows desktop.
- **In the Quick Launch Bar:**
Select this option to create a shortcut in the Quick Launch Bar.
- **Other:**
Select this option to choose where the shortcut will be created.
- **Don't create icons:**
Select this option to not create any shortcuts.
- **Create Icons for All Users:**
Select this option to create a shortcut that is accessible to all users of the Program Group or Start menu of the Windows OS.

7. Set your preferred Bitmap Editor application by typing the absolute path of the paint program, or by clicking the Choose button and selecting the paint program. Set your preferred Vector and Sound Editor application.



Installation step 6



Installation step 7

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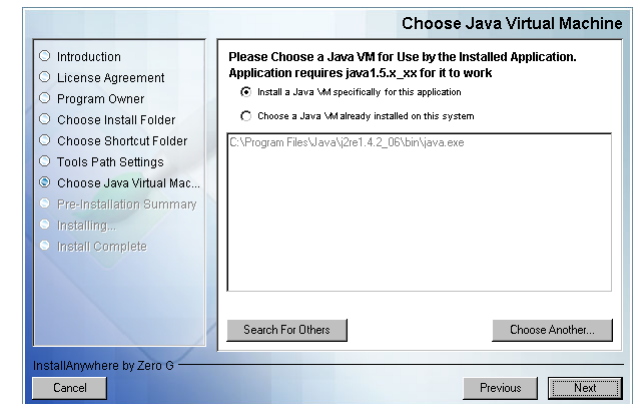
8. Select the Java Virtual Machine (VM) that will be used. You can select one of two options:

- Install a Java VM specifically for this application
This option installs a Java VM specifically for the application. This is the recommended option for all users.
- Choose a Java VM already installed on this system
Select this option to associate an existing Java VM with the application. This option is only recommended for experts who are familiar with Java VM concepts. An incorrect Java VM version may cause errors. After selecting this option, choose one of the listed Java VMs or search for others by clicking the Search For Others button. Alternatively, select a Java VM by clicking the Choose Another... button.

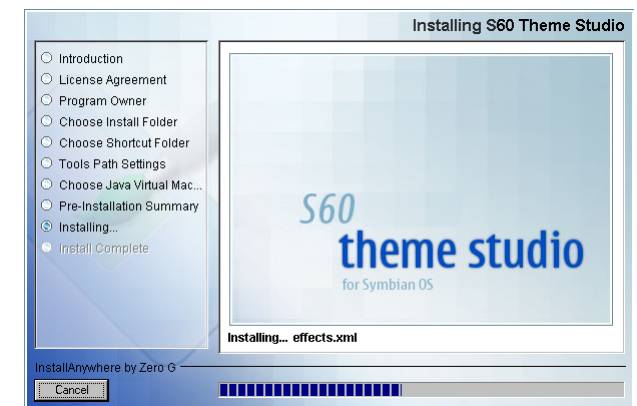
9. A summary of the options you have selected is now displayed. If any corrections are necessary, go back to the previous steps by clicking the Previous button.
10. Click the Install button to start installing the application. The install dialog will show the status of the installation process.
11. Click the Done button to complete the installation process. It is recommended that the system is restarted before starting the application.

Congratulations!

Theme Studio is now ready to help you create themes. Press the Done button to complete the installation process. It is recommended that the system is restarted before starting the application.



Installation step 9



Installing...



Uninstalling:

Uninstallation can be performed by Add/Remove Programs in Control Panel. Then select "S60ThemeStudio", click on Change/Remove and finally click on "Uninstall" from the Uninstall window.

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Gallery

Theme Studio has two views:

- Theme gallery view
- Theme editor view

The Theme gallery view allows you to check existing themes. Use the view to preview theme design files or SIS files.

Theme design files contain all components necessary to create a theme. Open a file for editing and select the components to be used for the SIS file output. The file format for design files is TDF (Theme Design File).

SIS files are compressed theme components that are ready to be used in a mobile device. The file format of the packages is a Symbian OS SIS file. The contents of packages may only be viewed, not edited.

Theme design files can be opened with other Theme Studio applications by sharing theme packages. Choose the Export command in the Theme menu to create a package. Use the Import command in the same menu to open the package.

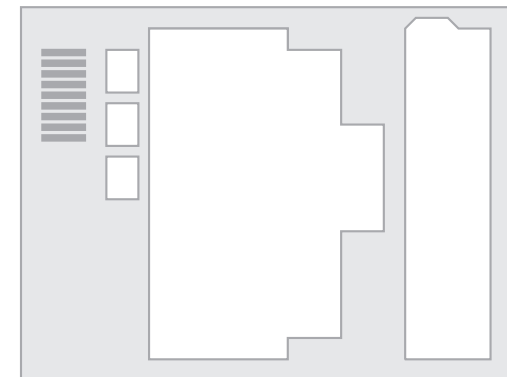
The file format for package files is TPF (Theme Package File).

Preview area

The Preview area contains the title and sample images for the currently selected theme. The displayed item can be a SIS file or a theme design file. Preview images are shown in an area surrounded by a green line, with the theme's title shown above it.



Theme gallery view



Theme editor view



File extensions:

TDF	theme design file
TPF	packed theme design file
SIS	compressed themes for sending to mobile devices



Theme design file (TDF)



Packed theme design file (TPF)



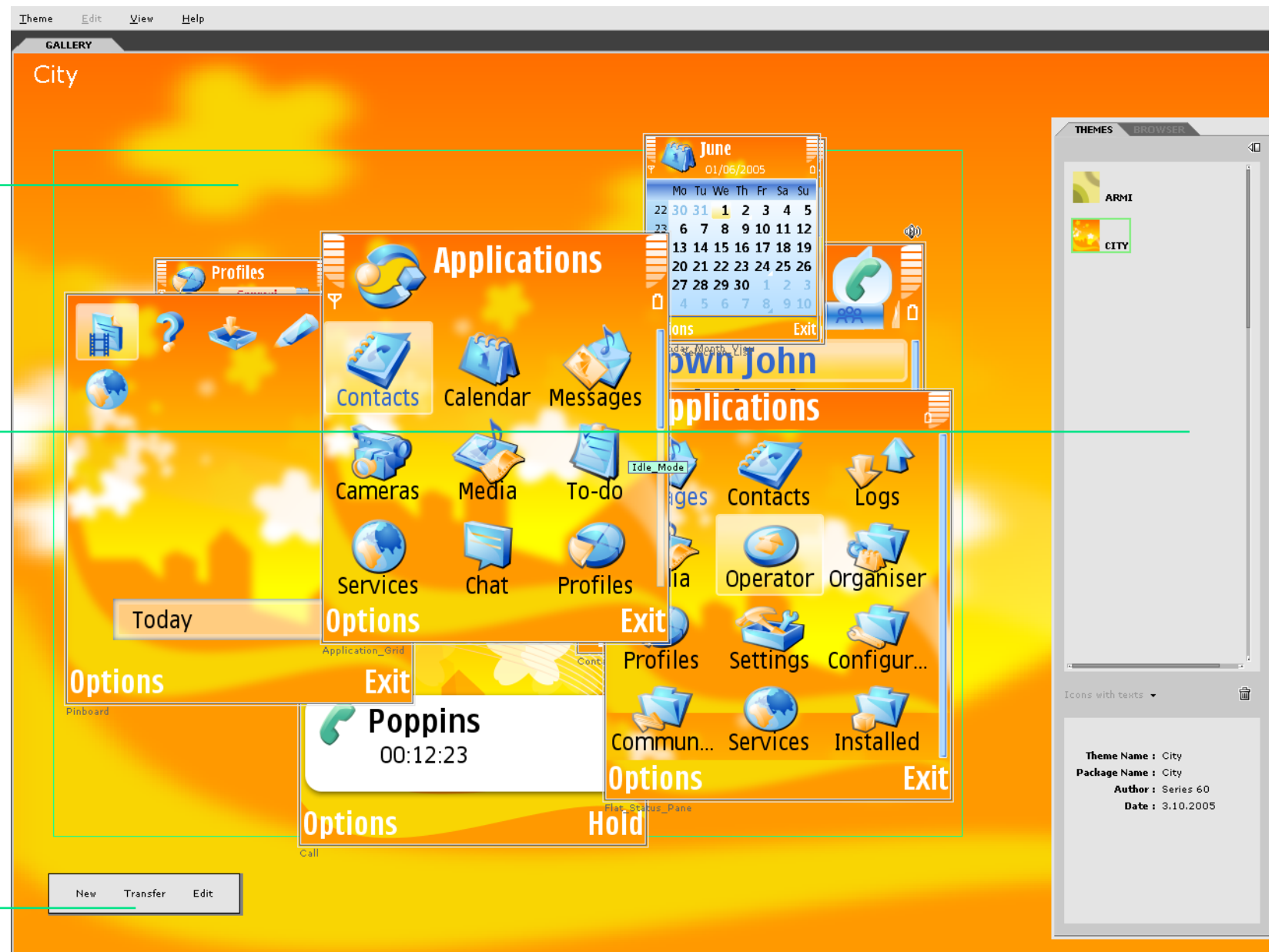
Mobile device theme (SIS)

Gallery view

- Theme preview area

- Theme browser area

- Command bar



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To preview a theme double-click on the theme in the themes-tab of browser view. Alternatively, you can drag-and-drop a theme design file from the Browser view to the Editing area.

Preview images are shown using different magnification levels. Five images are displayed at 100% magnification and the rest are shown at 50% magnification.

To bring an image to the foreground, click it with the left-mouse button.

To enlarge an image to its maximum level of 200%, double-click it.

The Preview area always contains the same number of images, which may be of different magnification levels. When you enlarge an image, the remaining ones are reduced.

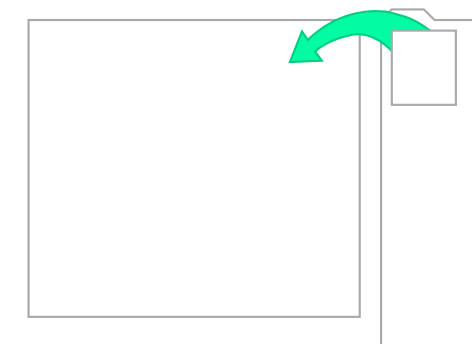
To move images within the preview area, drag-and-drop them. To drag-and-drop an image, select the image, hold down the left-mouse button, and move the pointer to a new location.

The title of each preview image is shown below its bottom-left corner. This title is either a theme's component or application screen name.

Preview images that have a sound attached are shown with a loudspeaker icon on the top-right corner. Double-click the image to play the sound.



Theme preview area



Opening a theme



Preview image with a sound

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Browser area

The browser area is used to select themes for viewing. The area contains three tabbed views to select theme design files.

The common items for the browser tab views are:

- Rubbish bin icon
- Information area

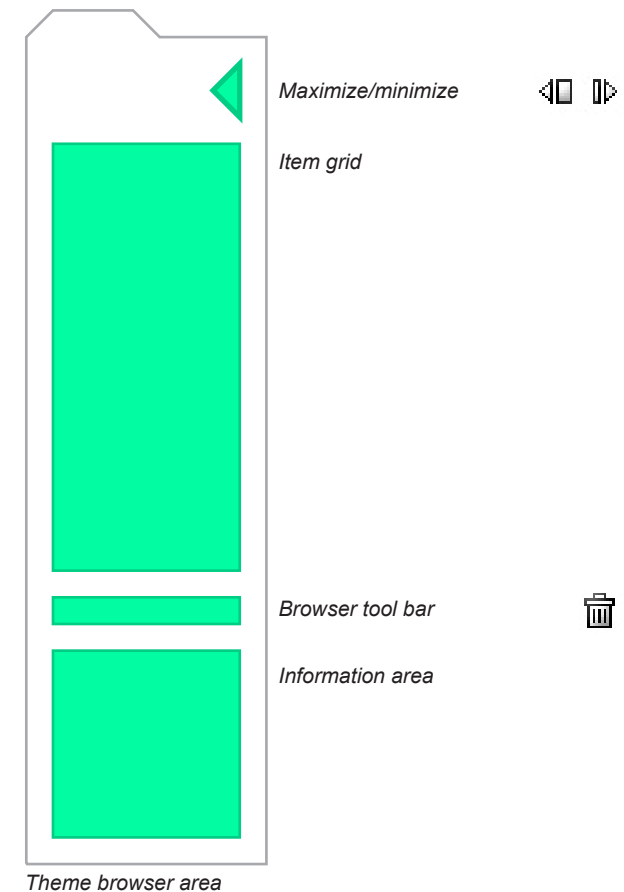
To delete an item, either select the item and click the rubbish bin icon, or drag-and-drop the item from the grid to the rubbish bin icon.

To open a pop-up window that contains deleted items, click the rubbish bin icon. You can restore the deleted items or empty the bin contents.

The details of a highlighted item are shown in the information area.

This area contains the following information:

- Theme name
- File name
- Theme author
- Date
- Other data depending on the item (for example, graphic format)



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Theme design files

Theme design files are shown in the first tab view.

The files can be opened either by double-clicking or by drag-and-dropping the files to the Editing area.

Directory browser

Use the browser tab view to search for theme SIS files or design files from your computer or a network directory.

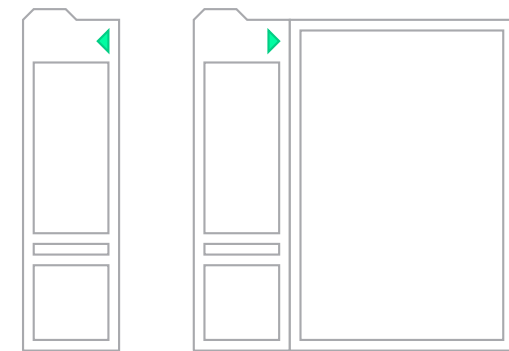
You can expand this view by clicking the Maximize/Minimize button at the top right corner of the tab view.

The left side of the directory browser contains the directory structure. The file grid is shown on the right. You can select the view type from the browser tool bar to view icons as small, large or with name.

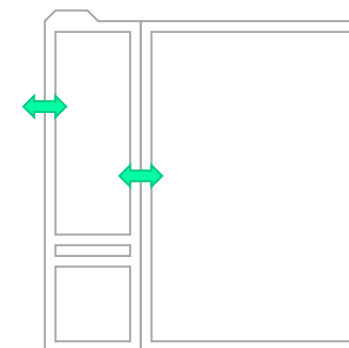
Command bar

The command bar contains commands to:

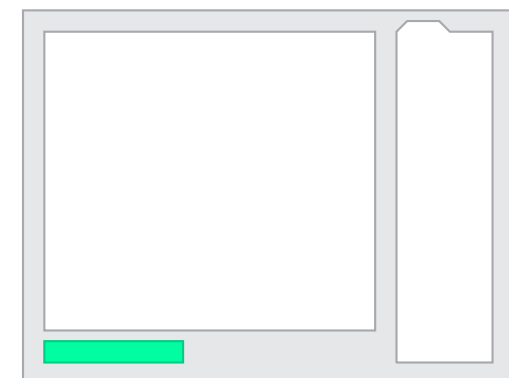
- Create a new theme
- Transfer a theme to a mobile device or storage disk
- Edit a theme



Maximize/minimize



Resizing browser view



Command bar



Note:
To adjust browser views, drag the window borders and division bar.

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Creating a new theme

To create a new theme, select the Create New Theme command or the New command from the Theme pull down menu. You are prompted to enter the theme name and author information, and to select the initial set of components to be created.

Sending a theme to a mobile device

To send a theme to a mobile device or directory location, select the Transfer Theme command.

The SIS file can be saved to the computer file directory and can be transferred to the mobile device by other means. This can be done, for example, via a Bluetooth connection or USB connection. If the Nokia PC Suite is installed, the theme can be installed by opening the SIS file while the phone is connected.

If you choose to send a theme design file, a SIS file is created first, and then the sending action is started.

Editing a theme

To edit the displayed theme, select the Edit command from the command bar or from the Theme pull down menu. The theme editor view appears. You may edit the theme components and save or discard the results.



Shortcuts:

Ctrl+n

Ctrl+s

Ctrl+Shift+s

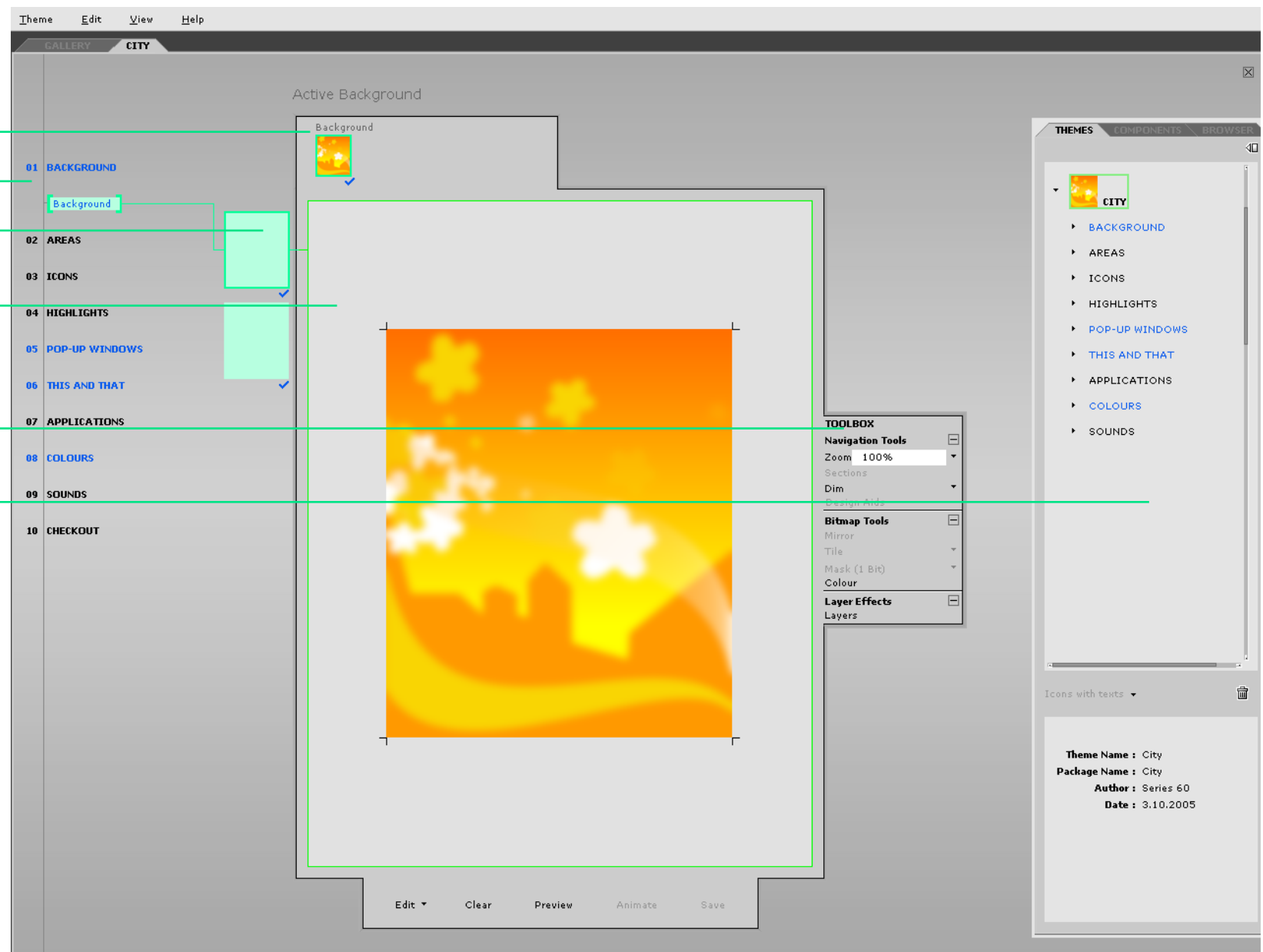
create a new theme

save a component and theme

copy and save a theme with a new name

Theme Editor

- Items display bar
- Theme creation task list
- Components display bar
- Editing area
- Editing toolbox
- Image/component browser



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Task list

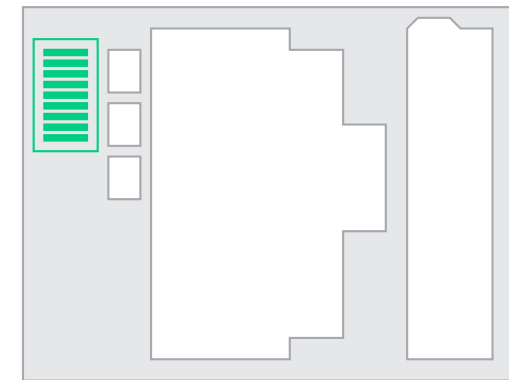
When a theme is created a list of available components is shown on the left side of the screen. This list acts as a task list indicating items that are:

- Done
- To be done
- Not to be done

You can define the initial selection of items to be included in the theme package in the theme creation dialog. The selected items are shown in black, and the items that are not selected are shown in gray.

Components that have been created and saved are shown in blue. The section title is also shown in blue when all the selected items have been updated and saved.

You can create components regardless of the initial selection – the list is used to guide the creation only. You can create items in any order, remove items, and define the final selection of theme components when the SIS file is created. When you define the SIS file output, you can include all, or a subset of, the components of the theme design file.



Theme creation task list

01	BACKGROUND	Done
02	AREAS	To be done
03	ICONS	Not to be done



Note:

Component group
Component
Item

theme components of the same nature
single theme component
single item within a theme component

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Theme creation in a nutshell

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Create basic theme background graphics and general full screen background images

Add images that change the outlook of specific areas

Create application menu and submenu icons

Adjust list, grid, and input highlights

Define graphics for pop-up windows

Adjust miscellaneous items

Add application-specific theme items

Modify icon, text and line colours

Add sounds

Verify output and create a SIS file

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Components display bar

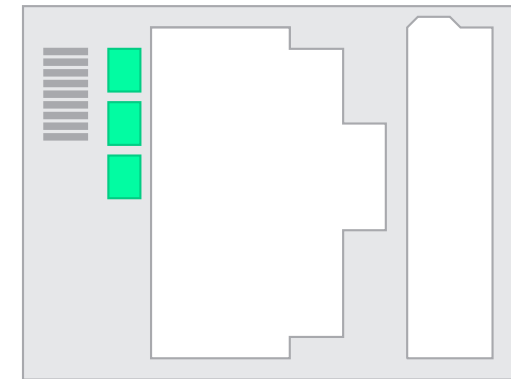
A component group may contain one or several theme components. Components are listed on the left side of the Editing area.

Each image shows a component that has been placed on a mobile device screen. A component may be used in several layouts and the images shown are only one possible layout.

