

NativeGeometry

NativeGeometry

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Getting started with NativeGeometry

NativeGeometry is a LiveCode extension which assists application developers working with LiveCode who wish to design cross-platform and localizable graphical user interfaces (GUI) at the speed of the thought.

Using NativeGeometry, you will be able to design without any effort complex GUI, NativeGeometry has been designed to be the less intrusive and to requires only few lines of code inside your application to be fully operational.

NativeGeometry is in version 3.x, this new versions brings a new impressive scaling engine that help you to create instantly DPI aware LiveCode application, and beautiful mobile application.

Setting up NativeGeometry

NativeSoft	NativeGeometry - License Manager		
Enter your serial number			
	To fully use NativeGeometry, you must enter a valid NativeGeometry 3 license Key. If you do not have a valid license key or a NativeGeometry 2 license, click here to purchase one: <u>store.nativesoft.net</u> To try freely NativeGeometry, click "Use evaluation edition" to use the "Evaluation edition". A nag screen will appear at the startup of your application and every ten minutes. Also you may NOT distribute software created with this edition for free, commercially, or within your organization.		
User name:			
License Key:			
Use evaluation edition	n 5 Cancel Previous Register 4		

Restart LiveCode after the installation of NativeGeometry.

At each startup, the NativeGeometry License Manager will open: accept the license agreement, and enter your user name(1), your company(2) and your license key (3). If you do not have a license key, you can try NativeGeometry by clicking "Cancel" (5) with the starter kit edition that is limited to 5 objects, or buy a license on the <u>NativeSoft Store</u>.

Once finished, click "Register" (4).

Note: You have to buy a license to remove the License Manager from poping at the startup of LiveCode.



This is the main NativeGeometry palette.

NativeGeometry has been designed to be effortless for the developer, to make an application using NativeGeometry, simply follow those steps.

Open NativeGeometry Help Center



Click (1) to open the NativeGeometry help center.

Place inside your main application stack the following code



Click (1) "Set up your application to use NativeGeometry", then copy the script in (2) inside your main application stack.

And that's all! When you will build your application, NativeGeometry will be embedded inside your application and at the startup will be loaded.

There is just one main thing you have to ever do in order to have NativeGeometry working: EVER PASS "resizestack" AND "preOpenCard" HANDLERS!

Using NativeGeometry

A sample stack

Untitled 3 *		
Open	<u> </u>	
I want to resize this field!		
	-	

To illustrate this example, we have created a simple stack with a button, a field and a scrollbar.

We want to have the field to be placed between the button and the scrollbar, and to have the field to fill the width of the card.

The first step is to select the object that you want to set the geometry of.

Open the geometry inspector palette			
NativeGeometry field ID 1004 of card id 1002 of stack Image: Set object Geometry Image: Set object Geometry Image: NativeGeometry is ready Image: Help Center			

About NativeGeometry

Click "Set object Geometry" to open the geometry inspector palette.

1 NativeGeometry_Inspect_1004			
Disable preview Select objects inspected			
Condition:			
No condition			
Stack			
Object			
Min width: Min height:			
Max width: Max height:			
Disable NativeGeometry Automatic Resize 6			
Generated Script 7 Cancel OK 9			

The geometry inspector is empty, it means that the object does not have any geometry relations set.

Some explaination about this palette:

- 1 "Disable preview", disable the preview of geometry modifications. If not activated the object geometry will be directly applied. (If you press "Cancel" then the object revert back to its original position)

- 2 "Select objects inspected", selects the objects edited by this geometry inspector.

- 3 "Condition", NativeGeometry handle single level geometry condition, see the associated chapter to learn how to use them.

- 4 "The geometry operation", define here what you want the object to do.

- 5 "Min/Max width/height", set the minimal or the maximal width/height that the object is allowed to have.

- 6 "Disable NativeGeometryAutomatic Resize", activate this button to disable the NativeGeometry feature that will make the object to fit to its content.

- 7 "Generated Script", click here to see the script that the NativeGeometry palette has generated.

- 8 "Cancel", cancel any updates and close the inspector.
- 9 "OK", apply any updates and close the inspector.

Set the left, the right and the top of the object

rev_NativeGeometry_Inspect_1004			
Disable preview Select objects inspected			
Condition:			
No condition 🔹			
Stack			
Min width: Min height:			
Max width: Max height:			
Disable NativeGeometry Automatic Resize			
Generated Script			
Cancel OK			

Information: The padding is a virtual property that is platform dependant and means the "left/top/right/bottom" of an object + a space defined by the platform.

