# Installer for macOS





Note: This is for **OS X Installer packages** which are to be **distributed outside the Mac App Store**. Packages for submission to the Mac App Store follow different rules. If you have any questions then please don't hesitate to write to <u>office@kamgam.com</u>.

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### **Overview (READ THIS FIRST)**

Before any app from the internet is startet <u>MacOS checks</u> whether or not this software is to be trusted. In order for your software to be trusted you will have to <u>sign</u> and <u>notarize</u> the installer and the app within it. This tool provides a GUI to do that.

These are the steps in detail:

#### 1. <u>APP SIGNING</u>

You will have to sign the app bundle exported by Unity (.app).

#### 2. <u>APP NOTARIZATION</u>

The signed app then has to be upladed to Apple servers for notarization. Your whole .app will be uploaded and processed in an async queue. This can take from 10 seconds up to a few hours. Usually it takes just under a minute. Though be prepared to wait for results (see APP CHECK).

#### 3. <u>APP CHECK</u>

You need to wait for the notarization to finish and then check if it was successful. Only after the app has been successfully notarized you can create a notarized installer from it.

#### 4. <u>APP STAPLING</u>

Once the app has been notarized successfully you need to staple it (meaning add some notarization data to the app to make it work even if the user is offline).

#### 5. INSTALLER CREATION (AND SIGNING)

The installer has to be created and signed. It will contain the app and some extra files (like a post-install script, your logos, text, ...).

#### 6. INSTALLER NOTARIZATION

The signed installer then has to be upladed to Apple servers for notarization. Both the APP and the INSTALLER need to be notarized separately.

The reason is that the installer needs to be trusted while installing the app and the app needs to be trusted when it is started (thus two notarizations are needed).

#### 7. INSTALLER CHECK:

Only after the installer package (.pkg) has also been successfully notarized you will have a fully functional installer which can be used on any mac.

It is quite an involved process and things may go wrong. Please come back to this manual for more details if needed.

#### Please proceed with checking the prerequisites.

### **Prerequisites**

This manual assumes you are building on a mac and that you have:

1) macOS 10.13.6 or later Building a new app for notarization <u>requires</u> macOS 10.13.6 or later.

2) An Apple developer account You can join the Apple Developer Program here: <u>https://developer.apple.com/programs/</u>

3) A valid certificate for signing APPLICATIONS See <u>Prerequisites for Signing</u> for more details.

4) A valid certificate for signing INSTALLERS See <u>Prerequisites for Signing</u> for more details.

5) Xcode 13 or later (or Xcode 14 <u>after fall 2023</u>) You can get Xcode here: <u>https://developer.apple.com/xcode/</u>

If you have multiple Xcode versions installed then please use "sudo xcode-select -s /path/to/Xcode13.app" to select the appropriate xCode version.

**NOTICE**: After fall 2023 notarization requires Xcode 14 and macOS 12.4 Source: <u>https://developer.apple.com/videos/play/wwdc2022/10109/?time=90</u>

6) Packaging & signing binares

Usually these binaries come bundled with macOS or the Xcode dev tools and no action by you is required.

- <u>pkgbuild</u> to package the .app into a .pkg
- <u>pkgutil</u> to verify the package signatures
- productbuild to build the installer
- productsign to sign the installer .pkg
- <u>codesign</u> to sign the .app within the .pkg and verify the signatures
- <u>spctl</u> to verify the notarization succeeded
- <u>xcrun</u> + <u>notarytool</u> to notarize .pkg files
- <u>sed</u> to replace text in templates
- <u>plutil</u> to modify .plist files

7) Ensure your build machine has network access See the <u>Apple Notarization Documentation</u> for more details.

## 8) AFTER INSTALLATION of the tool please make sure you have execute permissions on the shell scripts.

You can ensure this by executing these commands within the "Assets/Kamgam/MacInstaller/MacInstallerBuild/" folder:

chmod u+x \*.sh

### **Making an Installer**

As mentioned in the overview making an installer takes multiple steps.

! Please make sure you have execute permissions on the shell scripts, see prerequisites.

First you will have to build your app into an app bundle (also called "application)".