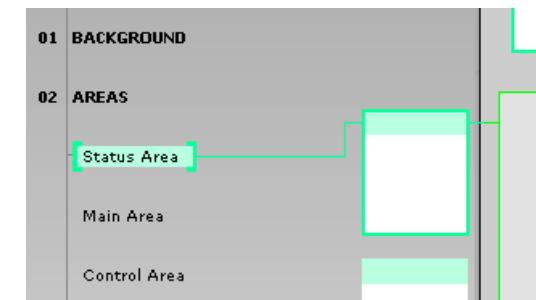
The component is shown surrounded by a green rectangle.

When an item is selected, a green line connects the component title in the task list to the component and the Editing area.

A tick mark is shown in the lower right corner of the component image when an item has been saved.



Components display bar



Selected component



Saved component

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Editing section

The component editing section consists of four areas:

- Items display bar
- Editing area
- Editing toolbox
- Command bar

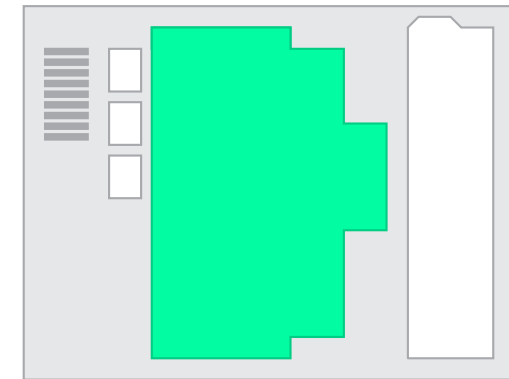
Items display bar

A component may be made up of several items. These items are usually different versions of the same graphic used to indicate a component's state.

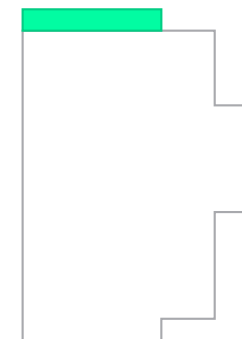
If a theme component contains items, they are shown at the top of the Editing area in a scrollable list.

Items can be selected and created in any order. A tick mark is shown on the bottom-left corner of the item when an item has been saved.

In some cases (for example, Navipane background graphics, application icons), multiple items can be viewed in the Editing area at the same time. Use the Ctrl and Shift keys to select more than one item at a time and drag-and-drop the items to the Editing area.



Editing section



Items display bar



Saved item



Note:

Shift+LeftMouseButton

Ctrl+LeftMouseButton

select all items between the first and last selection

select/deselect single items

All Toolbars are movable, you can reposition them while the cursor changes to move/scroll.



Move/scroll

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Editing area

Theme component contents are created in the Editing area. This area is surrounded by a green line with the edited items shown inside.

Theme components are shown using a sample layout. The area outside the actual theme item is dimmed. To adjust the dimness select the Dim command from the toolbox. The edited item is indicated with crop marks.

Editing toolbox

The Editing toolbox is divided into three parts according to the tool type: navigation tools, bitmap tools, and layer effects. The tools available depend on the component and its editing state. Selectable items are shown in black, items that cannot be selected are shown in gray.

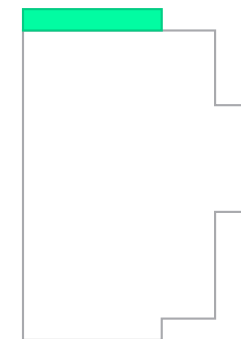
The component information section is shown only with relevant items.

The Navigation Tools are:

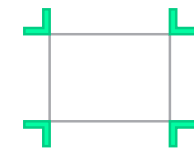
- Zoom
- Sections
- Dim
- Design aids
- Pan

The Bitmap Tools are:

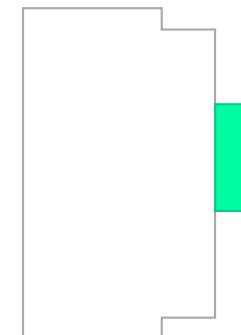
- Place
- Copy and Paste
- Move
- Scale
- Rotate
- Mirror
- Tile
- Mask
- Colour



Component editing area



Crop marks



Editing toolbox

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The Layer Effects tool is:

- Layers
- Effects

The pan, place, move, scale and rotate tools are not shown in the tool list but can be activated using keyboard shortcuts and mouse actions in the Editing area. The tools are described in the following sections.

Zoom


The zoom can be adjusted in two ways.

Click the Zoom tool button and select a new value from the pop-up list. The currently active value is shown next to the tool button. You can also modify the zoom using keyboard shortcuts.

When zooming is activated, the mouse pointer indicator changes to a magnifying glass cursor. The magnifying glass contains a '+' sign when the zoom in function is active, and a '-' sign when the zoom out function is active. At maximum or minimum magnification levels the mouse pointer indicator is empty.

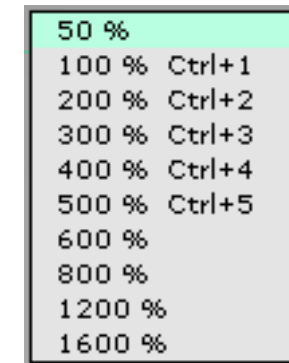
Pan

When items are zoomed so that the editable component or items do not fit the view, you can scroll the view by using the scrollbars or a keyboard shortcut.

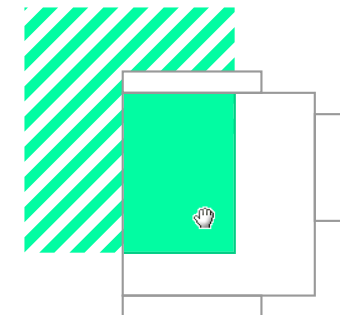
	Shortcuts:	
	Ctrl+Spacebar+LeftMouseKey	zoom in
	Ctrl+Alt+Spacebar+LeftMouseKey	zoom out
	Ctrl+ '+' (plus)	zoom in
	Ctrl+ '-' (minus)	zoom out
	Ctrl+0	fit the view
	Ctrl+1	100% magnification
	Ctrl+2	200% magnification
	Ctrl+3	300% magnification
	Ctrl+4	400% magnification
	Ctrl+5	500% magnification
	Ctrl+6	600% magnification
	Spacebar+LeftMouseKey	pan (move to the pointer direction)



Zooming cursors



Zooming level selection list



Panning an image

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Sections

Some components can be divided into smaller sections, for example, highlights.

You can view these sections by toggling them on and off with the Sections tool. You can then edit section contents separately. The currently active section is indicated by crop marks. You can activate a different section by selecting it with the pointer or by using the keyboard shortcuts.

Dim

You can adjust the dim value of the bitmap image outside of the component square.

The sample image is shown dimmed behind the editable component. The dimming scale is 0-100%, from a fully visible sample image to an opaque background.

Design aids

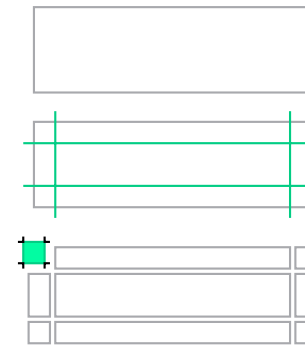
With some components, design aids can be displayed to guide in creating components. These semi-transparent placeholders indicate a placement of another layout item or component area division.

Icon and text placeholders are shown on the components where the component contains these items on top, for example, tabs.

Level areas are shown with items where the component functionality is achieved by revealing parts of the component graphics (for example, volume graphics).

Section areas are shown with components that consist of sections. Note that the section aids are shown only when the Sections tool is active.

Design aids do not affect the use of any other tool.



Component sections



Icon/text design aids



Section design aids



Shortcuts:

Ctrl+ArrowLeft

Ctrl+ArrowRight

Ctrl+ArrowDown

Ctrl+ArrowUp

activate the section to the left (of the active section)

activate the section to the right

activate the section below the active section

activate the section above the active section

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Place

You can drag-and-drop an image into the Editing area from the Browser tab view. (Alternatively, you can bring an image into the Editing area by double-clicking the selected image in the Browser tab view.) The image is placed on the top left corner of the highlighted area or section.

Images are shown using one image pixel per mobile device display pixel. The image or PC screen PPI values are not used.

You can also drag-and-drop a component for editing from the Themes tab.

Copy and Paste

You can also copy and place the bitmap with the clipboard by using a keyboard shortcut or select Copy and Paste from edit menu. Vector graphics will be pasted as bitmaps.

Move

You can drag-and-drop a bitmap and an SVG image into the Editing area. Select the bitmap image, hold the mouse button down, and move the pointer to a new location. Bitmap images may also be moved using keyboard shortcuts.



Shortcuts:

Ctrl+v

Ctrl+c

ArrowLeft

ArrowRight

ArrowUp

ArrowDown

place the image from the clipboard to the Editing area

copy the image to the clipboard

move the image one pixel to the left

move the image one pixel to the right

move the image one pixel up

move the image one pixel down



See also:

Double-clicking on the image opens the component in the preferred editing application (page 40)

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Scale

You can scale an image by dragging the image borders or corners. When scaling is possible the cursor changes into scaling arrows.

Moving the top left corner adjusts the top and left sides and leaves the bottom and right side of the image static. The other corners are affected in a similar manner.

Dragging a border affects the height or width of the image to be scaled.

Scaling is arbitrary. You can use keyboard shortcuts during scaling in order to keep the image aspect ratio fixed.



Scaling

Rotate

You can rotate an image by turning the image from the corners. When you place the pointer near the outside edge of an image corner, the pointer changes into a rotate cursor.

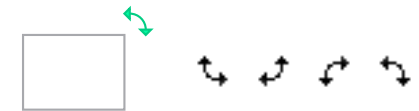


Image rotating

Mirror

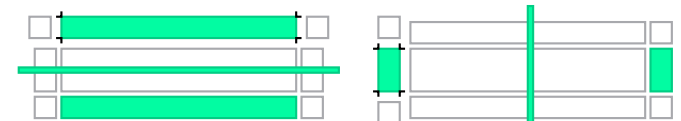
This tool can be used together with the Sections tool to copy and mirror graphics from one section to another.

You can mirror a corner section to all other corners. You can mirror a side section horizontally or vertically.

An axis is shown when the tool is active. Select the axis with the left mouse key to carry out the action.



Mirroring corners



Mirroring sides



Shortcuts:

Shift+scaling

Alt+scaling

Shift+Alt+scaling

scale the image with fixed aspect ratio

scale the image according to the image center

scale the image according to the image center and with fixed aspect ratio

You can scale/rotate/mirror only bitmap graphics, not SVG.

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Tile

When an image is smaller than the component area, use the Tile tool to fill the rest of the area.

Mask

A mask is used in some images to remove the unwanted pixels to be shown in the UI.

Masks are created with:

- The masking wand
- The masking pen

Areas made up of a single colour can be masked with the masking wand. Select one pixel to affect all the connected pixels of the same colour to be included in the mask.

You can mask and unmask single pixels with the masking pen.

To paint a mask on the selection, select unmasked pixels with the tool. When the pen tool is applied to the masked area, the edited pixels become unmasked.

Masking is shown with a 30% red overlay on top of the image.

To open the mask bitmap in the pixel paint application, double-click on the mask. White colour is used where the mask is not applied; black colour is shown where the mask is effective.

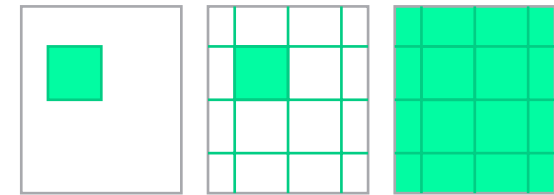
Items can have two different types of masks: a 1-bit masks (hard masks) and an 8-bit masks (soft masks). An 8-bit mask is a grayscale image and allows creation of soft edges (anti-aliasing), and semi-transparency.

The mask type is a component specific. Generally 8-bit masks are applicable unless otherwise indicated.

Note:

- If a component supports an 8-bit mask, the Mask tool is shown in black.
- If a component supports only a 1-bit mask, the Mask tool is followed by '(1-bit)'.
- If a component does not support the use of a mask, the Mask tool is shown in gray.

SVG graphics do not have masks.



Tiling



Image1

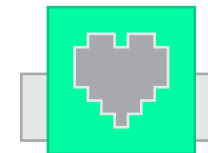
Image2



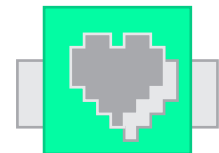
Hard mask



Soft mask



Hard mask placed on image



Soft mask placed on image



Hard mask applied



Soft mask applied

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Colour

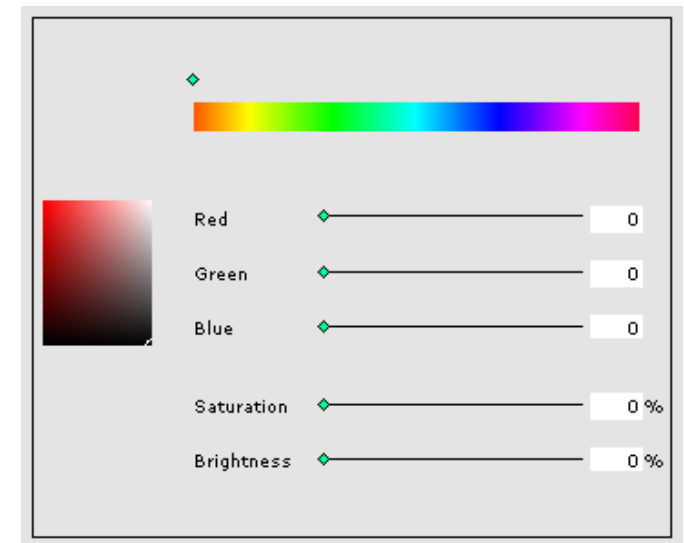
You can use the Colour tool to adjust the colour in different ways. When selecting the tool, a pop-up window appears.

To adjust the colour, select one from the palette, enter the RGB values, or adjust the Saturation or Brightness sliders.

If you set the value 255 to all colour channels the colour is white, with 0 the colour is black.

In saturation slider the values range from 0 to 100 percent. The higher the number is more saturated the colours are.

In lightness slider the values range from 0 to 100 percent. By moving the slider you add or remove lightness from the pixels.



Colour pop-up window



Note:

The colour seen on the mobile device display may not correspond fully with the colours seen in the application. Device displays vary according to the technology and colour depths used. You can check the colours on a real mobile device display by sending sample images to the device .

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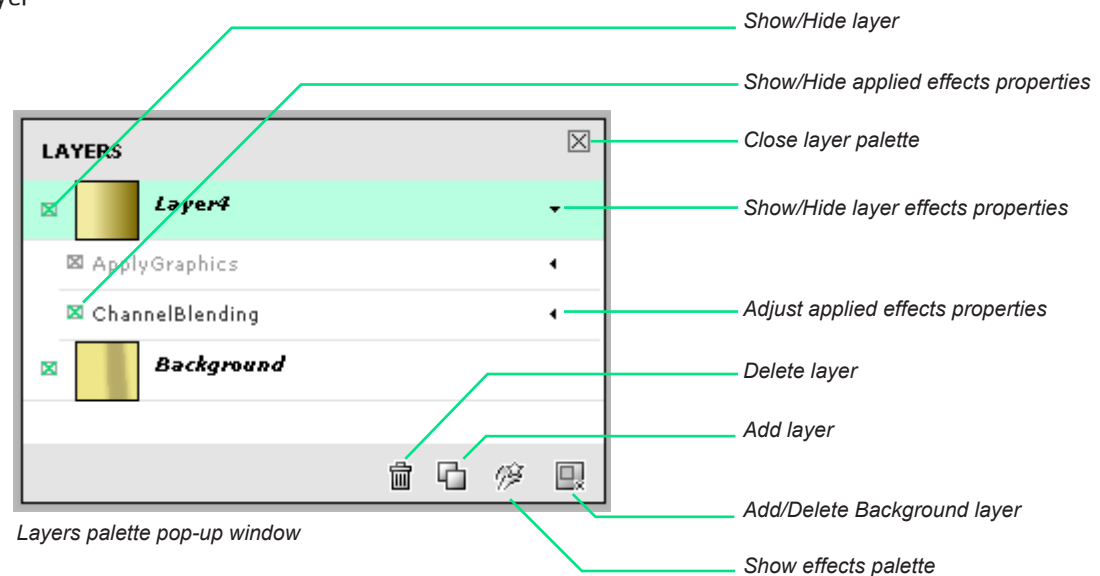
Other dialogs

Layers and Effects

You can compose a component with graphics on different layers. When a layering component is allowed, clicking Layers command on the last row of the Editing Toolbox will open the Layers palette. With Layers palette, controlling image layers and their effects properties are possible.

You can:

- Add layers
- Delete layers
- Add/Delete background layer
- Open effects palette



Note:

You can activate a layer by clicking it. Only one layer can be opened for editing. The maximum number of layers allowed is two. The order of the layers can be rearranged by drag-and-drop. Theme Studio will read them one by one including the properties and calculate the final composited result from top to bottom.

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Add layers

You can add a new layer by selecting the Add New Layer icon. You can add an SVG or a bitmap to a layer (refer to command bar/Edit). You can have a maximum of two layers for the backgrounds.

Delete layers

You can delete a highlighted layer by using the Delete Layer icon.

Add/Delete Background layer

A background layer can be added by clicking the Add Background Layer icon. When a background layer is added, it will automatically capture the background image drawn underneath the component.

You can create a semi-transparent effect on top of the background. A background layer can be deleted by clicking on the Delete Background Layer icon.



All components that support layers, except backgrounds, can make use of the background layer.



See also:
Effects (page 30)
Alpha blend (page 32)
Channel blend (page 33)

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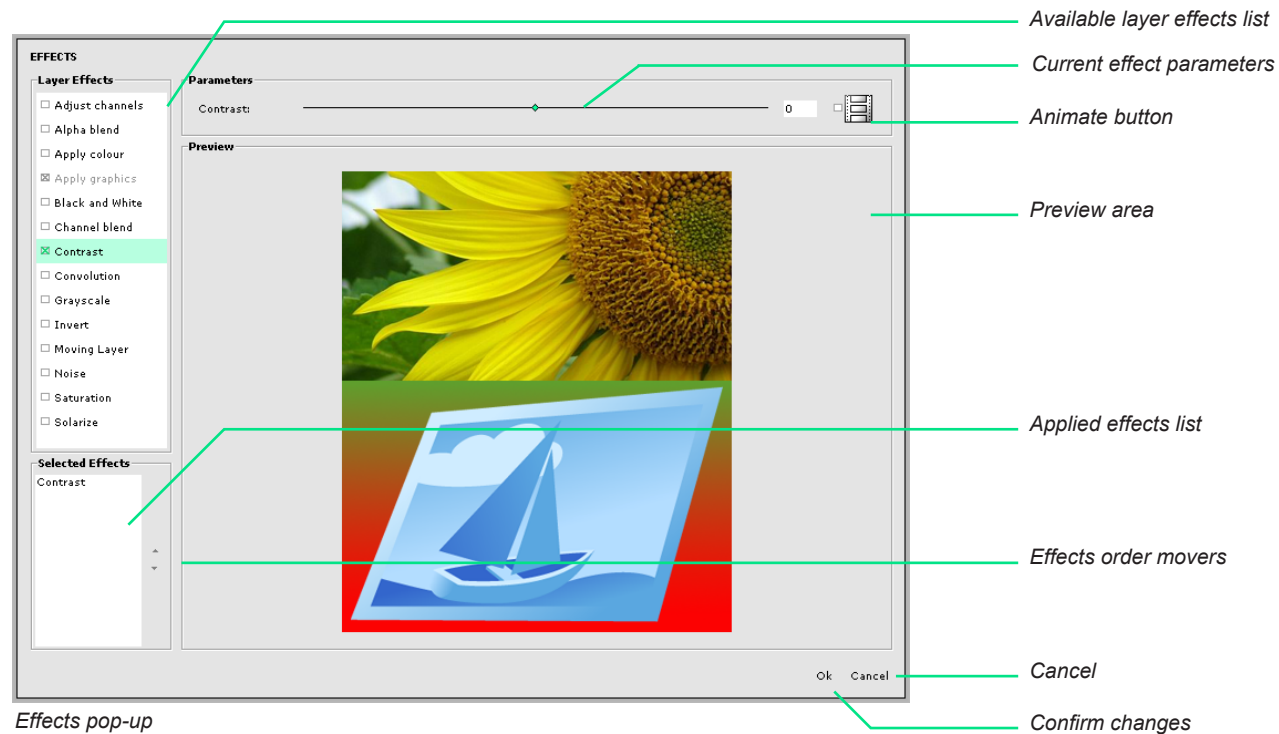
10 Checkout

Other dialogs

Effects

Each layer may contain its own effects. You can open the effects palette pop-up window by clicking the 'Show effects' button in the layers dialog. The window is divided into four areas:

- Layer effects
- Selected effects
- Parameters
- Preview



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Layer Effects

Layer Effects lists all the available effects.
The available layer effects are:

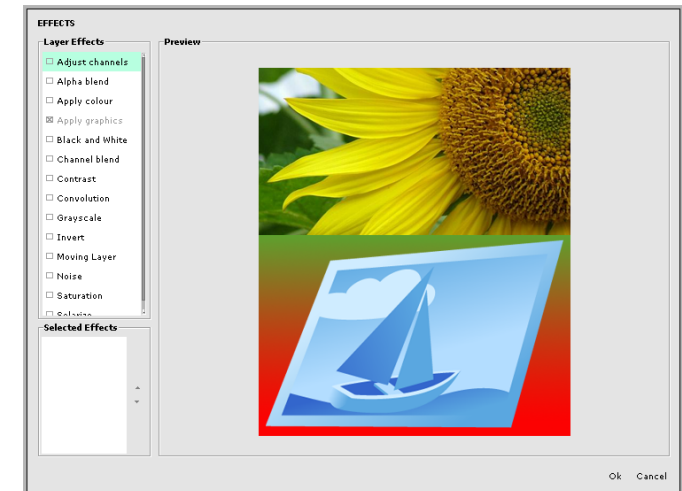
- Adjusting channels
- Alpha blend
- Apply colour
- Apply graphics
- Black and white
- Channel blend
- Contrast
- Convolution
- Grayscale
- Invert
- Moving layer
- Noise
- Saturation
- Solarize

Adjust channels

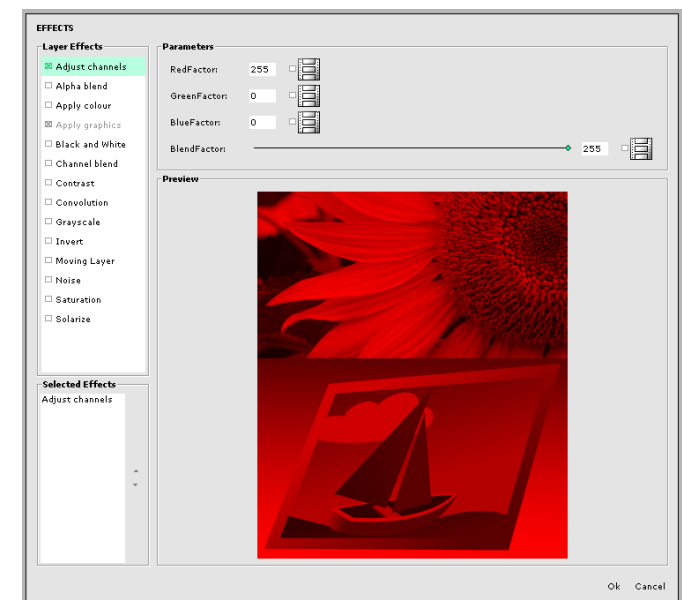
Adjust channels alters the colour of an image layer with RGB (Red, Green, Blue) values.
The adjusting range for each colour is 0-255.