To set the object to the left padding of the card, click "1".

To resize the object to the right padding of the card, double click "2".

To set the object to the bottom padding of another object, click "3".

The object dependency and custom relation palette

rev_NativeGeometry_Inspect_1004_Select	A family of the			
Simple relation	Disable preview			
Target:	Select			
 Advanced relation 				
the bottomPadding of button ID 1007				
Car				

To select the object that you want to depend on, click (1) "Select", then click the object that you want to depend on.

Select the object property that you want to use (2) and click (3) "OK" to apply.

Note: You can also set an advanced relation by clicking (4) "Advanced relation"

rev_NativeGeometry_Inspect_1004			
Disable preview <u>Select objects inspected</u>			
Condition:			
No condition 🗸			
Stack			
Object			
Min width: Min height:			
Max width: Max height:			
Disable NativeGeometry Automatic Resize			
Generated Script			
<pre>set the left of me to the leftPadding set the rRight of me to the rightPadd set the top of me to the bottomPaddir set the rBottom of me to the topPadd:</pre>			
Cancel OK			

Repeat the previous step in order to resize the bottom of the field to the top padding of the scrollbar (1).

Click (2) "Generated Script" to see the script generated by the inspector.

Click (3) "OK" to apply and close the geometry inspector.

The geometry of the object has been set, save your stack in order to save its geometry. (NativeGeometry geometry properties are located inside custom properties of the stack/card)

NativeGeometry 3 introduce the scale feature. This new feature allow LiveCode developper to create completely an application that will scale automatically depending on the screen resolution, DPI and user preferences.

This allow you to create easily good looking professional application without having to write one line of code.

What is scaled?	



NativeGeometry is handling only objects that are inside the NativeGeometry Databases. This means that if your object is not inside the NativeGeometry database, it will be not scaled.

NativeGeometry works like that in order to have the best performances.

when the scale is applied?

NativeGeometry will apply the scale up/down at the opening of the card. In the preopencard handler.

You must so: pass the preopencard handler, or call manually NativeGeometry with the command: ng_run (the long id of this card), true

How to add an object to the database?



An object can be added to the NativeGeometry and can not have any geometry relations.

To add objects to the NativeGeometry database, select them (1) then click "Set object Geometry"

Tip: Keep Shift key down to select several objects.

The NativeGeometry inspector will open.

Choice 1 Choice 2 Choice 3 Button	Disable preview Select objects inspected Condition: No condition Stack	e objects] bject Geometry caling on ID 1006 of card id 1002 of Center
	Objects Objects Min width: Min width: Max width: Max height: Scaling mode:	ut NativeGeometry
	 Disable content adaptation resizing Generated Script Cancel 	

Click (1) "OK".

That's all, now the objects are inside the NativeGeometry database.

Note: The NativeGeometry database is stored as a custom property of the card/stack. So when you save your card, geometry is saved too!

Playing with the scale



Now that you added the object to the NativeGeometry Databases, open the scale tool by clicking "Set scaling" (1).

You can play with the scrollbar (2), in the screenshot above we set the scale factor to 175%.

The objects identified by (3) were scaled up because they were in the databases. The object "4" was not scaled because it was not added.

An easy way to identify objects that are not in the databases is to scale up/down the interface.

To add all objects of your stack to NativeGeometry, select them all and do the previous operations.

Two different scaling mode

e Disable preview Condition: No condition	Select objects inspecte	ed orials Resources Dictionary
Stack	Object	button ID 1004 of card id 1002 of sta Set object Geometry Set scaling field ID 1013 of card id 1002 of sta Help Center
Min width: Max width: Scaling mode: F Disable con Font Obje Generated Stores	Min height: Max height: Max height: Max height: Max height: Max height: Max height: Max height: Max height: Max height: Stating (default) And Stating Max height: Max height: Max height: Max height: Max height: Stating (default) And Stating Cancel OK	About NativeGeometry

NativeGeometry 3 has two scaling mode:

- Font scaling (the default one)
- Object scaling

You can choose the desired scaling mode by using the NativeGeometry inspector and click (1).

Font scaling



Font scaling is designed for Desktop application, for DPI settings and localization purposes.

The font scaling only update the font size of the objects. Then like in NativeGeometry 2 the automatic resize engine will resize the object to fit to its content.

The button and the list are so good looking on all platform with any DPI, and with any text.





The object scaling has a different phylosophy. It is mainly intended for Mobile application development.

The object scaling simply do a scale up/down of an object, including its font (1). The automatic resize engine is disabled and a simple "zoom" is applied.