A bundle is the default output of the Unity build process for macOS (it's a folder ending with ".app").

< > /Users/geo/d	· <u> </u>	Q		
🚞 _stuff	>	🔏 Mac InstallerDer	no.app	
📄 .git	>			
gitignore				
📄 build-mac	>			

Once you have the app you can start with making the installer. Go to **"Window > Mac Installer**".

Window	Help
Minimize	ЖM
Zoom	
Bring All to	o Front
Panels	>
Search	>
Layouts	>
Mac Instal	ler

The info screen will be the first thing you see. It contains an overview and some useful links.

•••	Mac Installer					
Mac Installer	:					
	Version 1.0.0 🥥 Manual 🌣 Settings					
Info	App (sign) App (notarize) App (check) App (staple) Inst. (create) Inst. (notarize) Inst. (check)					
Welcome to t Creating a full It may also be 1) APP SIGNIN You will have	he Mac Installer Generator. y signed and notarized installer is a rather involved process. Please read this before you proceed. worth to take a look at the manual (button top right). IG: to sign the app bundle exported by Unity (.app).					

You should progress through all the steps from left to right.

### 1) App Signing

First you will have to sign the app which Unity has built for you.

			Mac II	nstaller			
Mac Installer							:
					Version 1.0.0	Ø Manual	🌣 Settings
Info	App (sign)	App (notarize)	App (check)	App (staple)	Inst (create) I	nst (notarize)	Inst (check)
	, ,pp (sign)	//pp (notan2c)	, pp (encert)				
Source App (.	app bundle)						
/Users/geo/de	v/MacInstaller,	/build-mac/Mac	InstallerDemo.a	арр			
		(+) Enter the	e path above or	drag & drop the	bundle here.		
Target (.app)							
{path}{name}-	signed.{ext}						
/Users/geo/de	v/MacInstaller,	/build-mac/Mac	InstallerDemo-	signed.app	Reset	Сору	Show
App Entition	nto						
I ne entitieme	nts define what	t permissions you	ir app will requ	est from the use	r.		
	Open Enti	tlements (.plist)			Entitlemer	nts Manual	
Signing							
Developer Apr		our Name (V/123	156789)				
			+50/03)				
			Sia	n Ann			
				Чтрр			
►Logs							

**Source App**: The "Source App" has to point to the ".app" bundle which you have built. Usually it takes that info from the last build report automatically.

HINT: you can drag & drop your .app folder on that input field (no need to type it all in).

**Target**: The "Target" path will define where the signed app will be stored. There are some handy placeholders "{..}" but you can also enter a custom path. It shows the resolved path below.

**App Entitlements**: You can specify some permissions for your app in an Entitlements.plist file. By default no extra permissions are set. To modify them click the **"Open Entitlements**" button. To find out more about it please refer to the <u>Apple Manual on Entitlements</u>.

The Entitlement.plist is part of the MacInstallerBuild~/Template folder. In there you can find all the template files used to build the app and installer. These template files are copied and then used for packaging the build (see <u>"Modifying Templates</u>").



**Signing**: Enter your Developer **Application** ID. You can copy it from your "Developer ID Application" certificate.

HINT: If you need help getting one please read the "Prerequisites for Signing" section.

Name	Kind	Date Modified	$\sim$	Expires	Keychain
🔄 Developer ID Certification Authority	certificate			01.02.2027 at 2	System Roots
Contraction:	certificate			01.02.2027 at 2	login
📷 Developer ID Installer:	certificate			01.02.2027 at 2	login
Developer ID Certification Authority	certificate			01.02.2027 at 2	login
📴 Developer ID Certification Authority	certificate			17.09.2031 at 0	login

Pressing the "**Sign App**" button will start the signing process. Depending on your app size this can take from few seconds up to a couple of minutes.

Once it has completed successfully you will see a green "Next Step" button.

In case of errors you can look at the logs below. They will show the output of the commands used to sign the app.