Note:
Some effects are disabled in the background layer.



Apply graphics as default



Adjust channels

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Alpha blend

Alpha blend defines the nature in which the current layer is merged with the bottom layer. It is set by default when the current layer has another layer below it. You can choose a blend mode:

- A over B
- B over A
- A in B
- B in A
- A out B
- B out A
- A top B
- B top A
- AX or B

Apply colour

Apply colour defines the image with a desired colour as set by adjusting the RGB and alpha sliders.

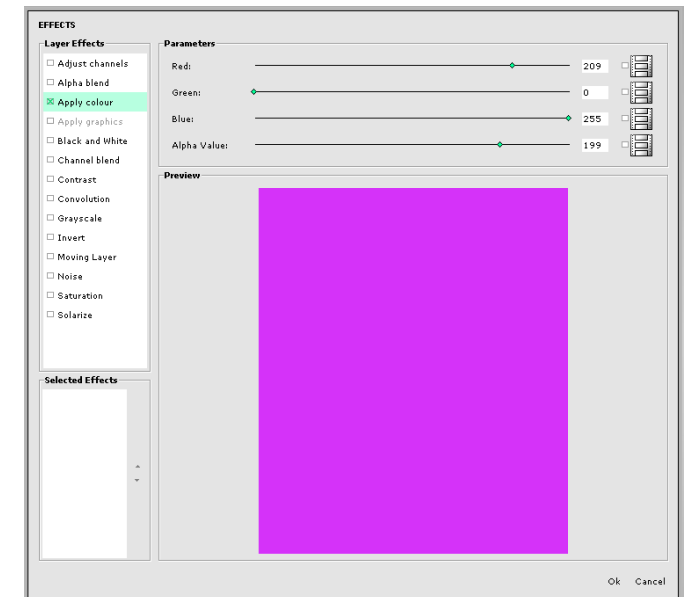
Apply graphics

Apply graphics is set by default when a layer contains an image. You can choose a scaling model for the graphic.

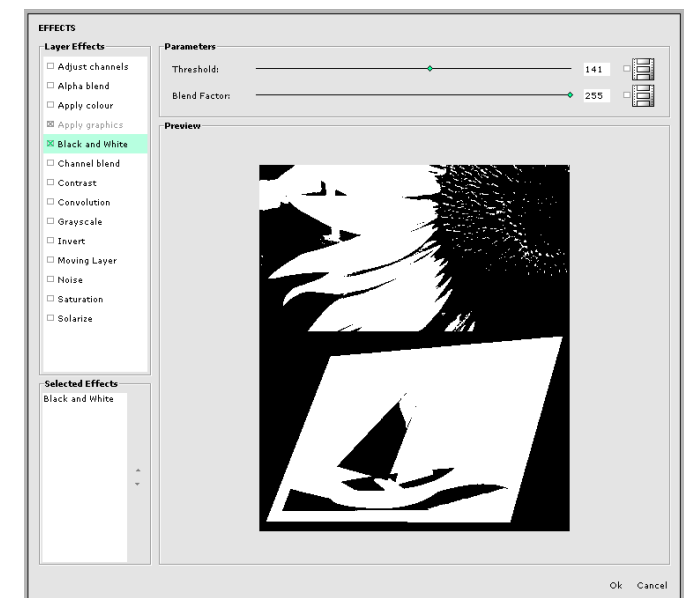
- Normal (shows the image as it is)
- With Aspect Ratio (scales the image to fill the whole area maintaining the aspect ratio)
- Stretch (scales the image to fill the whole area without maintaining the aspect ratio)

Black and white

Black and white effect will change the image to 1-bit colour mode. Threshold slider is used to control the sample range of the image. Blend factor slider can set the blending of the filtered image with the original image.



Apply colour



Black and white

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Channel blend

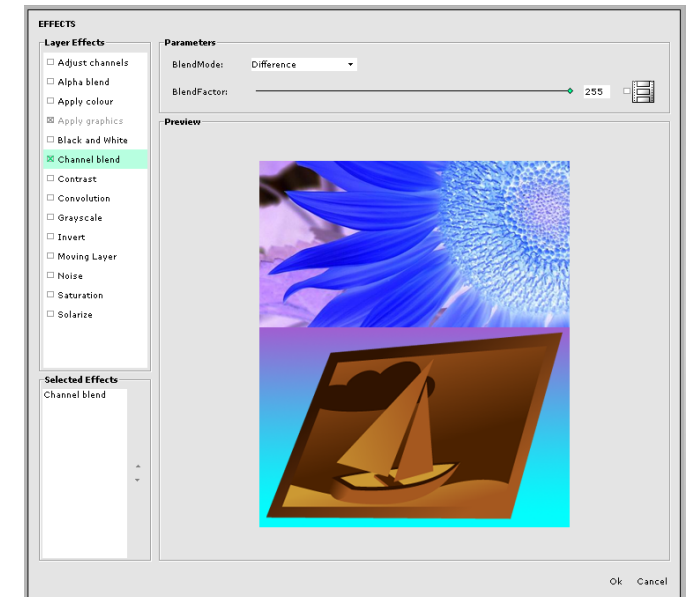
With Channel blend, you can set how the current layer is blended into the layer beneath. Different blending method can be set from the Blend Mode dropdown list. Blend Factor sets the opacity of the current layer.

These are:

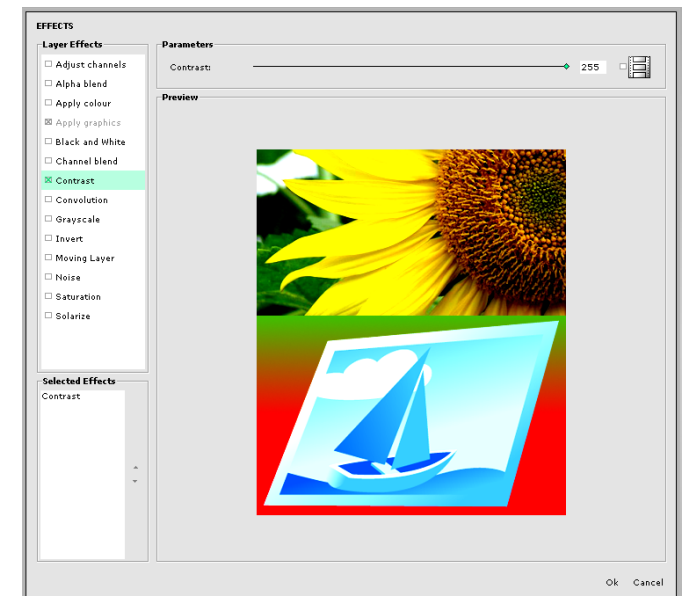
- Normal
- Darken (To make dark or darker)
- Lighten (To make light or lighter; illuminate or brighten)
- Multiply (Looks at the color information in each channel and multiplies the base color by the blend color. The result color is always a darker color. Multiplying any color with black produces black. Multiplying any color with white leaves the color unchanged.)
- Screen (Screen brightens by lightening the lower layer based on the lightness of the upper layer.)
- Overlay (Multiplies or screens the colors, depending on the base color. Patterns or colors overlay the existing pixels while preserving the highlights and shadows of the base color. The base color is not replaced but is mixed with the blend color to reflect the lightness or darkness of the original color.)
- HardLight (Hard light throws distinct shadows. It comes from a point light source such as the sun or an electronic flash.)
- SoftLight
- Difference (If you place an all white layer below a layer using difference mode, you will get a negative image.)
- Dodge (Can simulate the effects of underexposure by lightening the base color)
- Burn (The look of a high intensity light. It increases exposure in certain areas to darken the print.)

Contrast

Contrast is used to scale the brightness of the image.



Channel blend



Contrast

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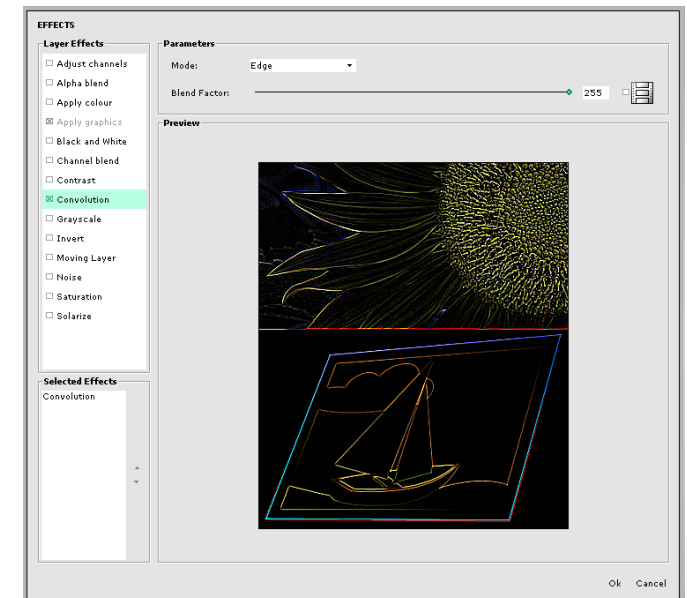
Other dialogs

Convolution

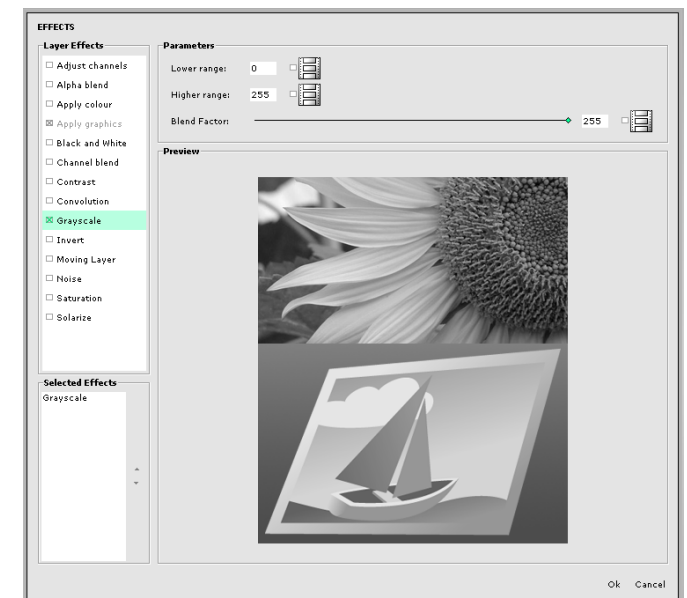
Convolution is a set of filters that affects the edges of the graphics, such as Blur, Sharpen, Emboss, and Edge.

Grayscale

Grayscale is similar to Black and white effect. It changes the image into grayscale and you can set the blending parameter to its original.



Convolution



Grayscale

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Invert

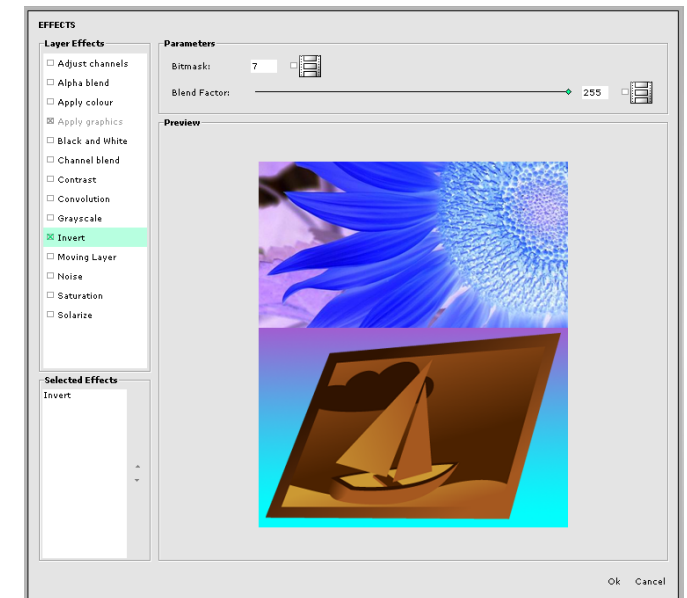
You can change all of the colours into the complementary colours of the image.

Moving layer

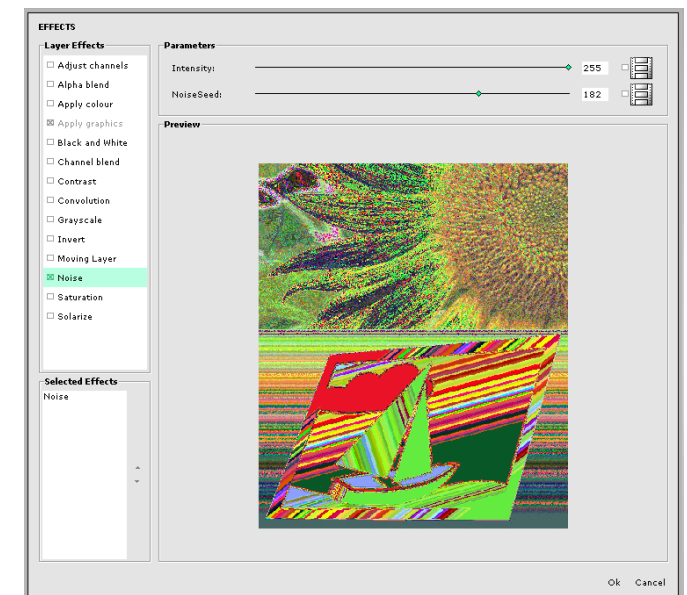
You can create a moving layer with this effect. Moving layer can be used only in highlights.

Noise

You can adjust the image's intensity and noise seed with this effect.



Invert



Noise

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Saturation

You can adjust the image's saturation with this effect.

Solarize

You can invert the colours of the graphic while keeping the original luminosity values.

Selected Effects

Selected Effects area lists all the applied effects in the order of the actions. The order can be changed by clicking on the two arrows on the right side of the area.

Parameter

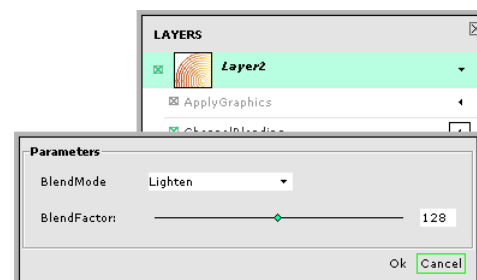
When an effect is highlighted, its parameter can be changed in the Parameter area. Available parameters vary depending on the selected effect.

Preview

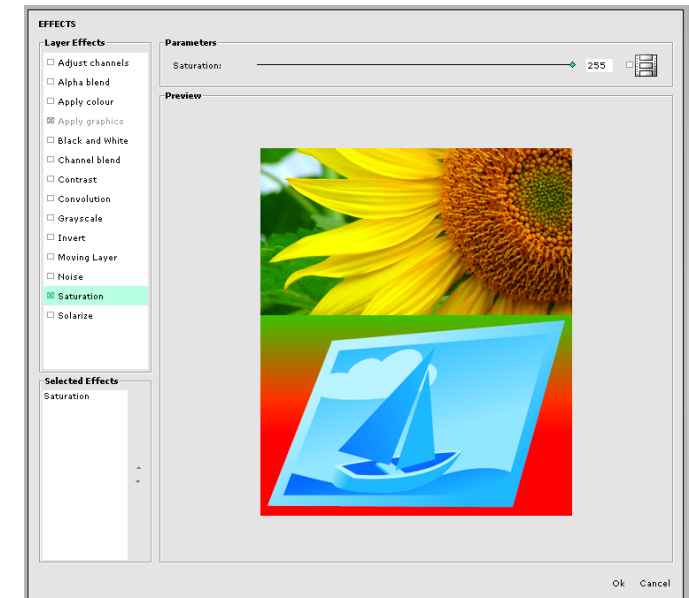
Preview area shows the result of the applied effects.

Parameter pop-up dialog

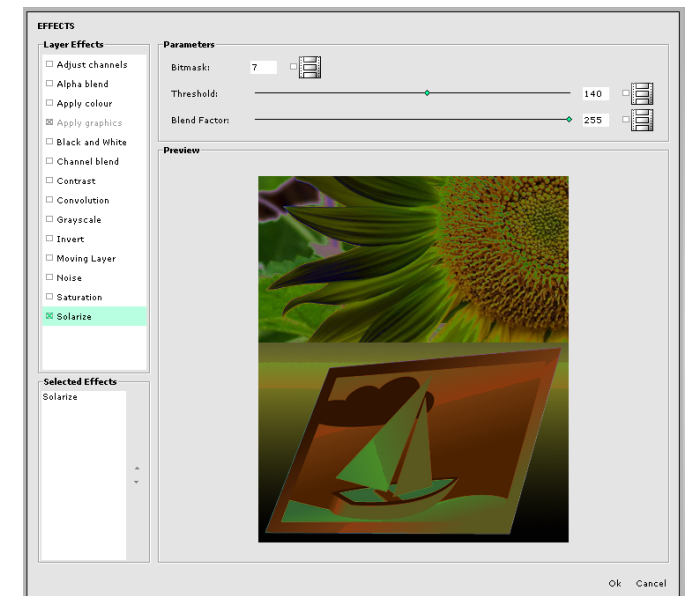
Applied effects can also be viewed in its own layer in the Layer palette by clicking on the arrow on the right side.



Effects Parameters pop-up window



Saturation



Solarize

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Animated Effects

Animated effects can be applied to the following components:

- Highlights (list and grid)
- General and idle background
 - General status area, control area, main pane area
 - Idle status area, control area, main pane area
- Settings item list
- Navi bar
 - Wipe bar
 - Solid bar

With effects you can create parameter-based animations to these components. With animation you can change the effect parameters at predefined intervals of time, for example, two times a week.

From the 'show effects' button you can open the effects-pop-up window.

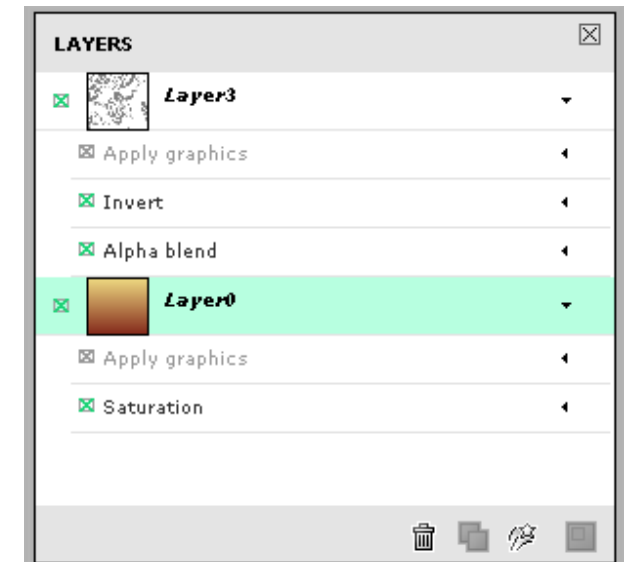
By selecting the effect you can define a desired still value for the effects from the slider. Clicking the 'Animate on' button opens a dialog where you can set the animation parameters to the selected component.

The flavour of the animation depends on blend mode parameters. You can choose the flavour to be:

- Polyline 1D (you can create a pattern how the animation is played by defining the values)
- Linear (from A to B)
- Random (randomly from A to B)
- Rapid rise (the animation starts with normal speed but gets faster in the end)
- Rapid fall (the animation starts with fast speed but changes to normal in the end)



See also:
Background (page 47)
Navipane items (page 51)
Highlights (page 55)
Settings (page 76)



Layers pop-up window

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Start value and end value define the area where the animation is played. Start value has to be smaller than the end value.

There are two different time models that you can use:

- Relative
- Real time

Relative time changes are slow changes and it is recommended to use those in the background-components. When the theme is activated in the phone, the animation starts.

Relative time values can be:

- Monthly
- Weekly
- Daily
- Hourly

By setting the time slice to 10 and selecting the daily time model, the whole animation is shown 10 times during one day. Depending on the update time of the device, any increments of the animation can be seen during the update.

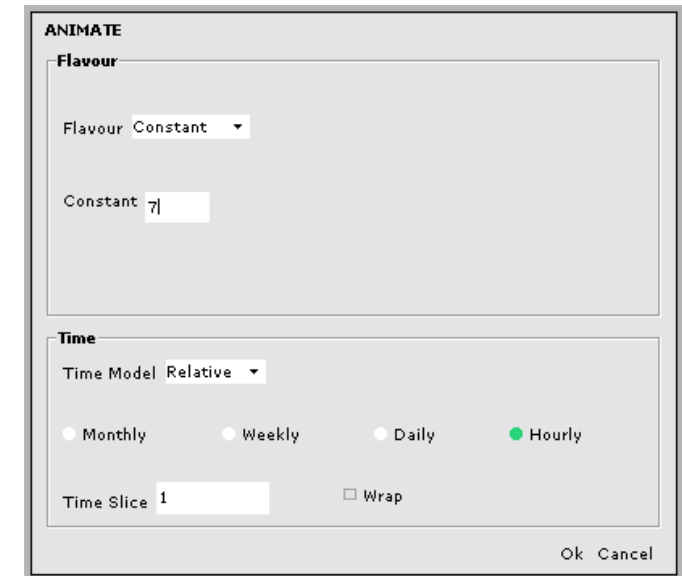
Real time model is used for fast animation and recommended for list, grid and focus highlight. Real time units are in seconds.

- Duration (duration for one cycle)
- Max duration (duration when animation is shown)
- Repeats (number of times the animation must be repeated)

By clicking the Wrap check box, you set the animation to be reversed after it has reached the final value; from A to B and then B to A. If wrap is unchecked, animation occurs from A to B and then starts from A again.



'Animate on' button



Animation settings pop-up window.



Note:

Frequent updates consume more battery.
Depending on the effect selected, the sliders and the parameter list can appear different.

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You can switch off the animation by moving the slider manually for the animated parameter.