Note: The object scaling does not consider the content of the object, so for localization purpose you have to create objects that are big enough to hold the text for all languages.

Some advices to not fall into some difficult situations!

Develop with a scale of 100%

💋 Unti	tled 2 *		×
Choic	e1		
Choic	e 7	1	Set object Geometry
	·	Reset to 100%	Set scaling
	Scale factor: 100% - DPI size: 96	More options	button ID 1004 of card id 1002 of
		Button Button	Help Center
			 About NativeGeometry

LiveCode IDE is working at a DPI of 96. To prevent any problems while you are developping your application, simply reset the scale to 100%.

Tip: By letting the scale to 100% while you are developping your app, you will prevent possible problems.

Use NativeGeometry automatic font set

```
on preopenstack
    -- Setting the font for this platform.
    ng_setStackFont ng_getSystemFont(), (the name of this stack)
    pass preopenstack
end preopenstack
```

NativeGeometry has a command "ng_setStackFont". This command allow you to set the font for your entire application instantly.

The ng_getSystemFont() will returns the right font to use on the platform.

This command handle the scale feature of NativeGeometry and so will help you to not fall into some strange scaling situations.

Note: You *must* avoid to handle yourself the scale up/down of the font. Set the font to the default ones.

Tip: The command ng_setStackFont by default does not change the font size of objects having a big font (> 14), this allow you to keep titles in your app.

NativeGeometry provide you a ready to use control to put in your configuration center. So that your users can scale up/down your application.

Getting the object

Click "Set scaling" (1), then (2) "More options" and "Place scaling object on the card" (3).

Apopup dialog will appear explaining you that the control has been placed into the clipboard.

Untitled 4 *		
Scale factor: 100% - DPI size: 96	•	Reset to 100%

On a stack, do Ctrl+V or Cmd+V to paste the scale factor group control.

How to initialize the control

To initialize the control, you have to put the following script in the stack: set the scaleValue of scrollbar "scale" to ng_getConfig("scale")

You can now control the scale factor of your application. The object has been documented with NativeDoc.

Note: Don't forget to set the geometry relations of the group in order to have it good looking and scalable.

Using the API

NativeGeometry has a complete documented API.

Accessing the API (HTML)



Open the NativeGeometry help center and click (1) to open the API.

Accessing the API with NativeDoc



NativeDoc 3.0 allows you to **freely** browse imported documentation.

Simply install NativeDoc and NativeGeometry help will appear automatically inside the NativeDoc Navigator.

To open the navigator, click (1) "Dictionary Navigator".

Then you will see "NativeGeometry" (2) as external documentation. You can perform a search in the area (3).

The documentation is displayed in (4).

To install NativeDoc, go to the NativeSoft website: http://www.nativesoft.net/products/nativedoc/

NativeGeometry on Mobile

NativeGeometry 3 introduced scaling feature. With this functionnality you have to develop your application for only one screen resolution and then NativeGeometry will take care of updating the object font and object size on all screen.

Note: If you images are not vectorial, you will have to change them for an high/low resolution version depending on the mobilePixelDensity() function value.



Almost all mobile operating system have the same screen ratio.

So, as NativeGeometry will scale everything, we have to develop the application at a low screen

Advantage: You can develop your mobile app on a small screen laptop computer :)



Now you have to set up NativeGeometry, as indicated in <u>Make your application using</u> <u>NativeGeometry</u>, you have to copy and paste the code contained in the NativeGeometry help center in the stack code.

In (1), you can see that we enable the full resolution feature on iOS.

In (2), we set the general scale to the system scale. On mobile, ng_getSystemScale() is using the mobilePixelDensity() function.

High/Low resolution images

You have to add your own code in order to handle image for high or low screen resolution.

Or you can use only high resolution image and scale them down with LiveCode. Then let the NativeGeometry scale engine increase the image size and let LiveCode compute the image.

Adding some objects



Place one button on the stack, we named it "top button" in this example.

Then set its geometry relation to:

- (1). Have its left and top locked to the left and top of the stack.
- (2). Have its right resized to the width of the stack.
- (3). And set the scaling mode to "Object scaling"

Note: Setting the scaling mode "Object scaling" is mandatory on mobile! The font scaling method is designed for Desktop platform and the results on mobile are uncertain.

Click "OK" to close the inspector.

MyMobileApp		
	Top button	Disable preview Select objects inspected
		Condition:
Choice 1 Choice 2	Â	No condition 🗸
Choice 3		
1		Stack 2
		Object
r		Min width: Min height:
		Max width: Max height:
		Scaling mode: Object scaling 👻
		✓ Disable content adaptation resizing
		Generated Script
		Cancel OK
	h	

Now we will place a list on the stack.