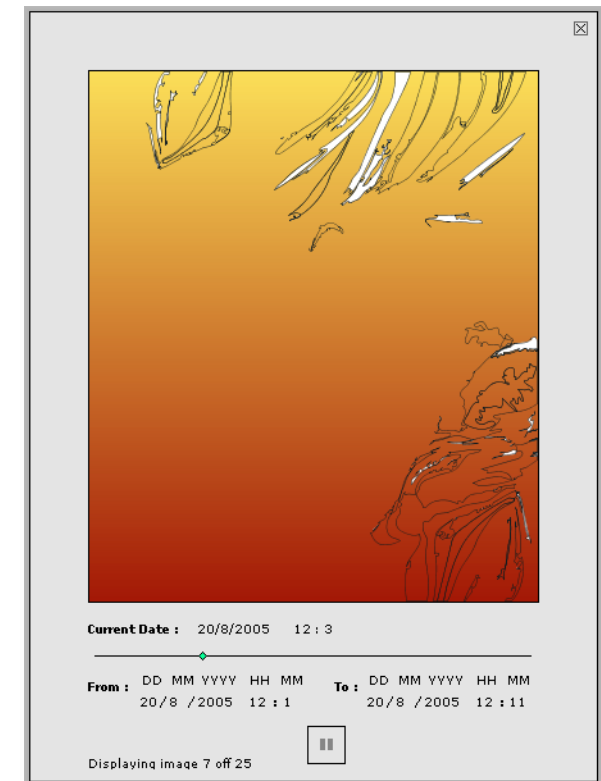
Click the Animate button on the toolbar and the preview pop-up appears. The animation starts automatically and it is shown twice.



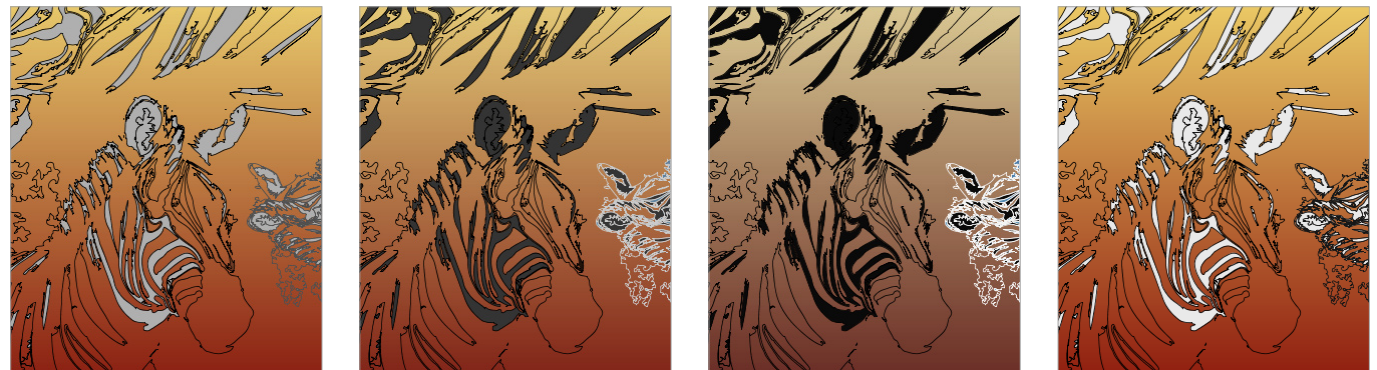
Note:
Background and navbar items can have two layers maximum with any number of effects.
Highlights can have five effects maximum. Note that 'Apply graphics' is counted as an effect.



See also:
Matrix of the real time model (page 95)



Animate pop-up window



Theme 'Zebra' idle background changes during one day.

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Command bar

The command bar is shown below the Editing area. It contains the following commands:

- Edit
- Clear
- Preview
- Animate
- Save

The available commands depend on the editing state and the component. Selectable items are shown in black. Items that cannot be selected are shown in gray.

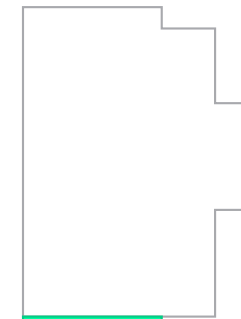
Edit

You can open a component vector/bitmap image or sound file in the preferred editing application by selecting the Edit command.

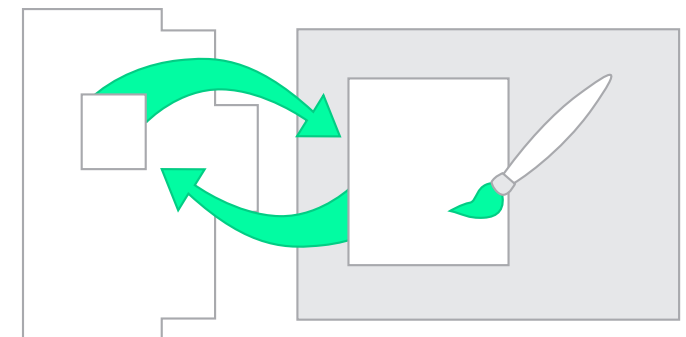
The item is shown as a new document in the editing application. You can edit the file and return to Theme Studio by saving the changes. If you close the file without saving, no changes are made.

You can only use keyboard shortcuts to transfer bitmaps between the paint application and the Editing area. Vector (SVG) will be pasted as bitmaps instead of original vector data.

When you edit a graphic for the first time, a pop-up window is displayed and provides an option to use a vector or bitmap editor as a default. Afterwards, SVG graphics will be opened to vector editor and BMP graphics to bitmap editor. You can change the default editing application from the pull-down menu.



Command bar



Editing in pixel paint application



Note:

The image file format in the editing program is either BMP or SVG. The edited file can not contain any additions that prevent saving it with its original title and format. The sound file formats WAV and MP3 are supported. Additionally there may be some device specific formats included.

Ctrl+c	copy the image to the clipboard
Ctrl+v	paste the image from the clipboard to the Editing area

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Clear

You can delete a saved component by selecting the Clear command. This removes the component from the saved items list, empties the Editing area, and updates the preview images.

Preview

You can view theme components on sample layouts by toggling the Preview command on and off.

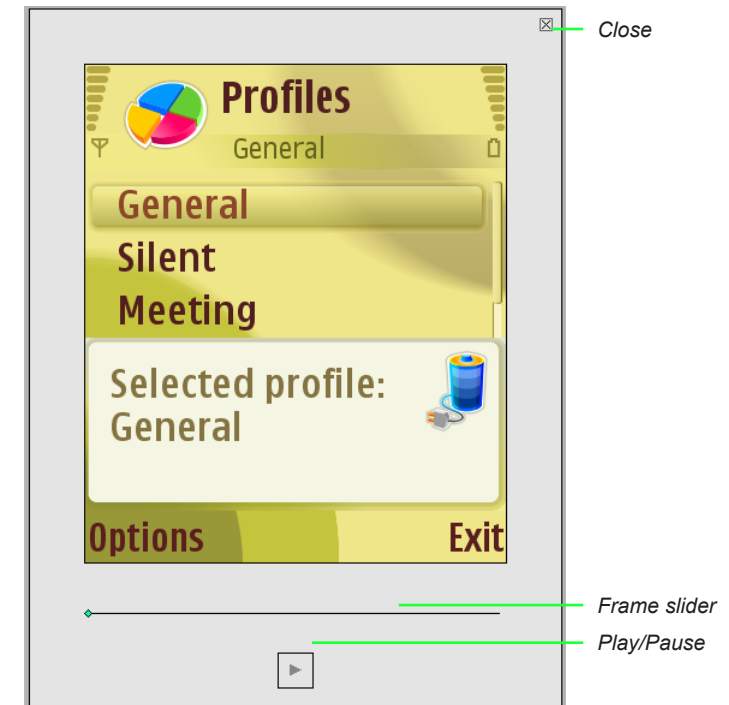
Components are not saved until you select the Save command.

Animate

You can preview some of the components as an animation. Animations are shown in a pop-up window.

You can control the animation by toggling the Play/Pause command at the bottom of the window. When the animation is paused, you can move the slider to view the details of the design more precisely.

To close the window, click the **Close** button in the top right corner.



Animate pop-up window



Animate:

Note icons (page 54)

Pop-up windows (page 59)

Tab graphics (page 63)

Signal strength and battery level components (page 64)

Volume level graphics (page 62)

Wait/Progress bars (page 68)

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Save

To save a component, select the Save command or use the keyboard shortcut.

When you select this command, the theme task, component group, component and item lists are updated. A tick mark and completed colour indicator is shown in the component, item and task lists.

The preview images are updated in the Preview section. You can continue with the theme creation while the update is in progress.

SVG-T

When you save an SVG graphic, a dialog is shown 'Converting to SVG-T'. SVG-T (SVG-tiny) removes unsupported items from the graphic and reduces the size of the SVG file. S60 platform supports gradients and opacity in addition to items specified in SVG-T specification.



Saved indicators



Note:

You may undo a save by selecting the keyboard shortcut Ctrl+z or by selecting the Clear command.

Ctrl+s

save a component and theme

Ctrl+Shift+s

copy and save a theme with a new name

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Preview area

The preview window contains a set of UI images that are updated as the Preview command is selected.

A term 'updating...' is shown after the window title when the update is in progress.

The sample images are shown using 50% magnification. When you move the pointer over an image, magnification increases to 100%. You can zoom in and out the example images with the keyboard shortcuts.

You can scroll the list using the scrolling arrows.

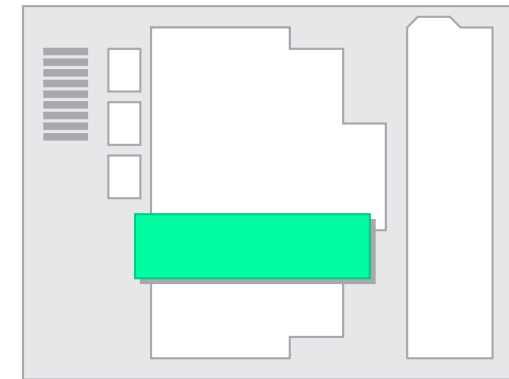
If you have added a sound it is played when the example image is zoomed.

You can send an image to a mobile device or save it to disk by clicking the image twice. This allows you to view the designs on the actual display of the target mobile device.

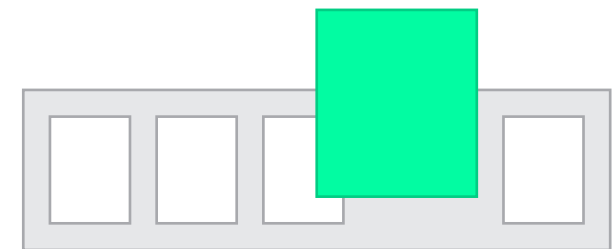
To close the window, click the Close button in the top right corner.

From the pull-down menu on the top right corner you can change the display resolution. You can preview the theme in these resolutions:

- 352x416
- 240x320
- 176x208



Preview window



Magnified preview image



Preview image with a sound



Shortcuts:

Ctrl+ '+' (plus)

Ctrl+ '-' (minus)

zoom in

zoom out

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Image/component browser

You can use the browser area to select images for component creation. The area contains three tabbed views:

- Themes
- Components
- Browser

You can drag and drop items from any of the browser views to the Editing area.

Theme design files

The theme design files are shown in the Themes tab.

You can expand a theme design file to view the components by clicking on the expand/collapse arrow. Components are shown using the same structure as is used in the task list on the left side of Theme editor view. By default, the view of the currently edited theme is expanded.

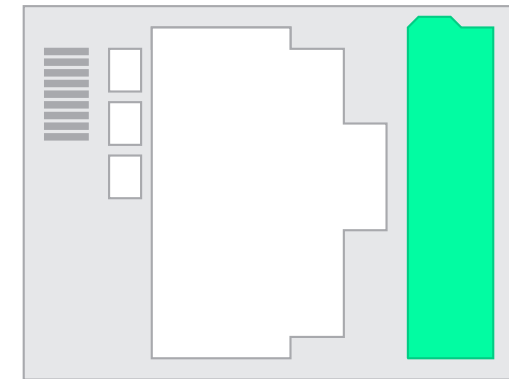
Each component contains the currently selected item (saved item) and possible alternative designs (drafts). To change the item to be used for the theme, click on the draft image.

Components

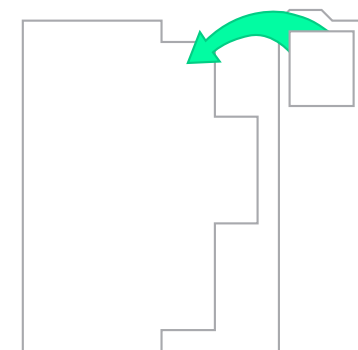
Images used for the same component in other themes are listed in the Components tab view. You can select components from several themes from the Component browser by double-clicking or dragging them to the Editing area.

Directory browser

The Browser tab can be used to search for images from the computer or network directory.



Image/component browser



Dragging an image/component



See also:

The tab view contents and commands are the same as those used with the theme browser in the Theme gallery view (page 10)

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Theme creation task list

The creation of a theme is divided into three steps:

1. Initial data entry
2. Component creation
3. Creating a SIS file

Theme creation dialog

The initial set of theme attributes are entered in the Create New Theme dialog. Select the Create New Theme command from the command bar or choose the New command from the Theme pull down menu to open the dialog.

In this dialog you can:

- Enter the name of the theme
- Enter the name of the author
- Select the device model (or base graphics)
- Adjust the initial set of components
- Select the default screen resolution

The theme name is used to save the theme design file. You can enter a different name for the SIS file.

Different device models may support different sets of theme components. You can create a theme based on a specific mobile device by selecting the model. The component list is modified to reflect the supported components.

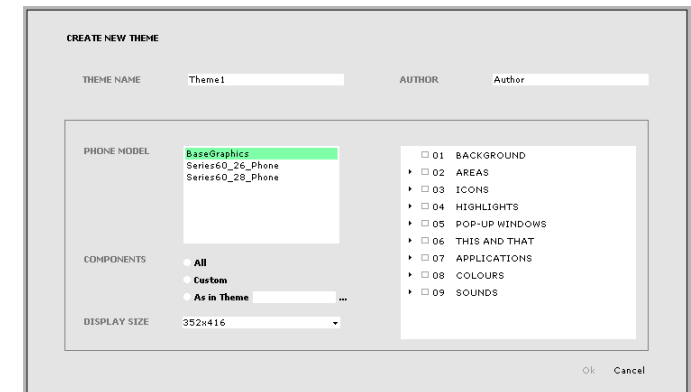
The application also contains an option to create themes based on S60 reference graphics (base graphics). These graphics are not necessarily used in any specific device.

Note:

You can import device model plug-ins to the application by selecting Updates command from the Help pull down menu.

If a theme contains items that are not supported by a specific device model, the excess items are ignored in the device.

When you are creating a theme for the first time you have to create personal and private key that are included in the SIS package.



Create New Theme dialog

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You can select all theme components available by choosing the All option.

You can select one component or a component group by marking the items in the numbered list. Component groups can be expanded/collapsed by double-clicking them or by clicking the arrow next to the component group.

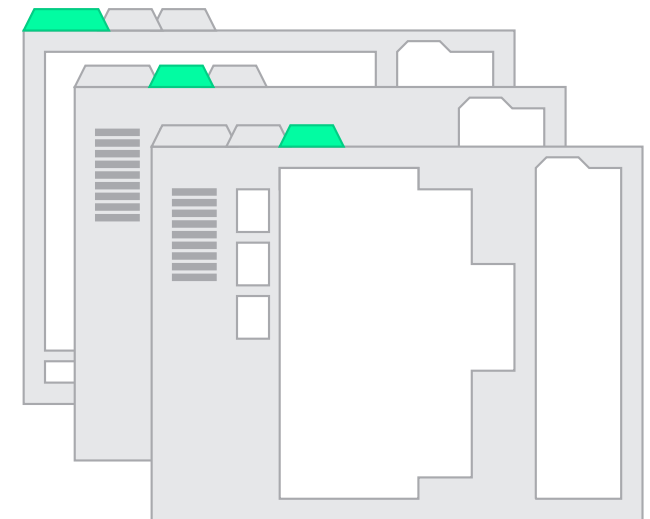
The Custom option is automatically selected when you use the numbered list to select components.

You can base your component selection list on an existing theme. You can search for the theme from the computer or network directory by selecting the As in Theme option.

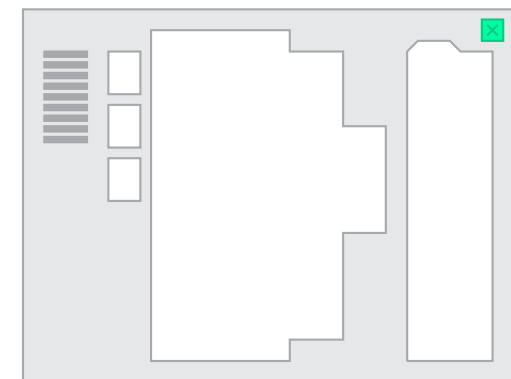
When you click the OK button, the Theme editor opens. The new theme name is shown in a tab next to the Theme gallery tab. You can switch between the views by clicking the tabs.

You can cancel theme creation by clicking Cancel.

You can save a theme by selecting Save from the Theme pull down menu or by using a keyboard shortcut. You can close a theme by selecting the Close icon in the top right corner of the theme view.



Switching between gallery view and themes



Closing a theme



Note:

You can have several themes open at the same time. To switch from one theme to another, click the tabs.

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This section in the task list is used to create the images for general background in portrait and landscape mode. The component is used as a background for the entire user interface unless backgrounds for specific areas or applications are defined (see the next sections). There are two groups of backgrounds:

- Active background
- Idle background

Active background

Active background is used as a default background in most of screens such as Application grid, list view and settings.

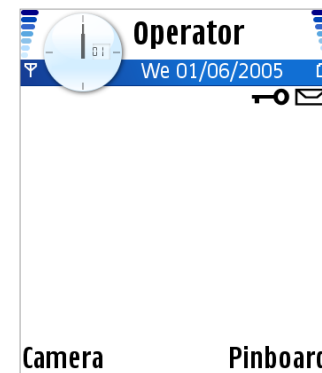
Idle background

Idle background is shown when the phone is in idle mode.

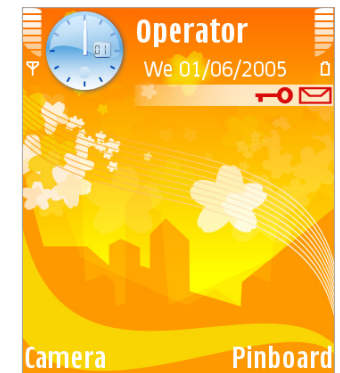


Portrait background

Theme component placing is shown as a green item on the device screen.



Default UI look



Themed background



Note:

If there is no specific theme background image defined, white colour is used by default.

The following areas may contain a specific background image:

- Status area
- Navipane
- List column
- Control area
- Main area



See also:

Layers and effects (page 28)

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To create a background:

1. Edit an item in a vector editing application or a pixel paint application:

- Click on Edit from the command bar
- Click on the arrow next to Edit and choose either vector or bitmap, or
- Double-clicking the graphic to launch the editing application

Or place an image in the Editing area:

- Paste an image from clipboard
- Drag-and-drop an image from the browser views

2. Modify item position, size orientation and colour values/dithering (applicable only for bitmaps):

- Move an item by holding down and drag with the left-mouse key
- Scale by dragging the image borders
- Rotate by dragging the image corners
- Use the Colour tool to assign colours to available options

3. Add layer effects:

- Add layers and graphics
- Select desired effect
- Set the animation parameters

4. Preview the sample images:

- Toggle Preview command on/off

5. Save results:

- Select the Save command.

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Status area

The status area contains general UI items that are explained briefly in this chapter. The background image to this specific area affects the visibility of the UI items. The items are:

- Signal strength indicator
- Active application indicator (application context pane icon)
- Application or main pane content title
- Navigation area
- Status indicators

Status area can have its own background images.

Signal strength

Signal strength indicates the level of network reception.

A complete graphic displaying a full strength signal is shown a part at a time. This creates the effect of different strength levels. Negative 'off' values may be drawn into the status area background image.

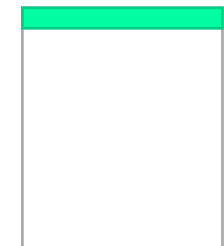
The network or packet data indicators are shown below the signal strength indicator. You can define the icon colour. When signal reception is turned off, an x-mark is shown instead of the reception levels.



Status area in portrait



Status area in landscape



Narrow status area in application shell



Status area without background



Status area with background



Signal strength



Signal indicators



See also:

Status area background image (page 49)

Application icons (page 53)

Signal strength indicator (page 64)

Layers and effects (page 28)

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Application icon

The icon of the open application is shown in the top left corner of the screen. Icons are masked to reveal the status area background.

In the Phonebook application, the icon may be replaced with a thumbnail image of the phonebook entry.

Title pane

An application title or main pane content name is shown in the title pane. You can change the colour of the text. Title text may occupy one or two rows.

Navigation area

In the navigation area, visual aids are shown to the user in order to help navigate between different UI views. These aids may be text, icons, or both. For example:

- Short information texts
- List icons and list ordering numbers
- View tabs with icons or text
- Folder tree

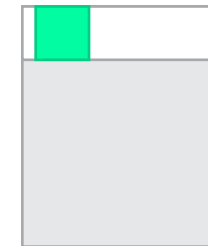
You can modify the item colours (texts, icons), indicator appearance (tab graphics), navigation arrows and the background graphics (navipane background image).

Status indicators

Some of the application or device state indicators are shown in the top right part of the status area.



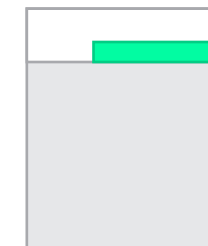
See also:
 Navipane background images (page 51)
 Tab graphics (page 63)
 Arrow graphics/navigation indicators (page 67)
 Adjusting status icon colours (page 82)
 Adjusting Idle mode icon colours (page 82)



Application icon



Title



Navigation area



Status indicator area



Thumbnail image



Short information text



List ordering numbers



Tabs with icons



Status indicators

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Status area background

The area background graphic is shown behind all status area items.

Navipane backgrounds

The navipane contains navigational aids such as text, icons or tabs. The background image must provide a clear background for the items on top.

The gradient image is used when there are no items in the navipane.

You can choose one of the following to use as the navipane background:

- No graphics
- Default UI graphics
- Theme specific graphics

To change the setting, drag-and-drop an item from the component tab area to the editing window, or supply a graphic to the theme.

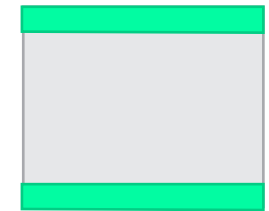
You have to add a background layer if there is no specific navipane background image used. The status area background or the screen background will be shown in this case.

The default UI graphics are rendered using the phone colour scheme palette. Therefore, the colours change according to the end user setting.

When the graphics you created are saved, the third option (theme specific) is used.



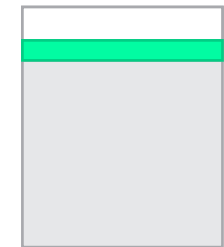
Status area background



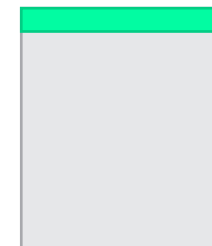
Status areas in landscape



Navipane solid



Navipane gradient



Narrow status area background



See also:

Navipane tab graphics (page 63)
 Navipane volume levels (page 62)
 Arrow graphics (page 67)
 Navipane icon colours (page 82)
 Navipane text colours (page 82)
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Main Area

The mobile device UI uses different types of lists. Lists have some items in common:

- List columns
- List ending graphics (slice)

Columns have three different widths (narrow, medium and wide).

Portrait and landscape use same graphic.

Control area

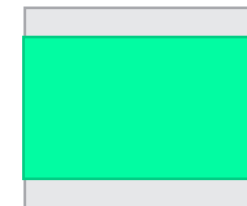
A theme can contain a specific image for control pane that is shown at the bottom of the display.

Combined status and control area

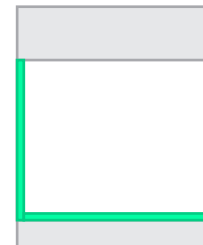
In landscape mode the status and control areas can be combined. There are two different graphics to be used based on the placement of the softkeys.



Portrait main area



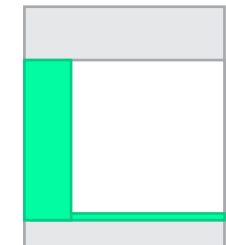
Landscape main area



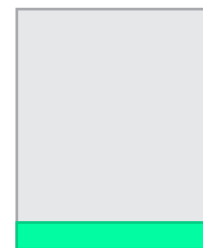
Narrow column



Medium column



Wide column



Portrait control area



Landscape control area



Combined status and control area



Note:
Additional control pane images can be used in the Idle mode and with pop-up windows.



See also:
General background image (page 47)
Control pane image for pop-up windows (page 61)
Control pane image for the Idle mode (page 52)
Layers and effects (page 28)

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Application icons

A theme may replace the UI application icons with graphics designed for the theme style.

A theme may contain none, all, or a selected group of the icons. If there is no specific application icon in the theme, the default UI application icon is used.

Application icons are used in two places

- Context pane
- Application shell

Icon for context pane is shown in the status area. The icon is used to indicate the active application that is currently open.

The application shell icon is shown in Menu and the application switching window.

Masking

For bitmap icons, you can mask icons in order to show the area background within the icon bitmap area.

Masks used in themes are created with the Mask tool. A mask is an 8-bit, grayscale image.

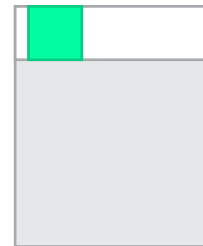
SVG icons are parsed with their own opacity. Separate masks are not needed.



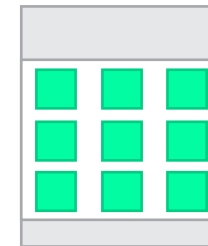
Note:

Actual icon image should be smaller than the icon area. This extra space allows more freedom when creating an icon. If the area is fully utilised the image may look crowded on the device display. For SVG icons, this extra space can be reserved by creating a none-filled square in the icon background.

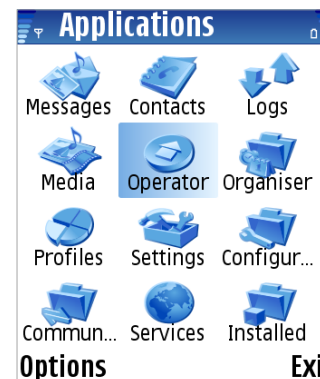
You can view multiple icons in the Editing area at the same time.



Context pane icons



Application shell icons



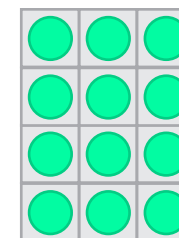
Base graphics



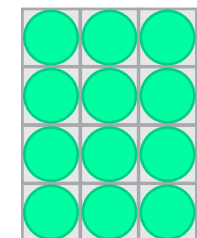
Theme 'City' icons



Theme 'Armi' icons



Icons smaller than the actual icon area



Icons filling the whole icon area

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List icons

List icons group contains large and medium icons that are generally used to create application submenus or content lists.

The icons are grouped by applications:

- Media Gallery
- Messaging
- Settings
- Pinboard
- Logs
- Other list icons

Note icons

Note icons group contains still or animated images displayed in various notes.

You can add frames to an animation by clicking Add New Frame button.

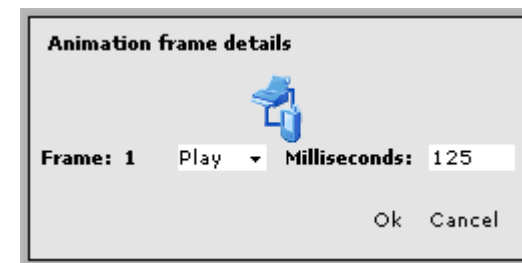
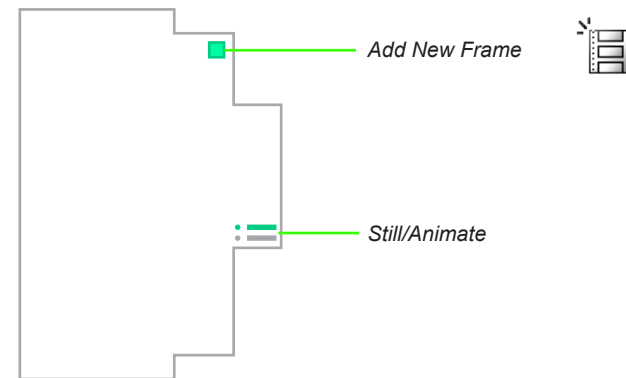
You can adjust the frame duration by selecting the frame by pressing the Alt key. The animation duration pop-up window is displayed.

You can adjust the duration of multiple frames at the same time by first selecting the frames with Shift or Ctrl keys.

You can toggle the animation on/off by selecting the Still/Animate item type from the component information section.

Miscellaneous icons

This group contains find field indications for Phonebook, Browser, and Pinboard, and a waiting animation for browser.



Animation frame duration pop-up window



Note:

The default frame duration is 160 milliseconds.

It is preferable that the full note animation duration does not exceed 1.5 seconds due to the minimum time the note is displayed.

Alt+LeftMouseKey open animation frame duration pop-up window

The Application shell folder icon is listed in the Other list icons group.

Note animations are frame by frame animations. Software does not support svg-animations, they have to be done frame by frame.



See also:

Selecting multiple items at the same time (page 20)

Using Animate command to test the animation (page 41)

Highlights

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Highlights may be designed to follow a theme's appearance. The generic highlights used are:

- List highlight
- Grid highlight
- Input highlight

Highlight versions and structure

A theme can contain two versions of list and grid highlights:

- List/Grid Highlight
- Animated List/Grid Highlight

The highlights can contain nine bitmaps:

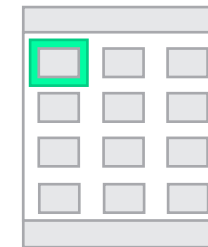
- Four corner bitmaps
- Four side bitmaps
- Center bitmap

Additionally highlights can be made of single graphic that is scaled as one entity. This allows better use of gradients and semi-transparency.

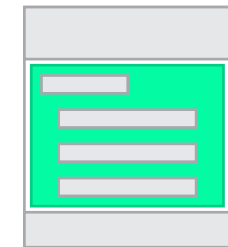
You can select the highlight type from component information section.



List highlight



Grid highlight



Input highlight



9 piece bitmaps



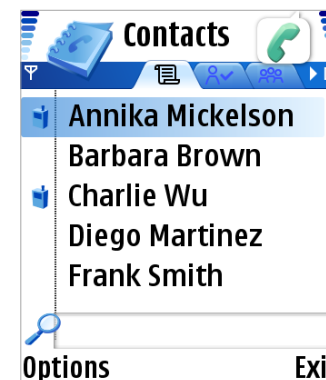
Single Graphic/9 Piece Graphics



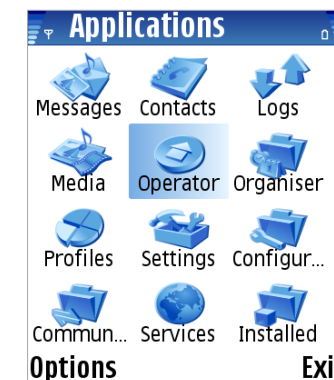
Note:
Highlights can also be animated with effects. If animated highlight is created, it over rides the normal highlight.



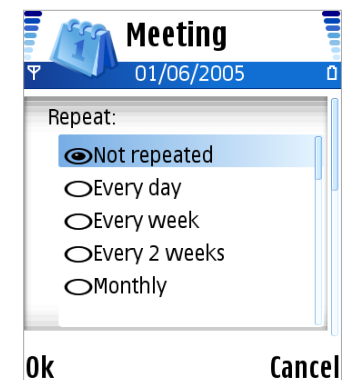
See also:
Layers and effects (page 28)



List example



Grid example



Input example

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List highlight

The list highlight is used in all the lists (with the exceptions of the Edited settings list or the Form selection list).

List highlights are of different sizes, but only one theme component is used.

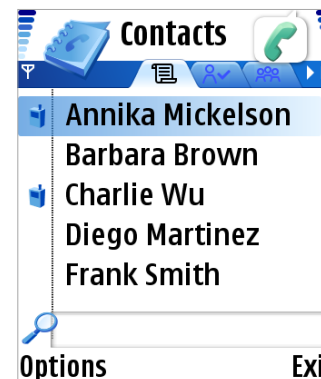
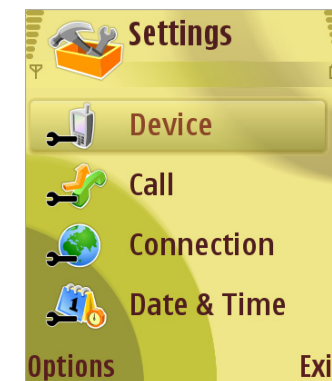
You can create a component according to the largest highlight.

When a graphic is used in a smaller sized component, vector (SVG) graphics will be stretched to the size of the full component. Bitmaps are shown starting from the top-left corner of each part and cropped on the bottom-right borders (9 piece highlight).

A one piece highlight is scaled as one entity to all highlight sizes.



List highlight sections



Different sized highlights



See also:

Using Sections tool to view component parts (page 23)
 Masking highlights to show background (page 26)
 Layers and effects (page 28)

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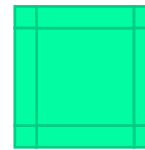
Other dialogs

Grid highlight

The grid highlight is used in all grids regardless of their cell size. For example:

- Application grid
- Pinboard application grid
- Special character selection grid
- Calendar week and month view grids

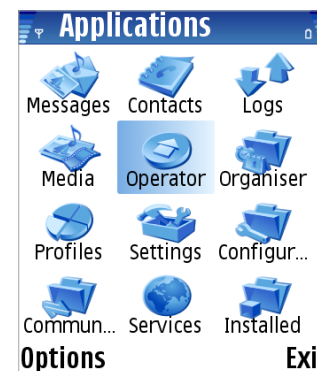
The rules and tools that apply for list highlight creation also apply for grid highlight creation.



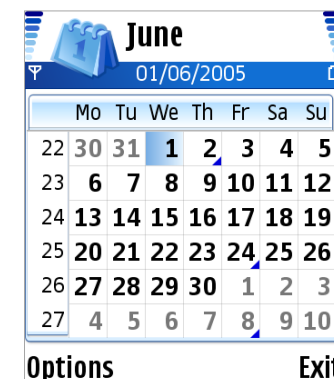
Grid highlight sections



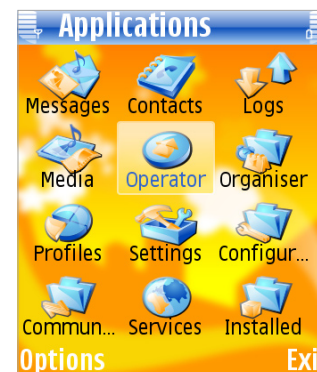
Input highlight sections



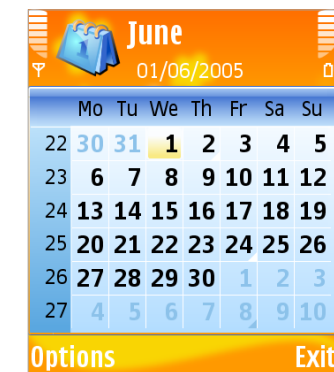
Application shell



Calendar month view



Theme 'City'



See also:
Layers and effects (page 28)

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Input highlight

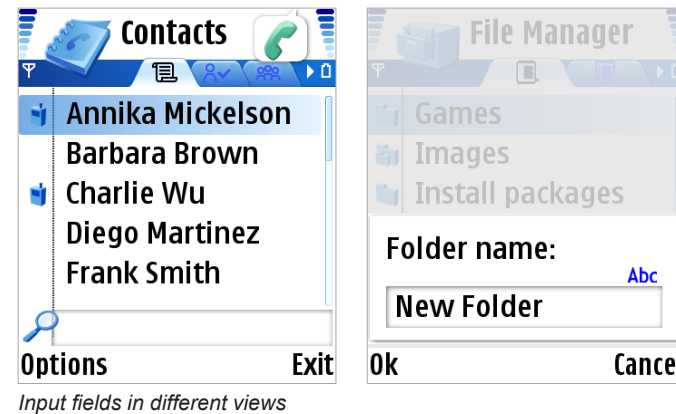
The input highlight is used to indicate end user data entry area. For example:

- Form fields
- Find boxes
- Data queries
- Data entry in Settings
- Title/search string entry in Pinboard

The highlight consists of nine graphics:

- Center graphic
- Four corner graphics
- Four side graphics

The size of the background graphic is the same as the input area. On top of the background you can place side and corner graphics.



Input fields in different views

Pop-up windows

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You can create theme components to modify pop-up window graphics. The components are:

- General pop-up windows
- Lower screen area
- Call handling windows

General window graphics

There are two pop-up window components used:

- General pop-up window
- Submenu pop-up window

Both components have the same structure:

- Four corner graphics
- Four side graphics
- Center graphic



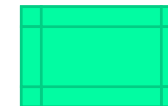
General pop-up window



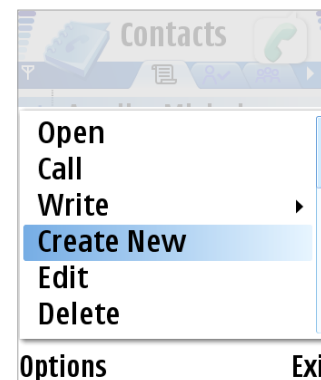
Submenu pop-up window



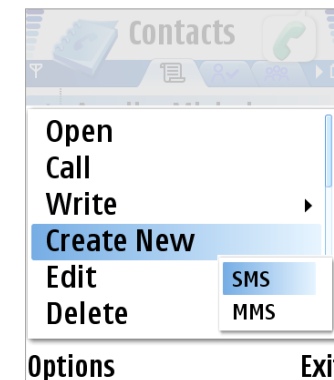
General pop-up window sections
(maximum value)



Submenu pop-up window sections
(maximum value)



General pop-up window



Submenu pop-up window

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General pop-up window graphics

General pop-up window graphics are used for all windows with the exception of submenus. These windows are:

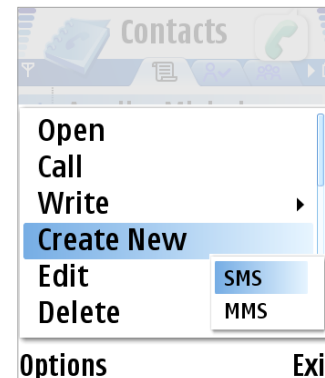
- Options lists
- Other pop-up lists
- Notes
- Queries
- Soft notifications

The window is surrounded with some margins. The top and bottom parts are always displayed. The size of the side and center sections vary according to the pop-up window height.

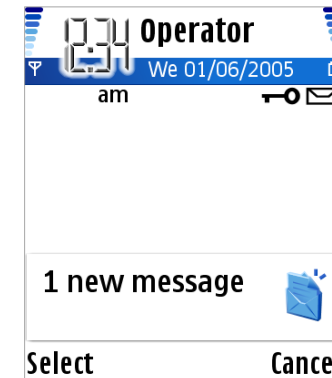
Submenu pop-up window

The submenu pop-up window has a special theme component applied due to its more limited window size.

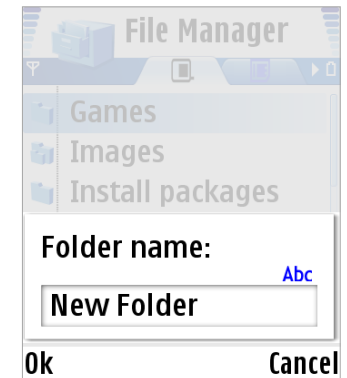
The submenu pop-up window graphics are used also in Calendar information pop-up window and Chinese/Japanese text entry windows.



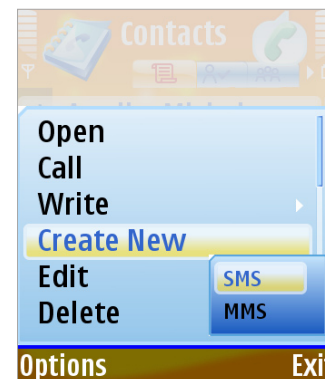
Options menu



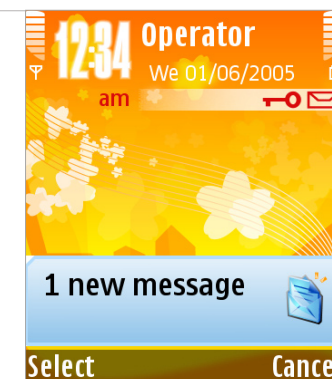
Note



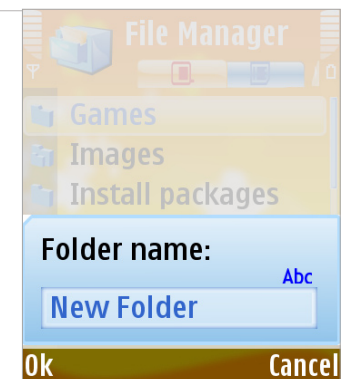
Query



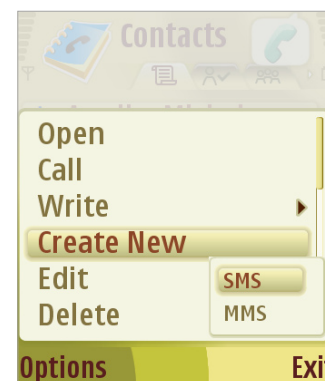
Theme 'City'



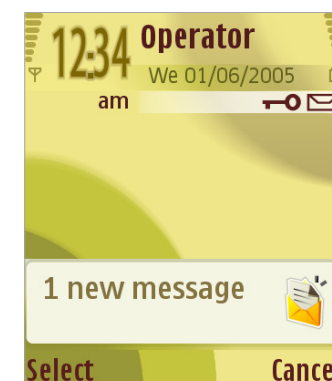
Theme 'City'



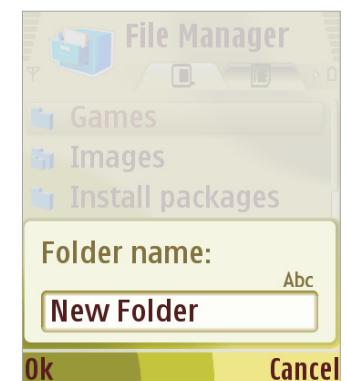
Theme 'City'



Theme 'Armi'



Theme 'Armi'



Theme 'Armi'

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Call handling windows

Call handling pop-up windows are used when there are incoming, outgoing and conference calls. Depending on the general functionality, there are four types of call handling windows.

- On-going call indications
- Conference call indications
- 1st - 4th position call indications
- Out-going call indications

Except on-going call indication which locates on top of the status pane, the rest of the call pop-up windows appear in the main pane area.

Call handling pop-up windows are all one piece single graphics with a "bubble" appearance. In some cases a dimmed appearance is used to indicate inactive phone calls such as disconnected call.

Lower screen area

A theme can contain lower main and control pane graphics that are only used with pop-up windows.



Note:

Text colour in call handling windows is always black, although the colour change is shown in the Theme Studio preview.



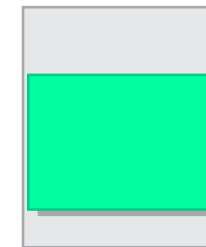
See also:

Creating control pane graphics (page 52)

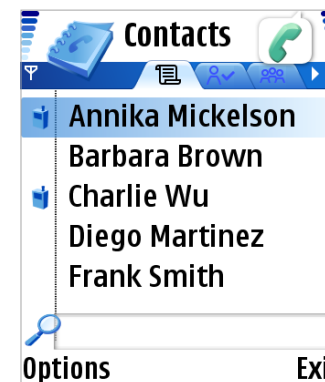
Creating control pane graphics for the Idle mode (page 52)



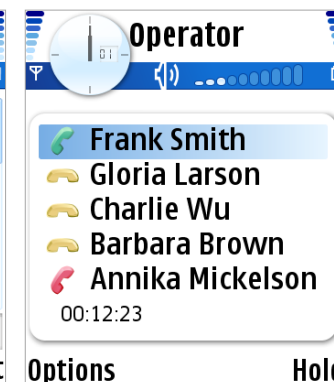
On-going call indications



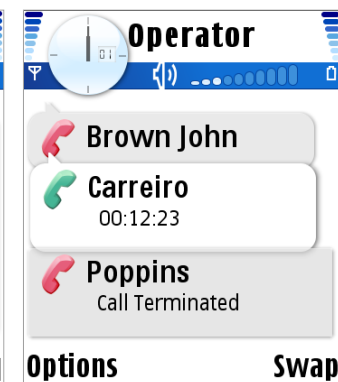
Other call indications



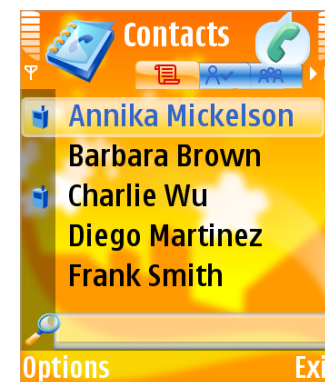
On-going call indications



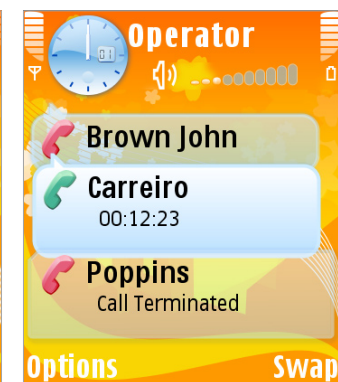
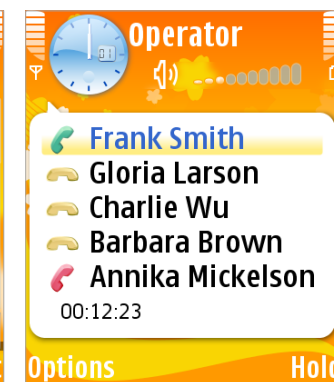
Conference call indications



1st- 4th position and out-going call indications



Theme 'City'



This and that

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This and that section contains a different variety of theme components:

- Volume level indicators
- Tab graphics
- Signal and Battery indicators
- Slider graphics
- Navigation indicators
- Wait/Progress bars
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Volume level indicators

The volume level is shown using a scale with ten levels. Levels are indicated in the default UI appearance with bar graphics in different height. These bars have on and off visual representations.