Drag and drop the list on the stack (1), set its geometry relation (2) and don't forget the scaling mode to "Object scaling".

Running the application on iOS simulator retina

	- 11	Carrier 奈	1:17 PM
Top button			Top button
Choice 1 Choice 2 Choice 3		Choice 1 Choice 2 Choice 3	

You can see the application running on Retina screen. Objects has been scaled for the resolution.

Running the application on iOS simulator retina

OOO MyMobileApp	Carrier 🤝 1:19 PM 📼
Top button	Top button
Choice 1 Choice 2 Choice 3	Choice 1 Choice 2 Choice 3

The same application running on standard iPhone screen. Object was not scaled.

NativeSoft NativeGeometry		
 NativeGeometry Application Compilation Compiler Configuration ng_init ng_SetConfig ng_GetConfig() Engine Font utilities Geometry Management 	ativeGeometry • 🛋 o command of the Na command ng_SetCon arameters	Configuration > I ng_SetConfig ng_SetConfig tiveGeometry configuration property pProperty to pVal fig pProperty, pValue
Utilities	vpe Name	Description
- 🗲 libraryStack	• pProperty	Configuration property to set.
 preOpenCard preopenstack resizeStack ng_ver() 	pValue	Value of the configuration property to set.

NativeGeometry has a complete API that allow you to tune it in order to have it fitting your needs. Do not hesitate to take a look at the API documentation!

The API is accessible within the NativeGeometry help center.

Solving problem

You broke the scale of your stack? Now when you set the scale to 100% it shows at a different scale value?

Don't worry, the scale problem solver tool is here to fix that.

The problem

Untitled 2 *		×
Cholce 3 Cholce 2 Cholce 3		
E	Scale factor: 100% - DPI size: 96	Reset to 100% More options)f
	Button Button	Help Center About NativeGeometry

If you are meeting a problem looking to the screenshot above, then the scale solver tool is for you.

What happened?

- The engine stored in the card a wrong scale value.
- Ascript broked the stored card scale value.

Warning: This can happen if you set too small increment to the scale value! This is why the scale factor object have increment of 5%!

What to do?

- We have to scale up the card until we reach 100% and reset all scaling properties.

	×	
Scale factor: 100% - DPI size: 96	Reset to 100%	2
Button Button	Place sc Place sc Scale pr About NativeGeometry	oblem solver

Click "More options..." (1) then "Scale problem solver" (2).

Awarning window will appear, read it carefully, because you can do severe damage to your stack! It says: **DO NOT CHANGE the font scaling while using this tool.**

So, simply don't change it.

The scale problem solver

	X
Selected object:	Select an object
Target card:	
Scale problem solver	Reset to 100
Scale factor: 100% - Selected object texts	DPI size: 96 size: 12
	Mark that the current scale is 100%
This stack is intended to solve scaling problem. If the scaling of the card at 100% is different than the one expected at 100%, then you can use the slider above to set the right scaling value of the card. Once you found the right scaling for this card; click "Mark that the current scale is 100%" button and close this tool.	
	Close

The scale problem solver is an intelligent tool. It track the selected object.

So you have to use the select tool in LiveCode, and select an object on the problematic card.

Increase of decrease the scale value of the card

Untitled 2 *	Selected object: field ID 1013 of card id 1002 of stack "Untitled 2" Target card: card id 1002 of stack "Untitled 2"
Choice 1 Choice 2 Choice 3	Scale problem solver Reset to 100 Scale factor: 100% - DPI size: 96 Selected object textsize: 8 Mark that the current scale is 100%
	This stack is intended to solve scaling problem. If the scaling of the card at 100% is different than the one expected at 100%, then you can use the slider above to set the right scaling value of the card. Once you found the right scaling for this card; click "Mark that the current scale is 100%" button and close this tool.
ler	Close

So you selected an object on the card. (1)

The problem solver said us that the textsize of the object is "8" (2), it should be set to 12 on Windows 7.

And the actual scale factor is 100% (3).

What to do?

- You have to increase the scale value until you don't have the textsize of the object set to 12. So drag the scrollbar to increase the scale.

Saving the modifications



So we had to zoom 45% (1) in order to have the object textsize set to 12 (2).

Now that we have the correct textsize set at a 100% scale, we can mark that this card is not scaled (100%). Click (3) "Mark that the current scale is 100%".

Close the tool.

Note: Use only this tool as recovery tool!