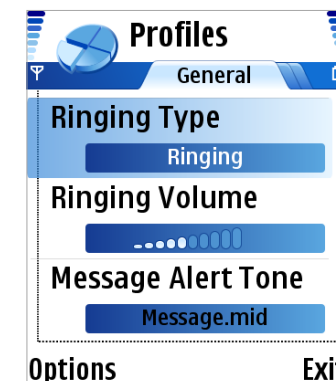
Volume levels are shown using two different layouts:

- Saved volume level indicator shown in settings list
- Edited settings volume

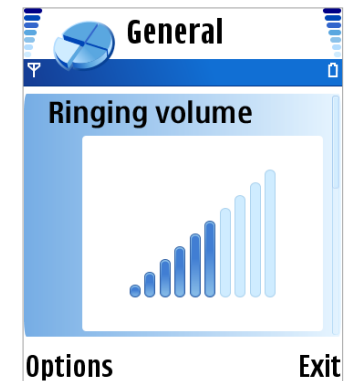


Note:

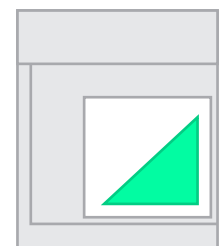
Volume level images will be placed on top of certain background such as Navipane, Unfocused list frame and Focused list frame. To make them visible, please check Areas.



Volume level default UI



Settings list volume



Edited settings volume

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Volume indicator in settings list

Settings list volume graphics are shown in the settings list selected option area.

Edited settings volume indicator

Volume levels are edited in an opened settings view.

As the Editing area is much larger than with other volume indicators, the indicators are increased in size.

Tab graphics

Tabs are shown in the navipane. They indicate selectable views and may contain either icons or text. The end user selects the active tab with the horizontal movement. The tab to the left/right is highlighted and the look of the previously active tab changes to inactive.

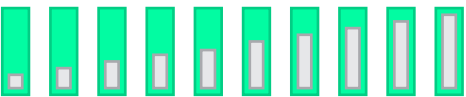
Create the tabs in the same way as any other theme component. However, extra caution needs to be taken to ensure that icons or text on top of tabs are shown within the active/passive areas.

A tab is sliced into three pieces: left, middle and right. Both left and right pieces' aspect ratio is fixed as the ending parts. The width of the middle is dynamic depending on the whole tab's length.

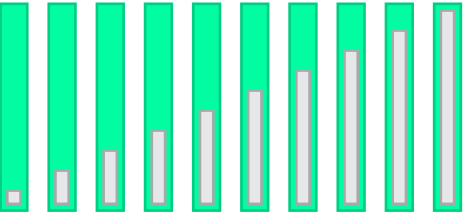
Tab icon/text colours

You can choose the colours for the active and passive tab icons and texts.

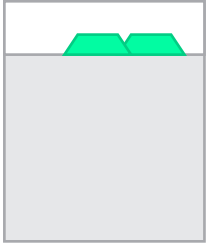
You can change the colour by using the Colours dialog. Separate colours are used for items shown on a highlighted tab and on a passive tab(s).



Settings list volume levels



Edited settings volume levels



View tabs



Left Middle Right

Tab slices



Themed Tabs



See also:
Colours (page 81)

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Signal and battery indicators

The mobile device UI contains two important strength level indicators:

- Signal strength indicator
- Battery level indicator

Both indicators have the same structure. Strength levels are shown by revealing the strength bitmap in sections. You can change the level bitmaps, but the sections are predefined.

Signal strength indicator

The signal strength indicator is shown on the top left corner of the screen.

Optimum reception is indicated by having all seven levels revealed. No reception is indicated when no levels are displayed.

It is important that levels are clearly indicated, as reception clarity and network availability may affect the end user's actions.

Full screen applications, such as Pinboard, Speed dial and games, do not display signal strength indicators in portrait view.



Note:
Placement of the signal and battery indicator may vary in landscape mode because of the softkeys. Only one set of graphics is needed, they are flipped to fit the other layout.



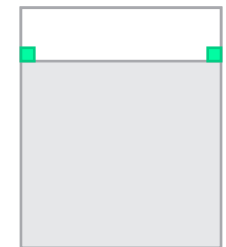
See also:
Using the Animate command to test the levels (page 41)
Creating signal off indicator in the background (page 49)



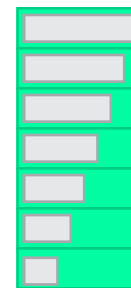
Signal strength indicator



Battery level indicator



Signal and battery icons



Signal levels



Signal levels in portrait mode



Signal levels in landscape mode



Signal and battery indications in landscape mode

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Battery level indicator

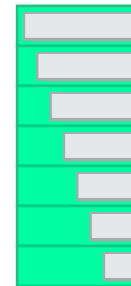
The battery level indicator is shown only when the device is in Idle mode or during power saving mode when the mobile device is being charged.

Like the signal strength indicator, the battery level indicator consists of seven levels. The indicator measures the battery energy levels that are available.

Icon colours

The signal strength and battery level icons are shown beneath the strength levels.

You can change the colour of these icons.



Battery levels



Battery levels in portrait mode



Battery levels in landscape mode



Signal and battery



Theme 'City'



Theme 'Armi'



Note:

Levels are animated when a device is charging. Animation consists of revealing the step levels from 0 to 7 repeatedly until the battery is full.

The signal network icon is shown with a packet data indicator when the network is available and the user has subscribed to it. The same icon colour is used.



See also:
Colours (page 81)

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Slider graphics

Sliders are used in the UI in similar way as volume indications. They measure levels. However, sliders are not limited to a number of adjustable steps.

The slider graphics consist of:

- Slider line
- Slider marker

You can replace the slider marker graphic.

The slider is used in different layouts:

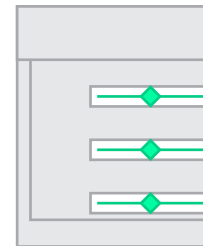
- Settings lists
- Edited settings items

Settings list slider

The settings list sliders are shown on top of the settings item background.

Edited settings slider

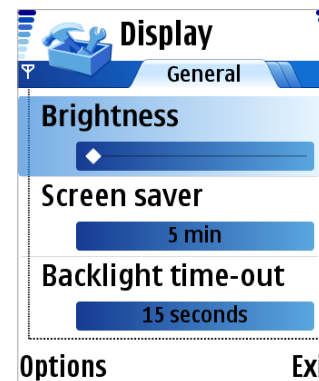
The edited settings sliders are shown when a settings item is opened for editing. The background used is the one designed for the settings option item area.



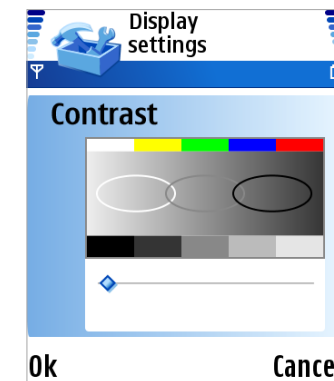
Settings list slider



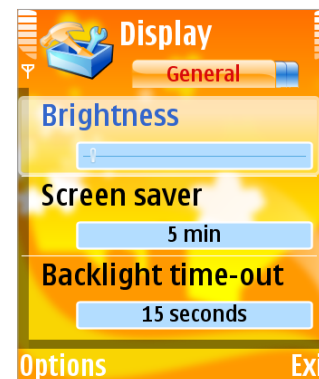
Edited settings slider



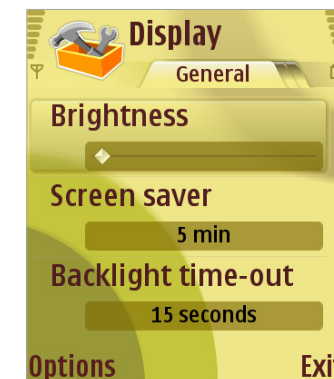
Settings list slider



Edited settings slider



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Navigation indicators

Arrowheads are used in the default UI look and feel to indicate possible navigation directions. The items are used in/as: navipane scrolling, list/grid scrolling and submenu indicator.

Navipane left/right scrolling indicators

The left and right scrolling indicators are shown at the both ends of the navipane.

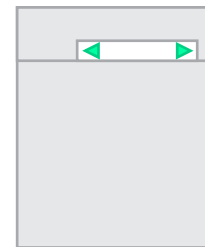
Indicators are either visible or invisible. If they are shown, scrolling in the indicated direction is possible.

You can change the left and right scrolling indicators with black and white images where black pixels are shown in the theme and white is used as mask.

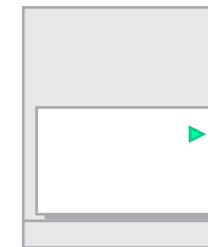
The colour displayed is the value defined for navipane texts and icons.

Submenu indicator

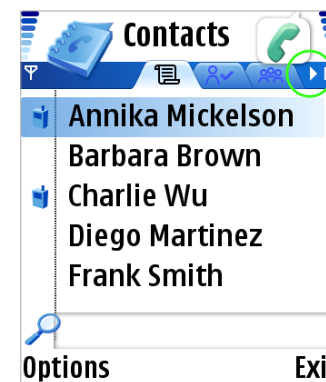
An arrowhead in the default UI appearance at the right side of the menu list item indicates a submenu. You can replace the indicator graphic.



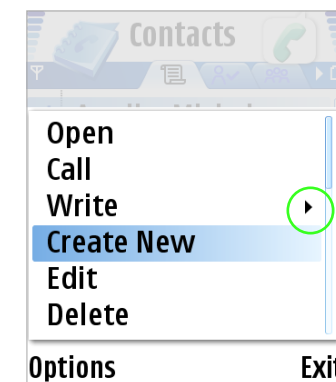
Navipane scrolling indicators



Submenu indicator



Navipane scrolling indicators



Submenu indicator



See also:
Using Animate command to test the tab graphics (page 41)
Colours (page 81)

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Wait/progress bar indicators

You can add the animated wait and progress bar indicators. The indicators consist of:

- Frame graphics
- Progress bar
- Waiting bars

The frame graphics are shown masked beneath the bar graphics.

The progress bar is a still image. It is moved from left to right according to the action measured.

The waiting bar images are shown animated one after another, looping, until the action measured is terminated.



Bar mask



Bar graphics



Frame mask



Frame graphics

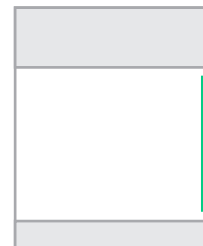


Waiting bar

Scroll bar

Scroll bar will appear in the list view when the list contents exceed the view. User can scroll up or down using vertical selection key movements.

A scroll bar consists of a track and a handle, each of them are composed by three graphic parts: top, middle and bottom.



Scroll bar



Scroll bar parts



Scroll bar with default theme

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- Volume indicators
- Tab graphics
- Signal and Battery
- Slider graphics
- Navigation indicators
- Wait /Progress bars
- Scroll
- Lines**

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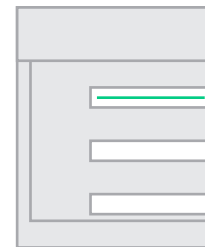
Lines

Lines are used in many places of the UI such as Slider tracks, view dividers and tables like Calendar. Depending on the priority, lines have three types:

- Primary lines
- Primary dashed lines
- Secondary lines

Each type of line has both horizontal and vertical graphics, which shows the correct way of how the graphic will be scaled.

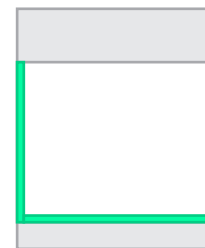
You can also set the column lines off. Select File/Theme settings and set the line visibility to false.



Line as slider track



Line as view dividers



Narrow column



Medium column



Wide column



Note:
Only the shape of the line is created in this section. The colour is changed in the colours section.



See also:
Colours (page 81)

Applications

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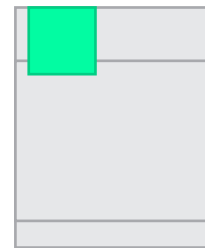
Some of the theme items are specific to individual applications. These applications include:

- Clock
- Pinboard
- Calendar
- Settings
- Calculator
- Notepad
- Music Player

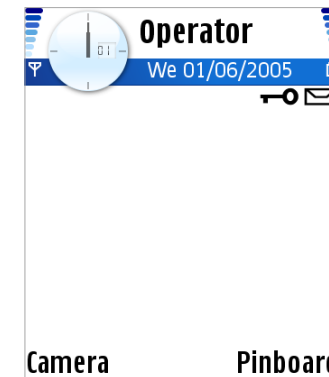
Clock

You can create clocks to match the overall theme design.

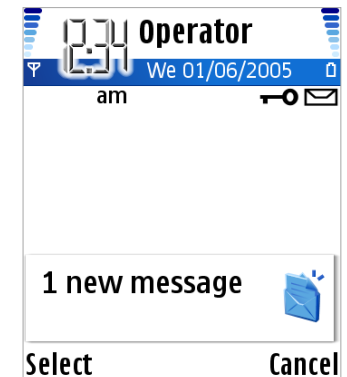
The digital or analogue clock is shown on the context pane of idle view. The end user can select the clock type shown. The same clock(s) are shown in the Clock application.



Clock



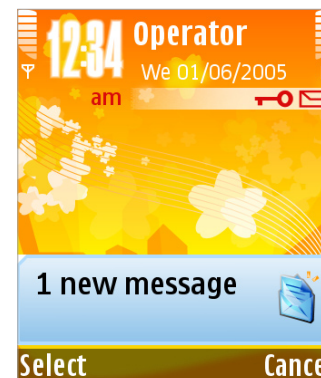
Analogue clock with default theme



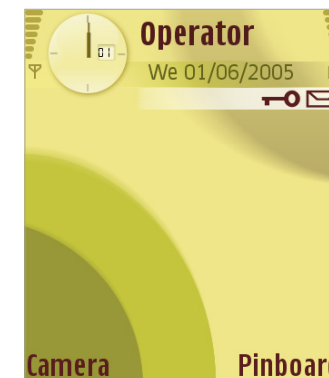
Digital clock with default theme



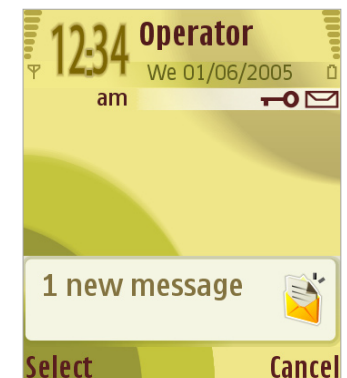
Analogue clock with 'City' theme



Digital clock with 'City' theme



Analogue clock with 'Armi' theme



Digital clock with 'Armi' theme

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Analogue clock

The analogue clock is made of five parts.

- Face1
- Current date frame
- Face2
- Hour pointer
- Minute pointer

A theme may alter the graphics used, however, the outlook and position of the pointers and the date numbers are fixed.

Use the first clock Face1 to render the basic clock table and possible background effects. The image may contain clock numbers, a shadow colour or a halo effect.

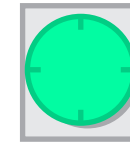
Current date frame is used as background for the date indicator in the right-center of the clock face.

Face2 image sets the highlight of the clock, it will be drawn on top of the rest of the images.

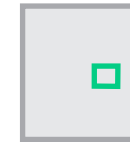
Pointer graphics must always start from the exact center of the bounding box to position the hands correctly.

You may or may not use all the clock graphics listed.

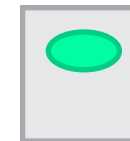
The clocks are shown also in the Clock application. The analogue clock date numbers are not shown.



Face1 (background)



Current date frame



Face2 (highlight)



Hour hand



Minute hand



Note:

Please keep the bounding box and the original positions associated with your graphics, otherwise they will not be positioned correctly.

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Digital clock

The digital clock is made from masked number and separator character images.

Each individual number/separator is created from two images. The first image (1) contains the character and possible effect colour or texture.

The second image (2) contains a hard mask to create clear characters.

The images overlap in the clock area in accordance with a fixed position.

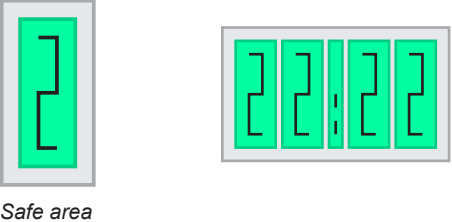
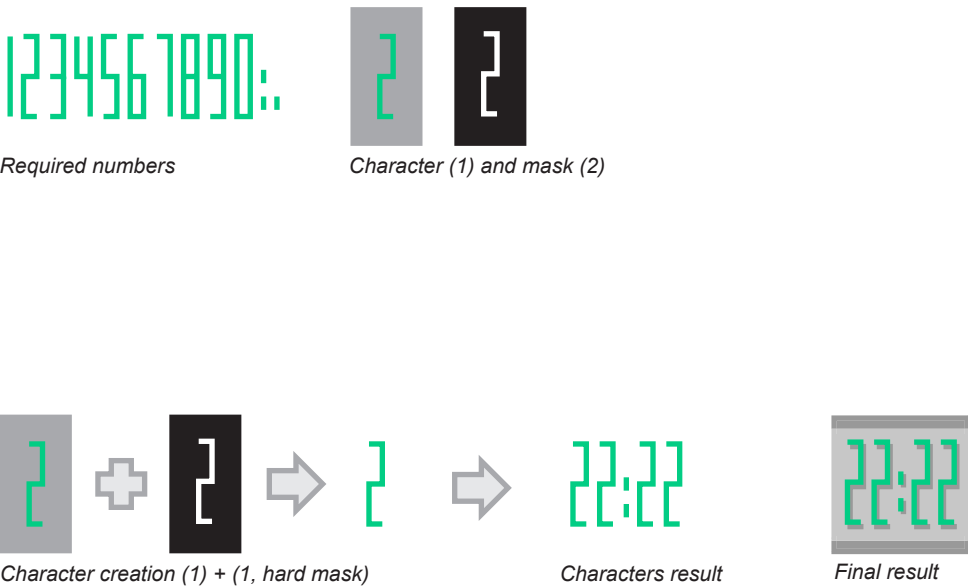
The digital clock is created in two steps:

- Background effect creation
- Character creation

To create the background effect, use the first image. Mask the character image with the second image in order to put different types of effects, such as a shadow or halo to the background.

When drawn in a device, the images overlap one another the number/separator character images will get masked from the second image so the characters will be drawn on top.

In order to ensure that the characters do not overlap, they need to be placed in a defined 'safe' area.



1st bitmap	character, effects	colour
2nd bitmap	mask	black and white

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Pinboard

The Pinboard application main area consists of background graphic.

The user may choose to view the items in a format of a grid or list.

Background

The application background creates a frame where the Pinboard items can be placed. The background graphics can be theme specific.

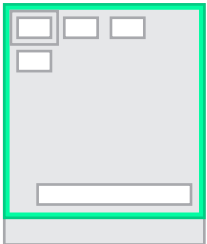
Highlight

The displayed highlight depends on the selected view format.

If the format is a grid, the highlight used is the one defined for all grids.
 If the items are shown in a list, the highlight used is the one defined for lists.

Title/search string entry

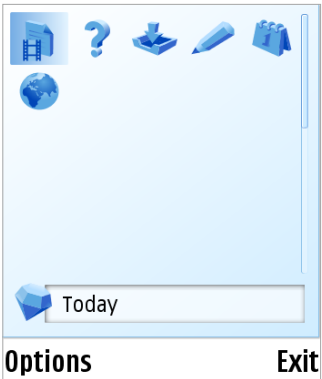
The title of the focused item and search string entry are shown in the general input highlight graphics.



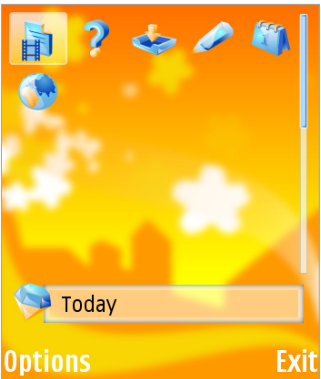
Pinboard background



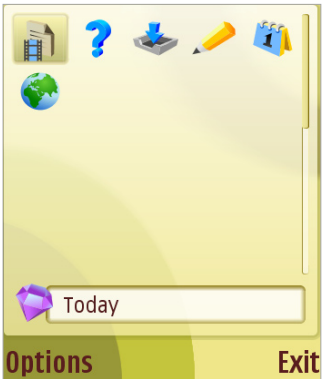
Highlight



Default theme



Theme 'City'



Theme 'Armi'



See also:
 General background image (page 47)
 List highlight (page 56)
 Grid highlight (page 57)

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Lower screen area

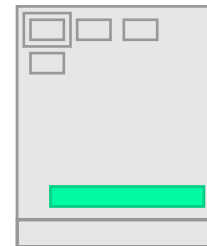
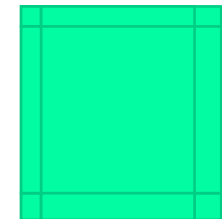
The lower screen area contains the general UI background graphics. If the control pane has an area specific background image defined, it is shown. The softkey colour is the one defined for softkeys in general.

Background graphics

The application background has the same structure as the Calendar or pop-up window backgrounds. The graphics consist of nine bitmaps:

- Four corner bitmaps
- Four side bitmaps
- Center bitmap

You can design the corner bitmaps independently. The side and center area graphics can be tiled or equal the maximum size of the component area.

*Title/search string entry**Lower screen area**Background sections***Note:**

The center section is used as wallpaper. End users may replace the wallpaper with their own image.

**See also:**

Using Sections tool (page 23)
Using Mirror tool (page 25)
Control area background image (page 52)
Input highlight (page 58)

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Calendar

The Calendar application has three main graphics:

- Calendar frame
- Calendar header frame
- Calendar side frame

Calendar frame and calendar header frame are used as view/header background in all calendar views.

The structure is the same as with highlights and pop-ups. The parts used are:

- Four corner graphics
- Four sides graphics
- Center graphic

You can design the corner images individually. The sides will be stretched to fill the size of the area. The center will be the maximum size of the graphics area.

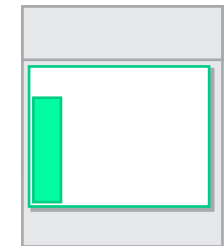
Additionally you can also change the colour of the separator lines as well as the colour of the event indications in Colours section.



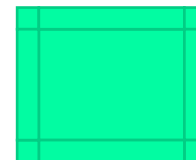
Calendar frame



Calendar header frame



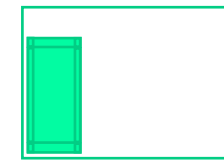
Calendar side frame



Calendar frame sections



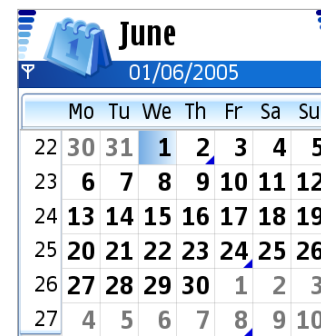
Calendar header frame sections



Calendar side frame sections



See also:
Using Sections tool (page 23)
Colours (page 81)



Options

Exit

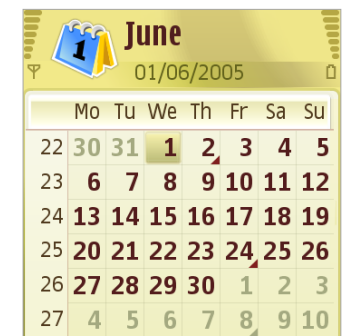
Default theme



Options

Exit

Theme 'City'



Options

Exit

Theme 'Armi'

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Settings

Settings items have two states:

- List state
- Edit state

In a list state, setting items are scrolled and the currently selected option value is shown below the item heading.

You can alter the appearance of the value item background.

When a list item is opened for editing, the main pane is shown with only one settings item. End users are able to edit the setting value once the item is opened.

Settings values may be edited through:

- Entering in a new item
- Entering time, date or code values
- Selecting a value from a list
- Modifying a generic slider value
- Modifying a volume slider

The general background for the opened item is the general list highlight.



Settings list (list state)



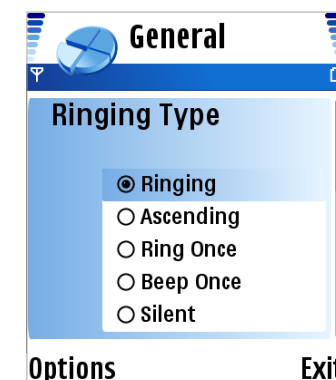
Edited settings item (edit state)



See also:
List highlights (page 56)



Settings list



Edited settings item

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Focused list frame

The focused option item indication is used in two cases:

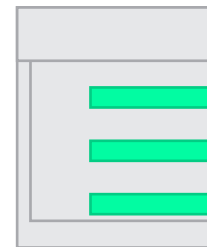
- As a background for the selected option in the settings list
- As a highlight in the option list

The item structure is the same as with highlights and pop-ups. The parts used are:

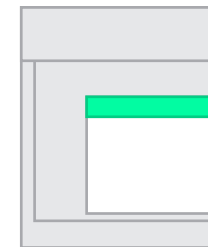
- Four corner graphics
- Four sides graphics
- Center graphic

You can design the corner graphics individually. The sides will be stretched to fill the size of the area. The center will be the maximum size of the graphics area.

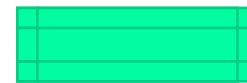
When the item is used as a highlight, only prefixed sections of the item are shown.



Focused item in Setting list



Focused item in Edited settings item



Setting focused item sections



Sections in Edited settings item



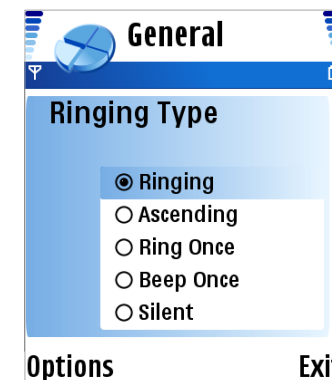
Note:
You can also set effects to setting items.



See also:
Volume level graphics (page 62)
Settings options list background (page 76)
Layers and effects (page 28)



Focused list frames in Setting list



Focused list frames in Option list

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Unfocused list frame

The unfocused list frame graphics are shown as a background for edited settings. The background is shown with:

- Option list
- Slider
- Volume

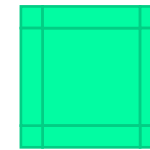
The item structure is the same as with highlights and pop-ups. The parts are:

- Four corner graphics
- Four side graphics
- Center graphic

You can design the corner graphics individually. The sides will be stretched to fill the size of the area. The center will be the maximum size of the graphics area.



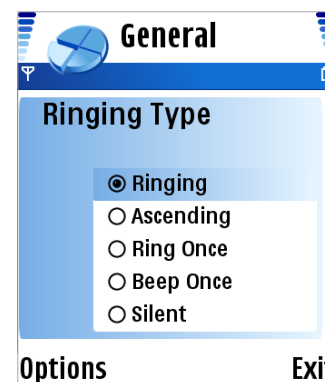
Option area background



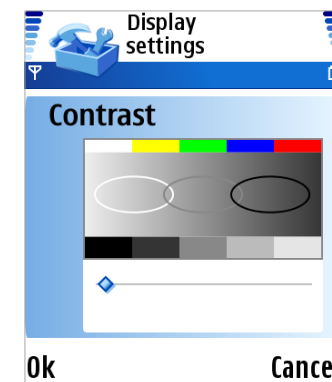
Setting option area sections



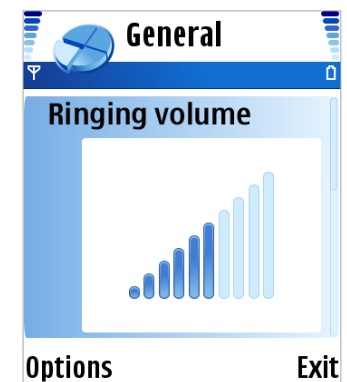
Note:
When the device contrast is adjusted there is an example image shown in the settings area.



Focused list frames with options



Focused list frames with slider



Focused list frames with volume

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Calculator

Calculator has two components themeable:

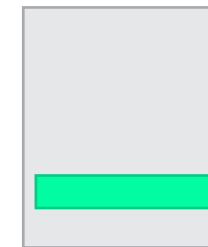
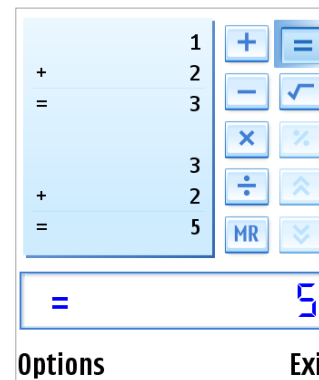
- Display (input/output display)
- Paper (calculation log)

The calculator paper component can be either one piece or nine piece graphics. The nine piece graphics component has:

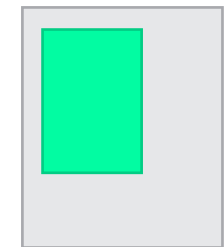
- Four corner graphics
- Four side graphics
- Center graphic

You can design the corner graphics individually. The sides will be stretched to fill the size of the area. The center will be the maximum size of the graphics area.

The calculator display component requires three pieces: left, center and right. The center piece is stretched to occupy the space between the left and the right piece.



Display area



Paper area



Display area pieces

Notepad

Notepad has two types of themeable backgrounds:

- First page frame
- Continues page frame

First page frame has a different "notes" header than continues page frame. These components can be either one piece or nine piece graphics.



Notepad background(s)

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Music Player

Music Player has several themeable components:

- Background
- Visualizer
- Buttons
- Volume bar
- Progress bar
- Equalizer

Music Player can have it's own fullscreen background graphic. If it is not provided in a theme file, the default background graphic will be used.

Visualizer is a rectangular shaped area located on the top right corner of the screen. The component requires a mask also.

There are several themeable buttons that have four different states:

- Available
- Unavailable
- Focused
- Selected

Volume and progress bar components are fully themeable.

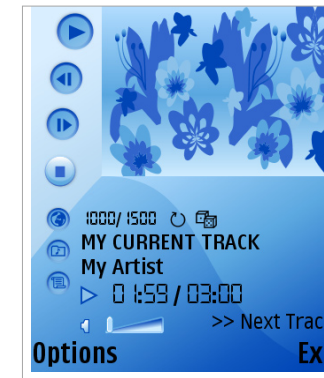
Equalizer has a bar and a handle that can be themeable.

Some of the components are themeable in the colours-section:

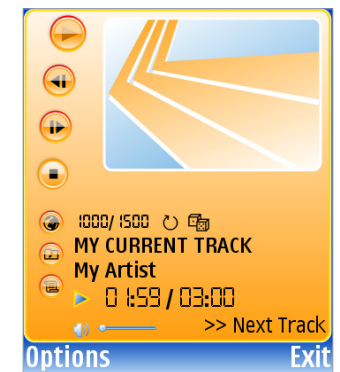
- Line in oscilloscope
- Gradient in spectrum
- Functionality indicators (random, playlist etc.)



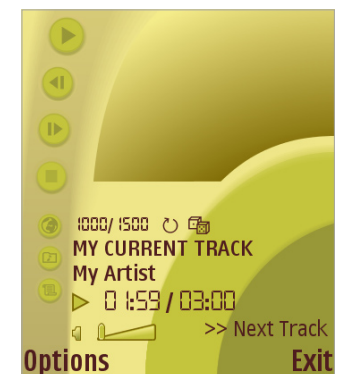
See also:
Colours (page 81)



Default Music Player



Theme 'City'



Theme 'Armi'



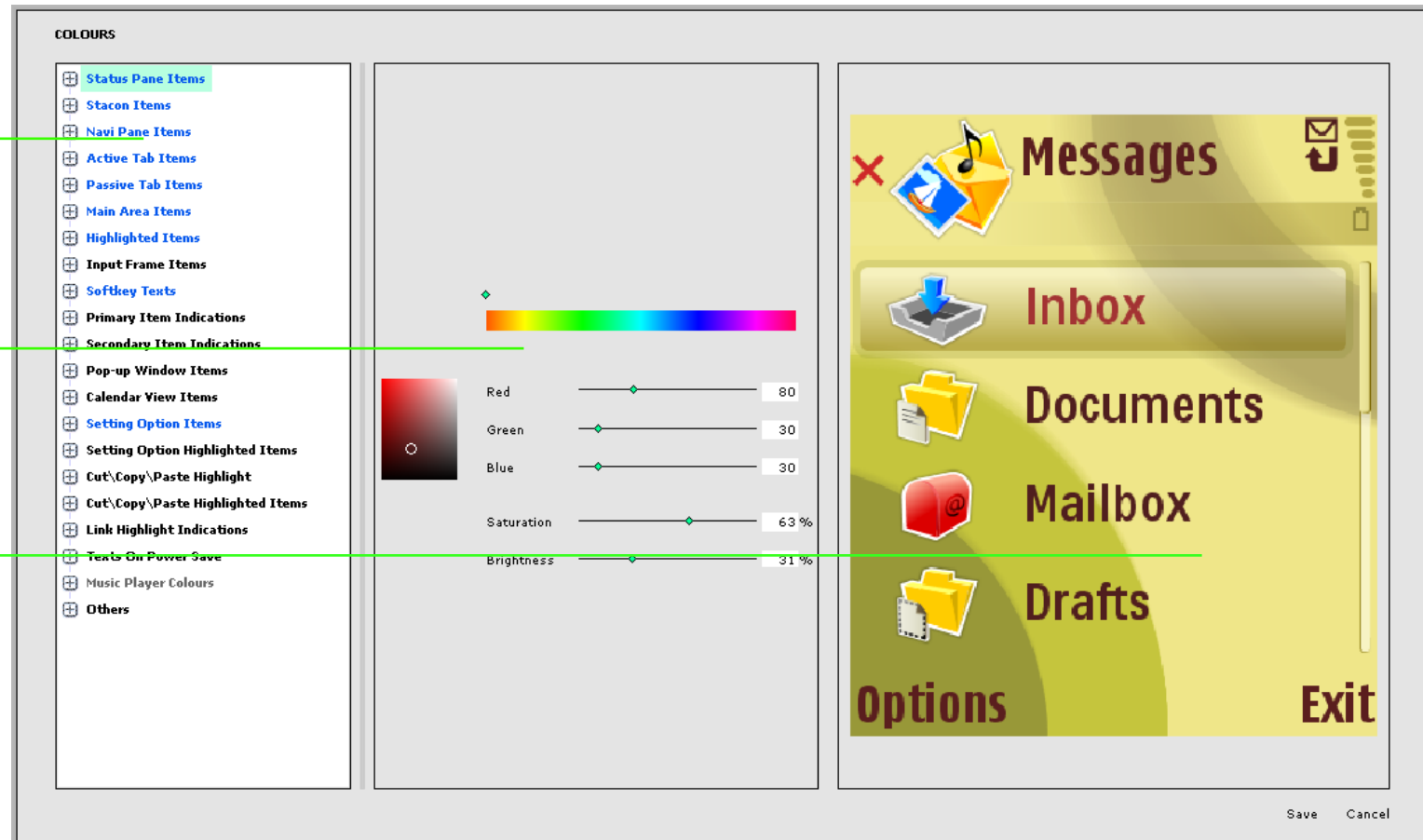
Visualizer area

Colours

- Colour group list

- Colour adjusting area

- Preview area



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Colours dialog

The colours section contains a dialog for adjusting item colours.

On the left is the Colour group list that has all the editable colours listed in groups. You can expand the group to view the themeable colour inside them.

You can adjust colour values in the Colour adjusting area which is similar to the colour palette in the Editing toolbox.

Preview area will choose the corresponding UI screen for each Colour groups and update the result when adjusting the colours by using Colour adjusting area.

Colour group list

The colours are grouped in the colour group list according to their parent UI components. Each colour will be affected by adjusting the colours parameters of the group:

- Status pane Items
- Landscape Items
- Navipane Items
- Active tab Items
- Passive tab Items
- Main area Items
- Highlighted Items
- Input frame Items
- Softkey texts
- Primary item indications
- Secondary item indications
- Pop-up window items
- Calendar view items
- Setting option Items
- Setting option highlighted items
- Cut/copy/paste highlight



See also:
Using the Colour tool (page 81)

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- Cut/copy/paste highlighted items
- Link highlight indications
- Music player
- Others

You can also control the sub colour in each colour groups separately.

Once all the colours in a group are set and saved, the text colour of the group will turn blue indicating the setting is done and saved.

For a complete colour list, please refer to Appendix-B Colour groups.

For the detailed location and effect of each colour and its group, please refer to the preview area of the Colours dialog.

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There are two types of sounds:

- Ringing tones
- Message alerts

The ringing tones are used with incoming calls and the message alerts are used when messages are received. The format of the supported sounds depend on the device. Generally supported sound formats are: WAV and MP3.

You can modify sounds with the preferred sound application by double-clicking the sound icon.

You can listen to the added sound at the preview while zooming the related preview image.



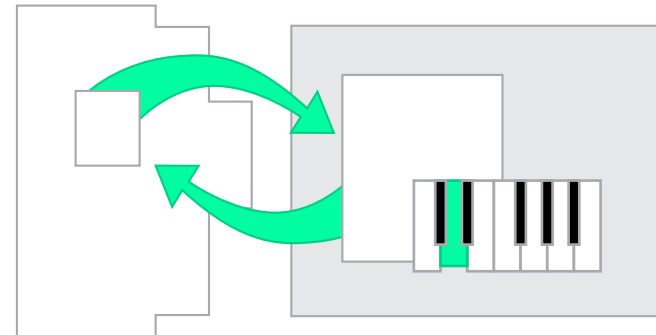
WAV sound file



MP3 sound file



Device specific format



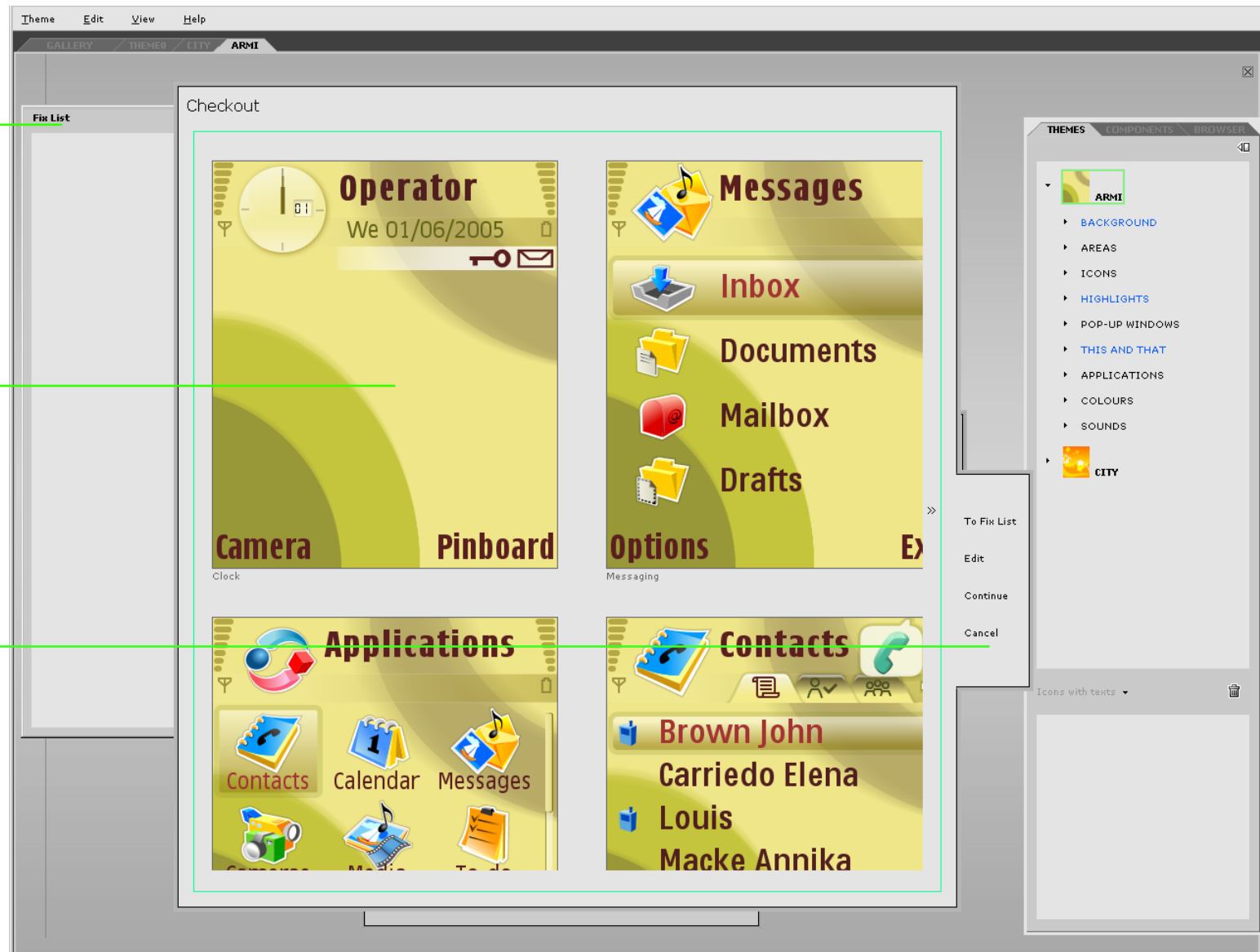
Editing in sound application

Checkout view

- Fix list

- Component selection area

- Command list



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Checkout

You can verify the theme output in the Checkout section.

The output verification is done in three steps:

1. Theme component verification
2. Component fixing
3. SIS file creation

Theme sample screens are shown in a pop-up window. You can scroll in the grid using the left and right arrows on the window or drag the empty areas in the preview area.

To re-edit any graphics, you can mark them in the images. Click the graphic you want to edit and then select the To Fix list command in the command list. If you wish to edit the graphic at once select the Edit command.

Selected items are shown in the Fix list. You can return to the editor by selecting the Edit command from the list. The sample screen window is closed and the first component in the fix list is opened for editing.

You can edit the theme component and remove the item from the fix list by saving the new design.

As corrections are made you can return to check the output by selecting the Checkout section again.

You can proceed with the theme output by selecting the Continue command.

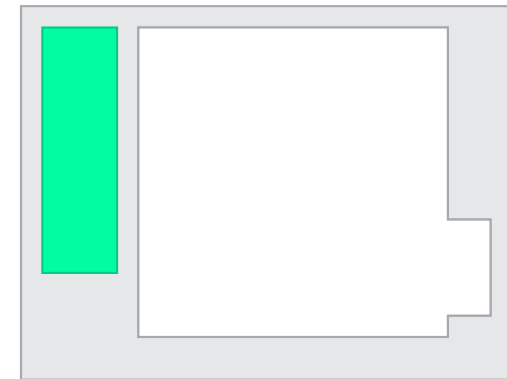
The settings dialog for the SIS file output is opened.



Note:

You can repeat the sample screen evaluation and component editing as many times as necessary.

You can edit the items in the fix list at any order by double-clicking the list items. The item component is shown in the Editing area.



Fix list



Component selection area



Command bar

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Other dialogs

The dialog contains the information that was entered during theme creation. You can adjust the following settings:

- Theme name
- SIS file name
- Author name
- Copyright statement
- Copy protection
- Screen saver
- Screen saver UID
- Components used
- Advanced settings

Theme name - this name will be shown in the mobile device. The default value is the name you specified in the Create new theme dialog.

SIS file name - This name may differ from the theme name.

Author name - By default, this is the same as the program owner or the name specified in the Create new theme dialog.

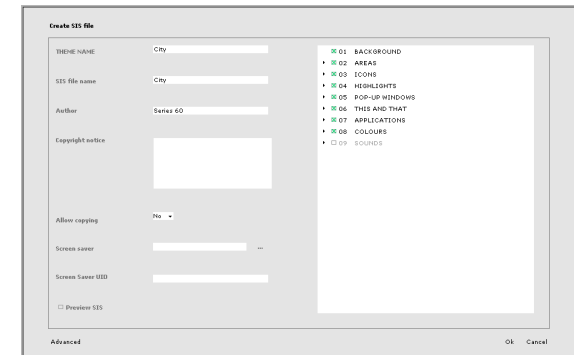
Copyright statement - You can enter a copyright statement for the theme.

Copy protection - You can either allow copying or prevent the theme from being copied between the mobile phone memory and memory card.

Screen saver - a Symbian OS DLL file (within a SIS file) may be included in the theme SIS file. The file may be browsed from the computer or network directory.

Screen saver UID- defining the UID number for the screen saver.

Components - You can select the components used in the theme output. The SIS file may contain all or a subset of the components of the theme design file.



Output options pop-up window



UID number:
Unique identifier number obtained from Symbian Ltd.



See also:
Create New Theme dialog (page 15)

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Advanced settings

Advanced settings contain:

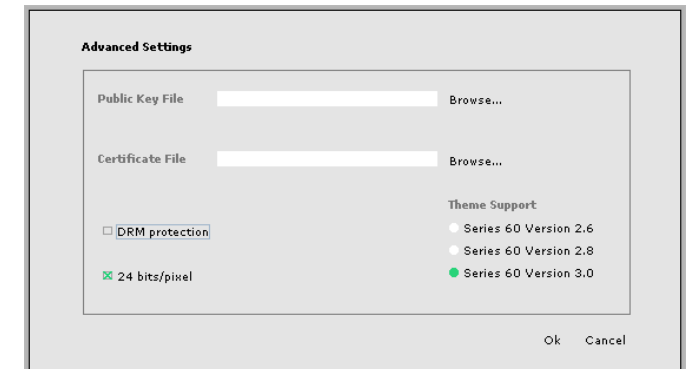
- Public key file
- Private key file (certificate key file)
- DRM protection
- Saving images using 24 bits/pixel

Symbian installation (SIS) file can be signed to verify the identity of the sender and to verify that the file hasn't been tampered with since it was signed. The digital signing process requires a private key and a public key certificates, which must previously have been created using the Certificate Generator.

The Certificate Generator (makekeys.exe) was installed to 'bin' directory during Theme Studio installation.

Support for Digital Rights Management (DRM) protected theme packages enables the user to create PIP packages. PIP packages can be DRM protected using corresponding tools and servers.

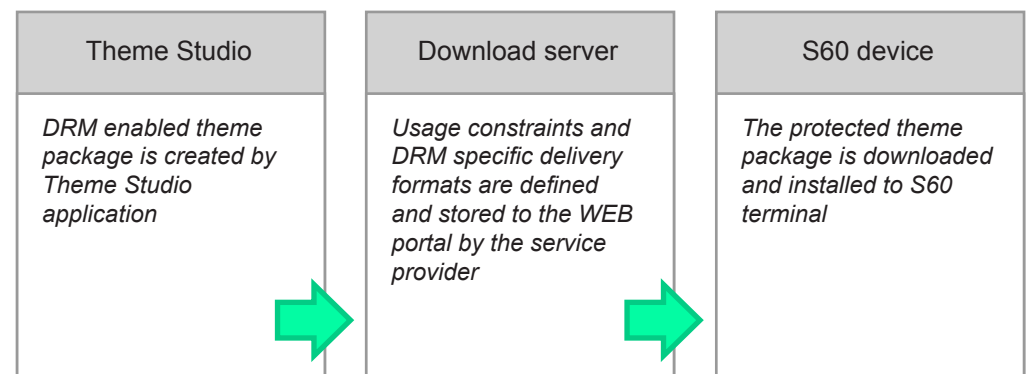
The theme images are saved as 16 bits/pixel by default. You can increase the colour range by selecting the 'Save images using 24 bits/pixel' option; however this will increase the theme file size.



Advanced settings pop-up window



See also:
Creating private and public keys (page 91)



Other dialogs

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Other dialogs

- Properties
- theme settings
- Rubbish bin
- Third party icons

in Theme Studio are:

- Properties dialog
- Theme settings dialog
- Rubbish bin dialog
- Third party icons dialog

Properties dialog

To open the Properties dialog, select Properties from the Theme pull down menu.

Directories

You can view the application installation directory path and the item editing applications that are used when you double-click images or sounds in the Editing area. The values for these are set during program installation. To change the values, select the Browse command.

Settings

You can select the background colour of Theme Studio: no colour, white, light gray or dark gray.

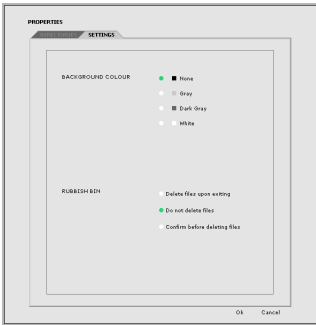
You can select if you want to delete files from the rubbish bin upon exiting the program. The choices are: Delete files upon exiting, Do not delete files, and Confirm before deleting files.

Theme settings dialog

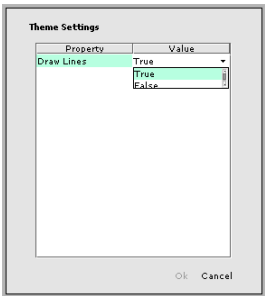
When a theme is in editing mode, theme setting dialog can be opened from the File menu. With this dialog you can set the draw lines or not.



Properties dialog directories view



Properties dialog settings view



Theme settings dialog

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theme settings

Rubbish bin

Third party icons

Rubbish bin

To open the Rubbish bin dialog, click the rubbish bin icon in the browser toolbar.

In the rubbish bin dialog, you have the following options:

- To restore a deleted item, click the item and select Restore from the File menu.
- To delete all the files from the rubbish bin, select Empty Rubbish Bin from the File menu.
- To delete a single item from the rubbish bin, click the item and select Delete from the File menu.

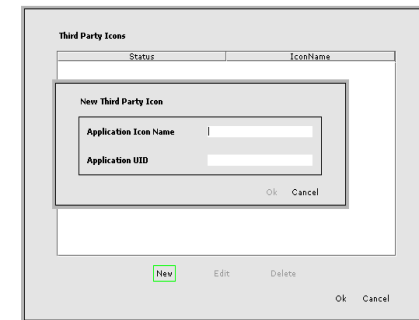
Third Party icons

Support for third party application icon skinning enables customization of third party application icons in case Application's Unique Identification Number (UID) is known. See Symbian Developer Library for more information about the UIDs (<http://www.symbian.com>).

To open the third party icons dialog, select the item from the Theme pull down menu. From the first window you can see the information of the applied third party icons. Information includes status of the icons and the icon names.

You can add new third party icon by clicking New command from the Command bar. For adding a new icon you will need the Application's Unique Identification Number (UID). The information requested is:

- Application icon name
- Application UID
- Icon type (application shell or context pane icon)



Third party icon dialog with new icon entry window



More information?

Select keyboard shortcut F1 to access the context sensitive help.

Appendix A - Creating private and public keys

NOTE: PASSWORD IS NOT SUPPORTED

1. HOW TO DIGITALLY SIGN AN INSTALLATION FILE

1. Create a private key and a self signed certificate using the Certificate Generator — see How to create a private key and self signed certificate Subchapter. If verification of the sender's identity is not important, then skip to step 4.
2. Create a certificate request using the Certificate Generator, specifying the private key and self-signed certificate created in step 1 — see appropriate "How to" topic.
3. Send the certificate request to the Certificate Authority, and get back the authenticated digital certificate.
4. Specify the private key used to create the digital signature, and the public key certificate to be used to decrypt it. For secure installation this should be an authenticated digital certificate, however the self-signed certificate may be used.

1.1 How to create a private key and self signed certificate

The Certification Generator is a PC based command line tool which creates a private/public key pair and issues certificate requests. The resultant private key is used to digitally sign installation files, enabling the install system to authenticate them. It carries out the following tasks:

- Creation of a private/public key pair, where the public key is in the form of a self signed certificate.
- Construction of a certificate request.
- Optional viewing of certificate details.

1.2 Command line syntax

1.2.1 Create a private key and self signed certificate

```
makekeys -cert [-v] [-len key-length ] [-password password ] -dname distinguished-name-string private-key-file public-key-cert
```

For example:

```
makekeys -cert -dname "CN=Symbian OU=Development OR=SymbianLtd CO=GB" mykey.key mycert.cer
```

1.2.1.1 Note:

The Certification Generator uses a mouse input mechanism to generate the private key. The MSDOS property QuickEdit must be turned off in order for sampling of random data from the mouse to work.

1.2.2 Create a certificate request given a self-signed certificate

```
makekeys -req [-v][-password password] -dname distinguished-name-string private-key-file public-key-cert cert-request-file
```

For example:

```
makekeys req -dname "CN=Symbian OU=Development OR=SymbianLtd CO=GB" mykey.key mycert.cer myreq.p10
```

It is then up to the developer to send the certificate request to be signed by a trusted third party, i.e. a Certificate Authority. The CA uses various means to establish that the originator of the certificate request is who they claim to be. The developer's public key is signed by the CA, using the CA's private key, creating a certificate, which is then sent back to the applicant. The CA may return a single certificate, or a file containing a chain of certificates.

It is important that certificates returned by CA's are in the base64 encoded ASCII format. The Certification Generator generates base 64 encoded certificate files and expects certificates which come back from a CA to be in the same format.

The CA may return a file containing a certificate chain. These are supported, and are needed if intermediate certificates are required between the CA's root certificate on the Symbian OS device and the developer certificate.

1.2.3 View certificate details

makekeys – view public-key-cert

Displays details of a certificate or certificate chain file. The -view command should be used with an existing certificate file (which should be in base 64 encoded format).

For example:

makekeys – view mycert.cer

1.2.4 Arguments

-cert Create the private key (private-key-file) and self signed certificate (public-key-cert). If the private key file already exists it will be used to create the self signed certificate.

-req Create a certificate request.

-view View certificate details.

-v Verbose mode — displays additional diagnostic information.

-dname distinguished-name-string

The distinguished-name-string specifies the distinguished name parameters required for the self-signed public key certificate file. This command line option should be constructed of a string of white space separated key/value pairs as follows:

CN=common name
 OU=organisational unit
 OR=organisation
 LO=locality
 ST=state
 CO=country
 EM=e-mail address

-password password

Password (optional). After creation, the password must be supplied to subsequently use the private key.

-len key-length

The key-length. The minimum is 512, maximum is 4096. The key length defaults to 1024.

-private-key-file

The file containing the private key. The private key should be kept secret by the developer, whereas the public key is usually made generally available. Has a .key extension.

-public-key-cert

A self-signed certificate containing the public key. Has a .cer extension.

-cert-request-file

A self-contained file which is sent to the CA. The Certification Generator will create this file given a private and public key. It is then up to the developer to send the file to the CA and arrange for the application for the certificate. Has a .p10 extension.

Reference: Symbian Developer Library, Symbian Ltd. 2002. Available at <http://www.symbian.com/developer/techlib/sdl.html>

Appendix B - Colour groups

Status pane items

Universal indicator icons
Reception off icon
Title text

Landscape items

Universal indicator icons
Reception off icon
Editing state icons
Signal icon/packet data indications
Battery icon
Other navipane icons
Landscape navipane text

Navipane items

Editing state icons
Signal icon/packet data indications
Battery icon
Other navipane icons
Navipane texts

Active tab items

Active tab icon colour
Active tab text

Passive tab items

Passive tab icon colour
Passive tab text

Main area items

Status indicators
Additional list icons
Main area texts

Unfocused application title texts

Idle text
Note text

Highlighted items

List texts
Grid text
List highlight additional list icons/form checkbox
Grid highlight additional list icons/gms images

Input frame items

Form list item textform data entry text
Form popup list checkbox
Search string Text
Setting text entry
Query text entry
Form slider line

Softkey texts

General left softkey text
General right softkey text
Idle Left Softkey Text
Idle Right Softkey Text
Popup Windows Left Softkey Text
Popup Windows Right Softkey Text

Primary Item Indications

View Lines
Heading Pane Separator Line
Lists Column Separator Lines
Setting List Column Separator Lines
Public Event
Private Event
Not Synchronized Event
2 Or More Events Overlapping
Event Indication On Focused Month

Secondary Item Indications

- Passive Month Day Numbers
- Shadow Text
- View Lines
- Main Pane Grid Cell Separator Lines
- Popup Windows Grid Cell Separator Lines
- Popup Separator Line In Options Menu
- Event Indication On Unfocused Month

Pop-up Window Items

- Editing State Icons
- Call Status Icons
- Popup Windows Text
- Submenu Texts

Calendar View Items

- View Day Abbreviations hours/week Numbers
- Calendar Views Additional List Icons

Setting Option Items

- Settings Popup List Checkbox
- Settings List Item Text
- Opened Settings List Value Item Slider Line

Setting Option Highlighted Items

- Setting List Highlight Checkbox
- Settings Value Item Text
- Settings List Value Item Slider Line

Cut\Copy\Paste Highlight

- Cut/Copy/Paste Highlight
- Link Text And Underline Indication

Cut\Copy\Paste Highlighted Items

- Copied Text

Link Highlight Indications

- Link Highlight

Music Player

- Function Indicators
- Music Player Left Softkey
- Music Player Right Softkey
- Music Player Main Pane Text
- Oscilloscope Line and Visualizer Accent
- Spectrum Bar Gradient Top
- Spectrum Bar Gradient Bottom

Others

- View Active Month Day Numbers/Day View List Items
- Calculator Operator/Operand
- Calculator Result
- Calculator Result Shadow
- Pinboard Input Field Item Title/Find String
- View Item Title
- Title Text In Idle
- Landscape Area Title Text
- Landscape Area Title Text In Idle
- Landscape Area Top Softkey Text
- Landscape Area Bottom Softkey Text
- Landscape Area Softkey Text In Idle
- Landscape Area Bottom Softkey Text In Idle

Appendix C - Real time model chart

The matrix below describes the way how the Real time model is created.

D = Duration

RC = Repeat Count

RD = Repeat Duration

Def = Defined

Inf = Infinity (very large number)

	D	RC	RD	Single Duration	Total Duration
#1	0	*	Def	RD	RD
#2	0	*	Inf	Inf	Inf
#3	0	Inf	0	Inf	Inf
#4	0	0	0	0	0
#5	0	Def	0	0	0
#6	Def	Inf	0	D	Inf
#7	Def	Inf	Def	D	RD
#8	Def	Inf	Inf	D	Inf
#9	Def	0	0	D	D
#10	Def	0	Def	D	RD
#11	Def	0	Inf	D	Inf
#12	Def	Def	0	D	D * RC
#13	Def	Def	Def	D	MIN (D * RC, RD)
#14	Def	Def	Inf	D	D * RC
#15	Inf	*	Def	RD	RD
#16	Inf	*	Inf	Inf	Inf
#17	Inf	*	0	Inf	Inf

Note:

Easiest result can be achieved by using only the duration and leaving the others as zero.

By writing -1 (minus one) you indicate that the value is undefined.

Appendix D - Graphics Optimization

File formats

S60 3.0 SVG rasterizing engine supports SVG Tiny 1.1 standard with additional support for :

- line and fill opacity
- gradient

File format	SVG Tiny
Compression	No (ASCII text or Binary)
Colour depth	24 bits / pixel
Masking files	No (implemented with opacity values from SVG file)

The screen module or SVG engine rendering colour depth may be less than 24 bits / pixel. The graphics are shown 'as is' without any image dithering methods used – this may result banding in large gradient areas.

SVG file format exported from a standard vector graphic authoring tool is supported. Due to different implementations of the SVG standard the file format compatibility problems may occur.

Graphics containing other features than what have been defined in the SVG Tiny standard or supported by S60 3.0 SVG rasterizing engine may not be displayed correctly. Vector graphics are rendered with smooth anti-aliasing effect on borders. This produces small gap between two adjoining vectors even if the edges are numerically matched without any gap. This can be avoided by overlaying the edges.

Optimizing graphics

Graphics optimization can be evaluated with different criteria:

- File size
- Size in pixels
- Complexity
- Features required

File size

Large file sizes increase the memory consumption and correspond generally well with slow rendering performance.

UI graphics need to be checked for large file sizes. More complex and detailed designs as well as large area graphics consume more memory.

If a file size is bigger than 10kB the file contents need to be re-evaluated for simplification of the design.

Template	Size (kB)*	Remarks
File header	0.323	VG2SVGT tool output
Average shape	0.1~1	Rectangular path with 10 curved anchor points
Gradient	0.26	3-colour, one more color += 0.085

*: SVGT file' storage size on disk, ASCII text format optimized with SVG2SVGT tool

Size in pixels

SVGT graphics are rendered to the layout area defined. The area aspect ratio and size may be different from the original graphics – the graphics are scaled and stretched to fill the area.

The required area sizes affect the graphic design: the larger the screen sizes the more complex and detailed the design can be – with smaller screen sizes the lesser details and simpler designs are preferred. Images can be divided into three size classes:

- small (10% of screen width)
 - medium (25% of screen width)
 - large(50% to full screen)
- simple design

more complex design possible

most complex design possible

The targets sizes for the different type of graphics are:

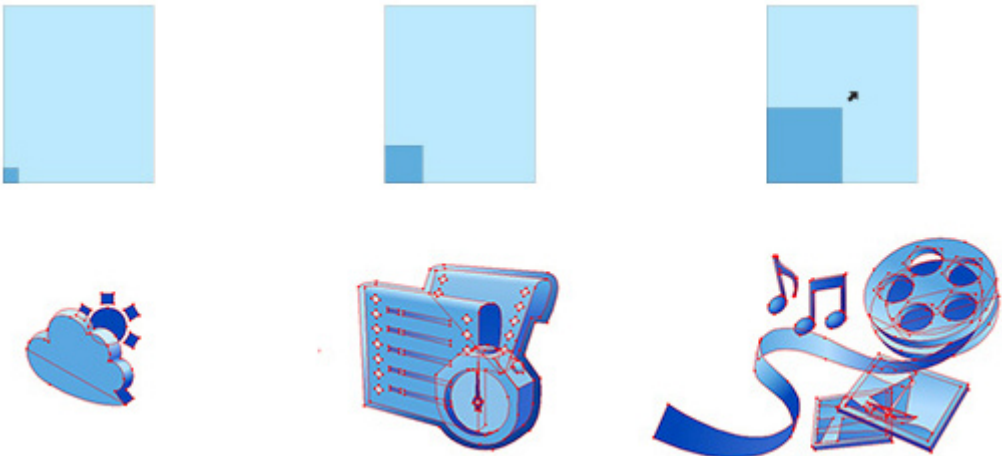
Graphic group	Size	Remarks
Menu graphic	<10KB	(exceptions possible)
Note graphic	<7KB	
Submenu graphic	<7KB	
Large list graphics	<7KB	
Medium list graphics	<7KB	
Small list	<4KB	

Complexity

The complexity of the graphics is mainly defined by the content and drawing style. A world map or a gothic-looking object is relative bigger in file size than a ball or a simplified modern looking object.

Complexity can be reduced without affecting the outlook of the object by:

- Reducing points (anchors)
- Reducing curved points
- Simplifying shapes (paths)



Different size graphics

Reducing points

Removing unnecessary points is a way to optimize graphics as each point consumes ~20-40 bytes of memory. Actions to do this are:

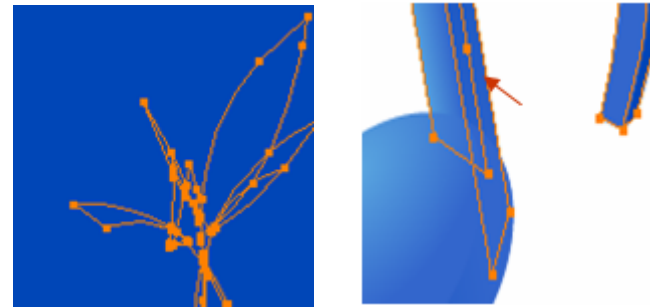
- Removing stacked points
- Removing points that have no visual impact

Points may be created stacked close to each. This may occur, for example, when multiple shapes have been combined with Boolean operations (e.g. union, subtract, divide).

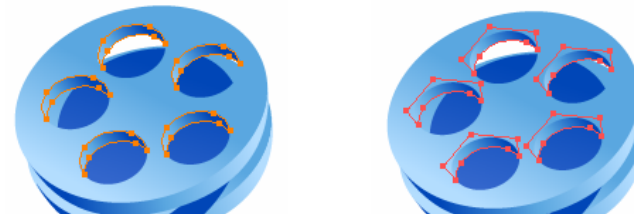
Simplify curved points

A curved line requires more time and CPU power to render than a straight line. Therefore utilizing straight lines whenever possible is preferable. Actions to do this are:

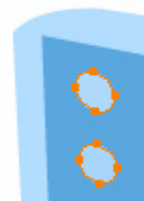
- Covert hidden curved lines to straight lines
- Change visually indifferent curved lines to straight lines
- Retract unnecessary handles



Remove points that do not have any visual effect - point's existence does not affect the shape's outlook.



If an outline is hidden, it is recommended to simplify it by converting the relevant curved points to straight ones.



If a curved line can not be recognized, convert them into straight lines.



If a line is not needed to be curved on both sides of a point retract the handle that is on the straight line side.

Simplify shapes

Simplifying shapes by removing unnecessary details is another step for optimization graphics. Actions are:

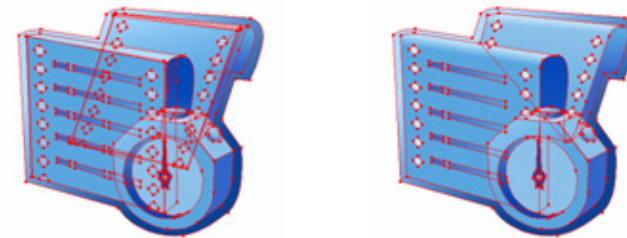
- Remove hidden shape details
- Combine shapes with similar fills

Demanding features

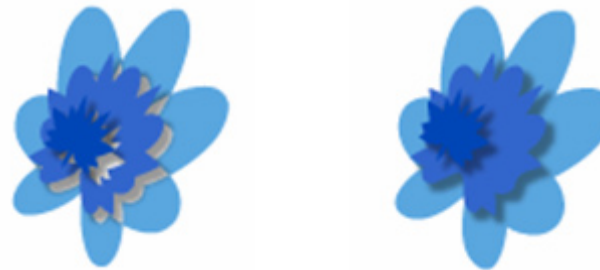
Gradient and opacity are relative demanding features for the SVG engine to render, especially when used in large areas. Optimization actions are:

- Use gradients and opacity sparingly
- Combine shapes with same gradient
- Do not use overlapping transparency (opacity)

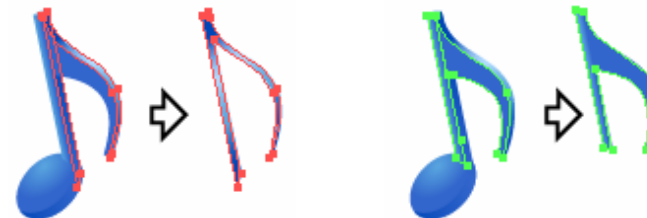
Avoid using overlapping transparency or transparency on a gradient. Create the same visual effect 'faking' the transparency outcome.



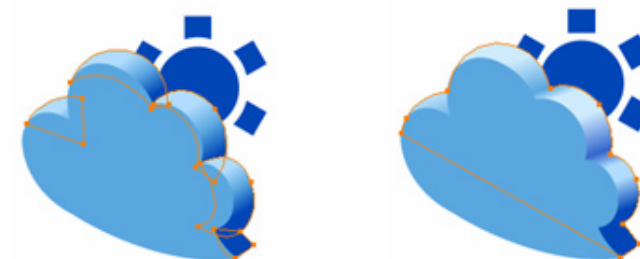
Remove hidden graphic details.



When graphics are overlapping do not subtract foreground shapes from the graphics behind as it creates overlapping edges and increases point count.



Combine connected shapes that have same or similar fill.



Unify shapes that can share the same gradient.