	Mac Installer	
Mac Installer		
	Version 1.0.0 A Manual	- Settings
		Settings
Info App	o (sign) App (notarize) App (check) App (staple) Inst. (create) Inst. (notarize) Inst.	(check)
Source App (.app bu	undle)	
/Users/geo/dev/MacI	Installer/build-mac/Mac InstallerDemo.app	
	(+) Enter the path above or drag & drop the bundle here.	
Target (.app):		
{path}{name}-signed.		
/Users/geo/dev/Macl	Installer/build-mac/Mac InstallerDemo-signed.app Reset Copy S	show
App Entitlements		
The entitlements defi	ine what permissions your app will request from the user.	
O	open Entitlements (.plist) Entitlements Manual	
Signing		
Developer Application	on ID: Your Name (V123456789)	
	Sign App	
App was signed succ		
Go to signed app	Next Step: Notarize app	
▼ Logs		
[2022-10-18 14:32:0	00][INFO] Copying signed app to '/Users/geo/dev/MacInstaller/build-mac/Mac	
InstallerDemo-signe	ed.app'.	
ProcessHelper: Exec	c was done with exitCode 0 after 3 seconds.	
		•
C		

HINT: The actual signing will be done by a bash script located in the MacInstallerBuild~ directory. Take a look at it in case you want to investigate the signing process.

< > /Users/geo/dev/MacIns	staller/UnityMacInst 🚈 🗸 🤇		· û ⊘ ⊙ · <b>∵</b>
MacInstaller >	MacInstaller.asmdef	.gitignore	#!/bin/bash
MacInstaller.meta	MacInstaller.asmdef.meta	app-signed >	#Configuration Variables and
	MacInstallerBuild~	📄 build-macos-x64.sh	Parameters
	Scripts >	LICENSE.txt	#Find script root (first try \$0
	Scripts.meta	🖺 notarize-macos-x64.sh	available)
		NOTICE.txt	<pre># see: http:// mvwiki.wooledae.ora/BashFA0/</pre>
		📄 sign-app.sh	



Now we can move to the next step. The notarization.

Press the "Next Step" button.

### 2) App Notarization

The notarization is necessary so that the Apple servers know your app is trustworthy.

The signed app has to be upladed to Apple servers for notarization. Your whole .app will be uploaded and processed in an async queue. Usually it takes just under a minute. Though be prepared to wait for results, it may take longer.

Depending on the size of your app and your upstream speed the upload will take a while. Please be patient.

	Mac Installer						
Mac Installer							:
					Version 1.0.	0 🕑 Manual	Settings
Info	App (sign)	App (notarize)	App (check)	App (staple)	Inst. (create)	Inst. (notarize)	lnst. (check)
Signed App (.a	ipp)						
/Users/geo/dev	/MacInstaller,	/build-mac/Mac I	nstallerDemo-s	signed.app			
	(+	-) Enter the path a	above or drag 8	drop the SIGN	ED App (.app) he		
Credentials fo	r notarization						
Enter your nota	rization crede	ntails.					
Apple ID	ot	ffice@yourcompa	any.com				
TeamID	V	123456789					
Password (is no	ot saved) 🛛 🔭	******	**				
Manual and do	ocumentation:						
A	Apple Manual		Unity	y Manual		Ø Manua	
Send notarization request							
► Loas							

Signed App: The path to the signed .app from the previous step. Usually that is copied over automatically.

#### Credentials for Notarization:

Please refer to the <u>"Prerequisites for Notarization</u>" section if you do not yet have notarization credentials.

Apple ID: Your developer account Apple ID. Usually that's your email address.

Team ID: The developer Team ID. Usually that's the same as in the developer certificate.

Password: Your notary app-specific password. Usually in the form of "xxxx-xxxx-xxxx.".

NOTICE: "app-specific" in this context does not mean you need an extra password for every app you build. Instead it refers to the <u>Apple "app-specific" password mechanism.</u>

Pressing the **"Send notarization request"** button will start sending your app to Apple for notarization.

izatio	on	
n cr	Notarizing App	
d)	Uploading app to the apple notarization service (please wait).	Cancel
tation		

This may take a while. Please be patient.

Please refer to the <u>documentation for notarizing custom installer packages</u> if you need more info on how things work behind the scenes.

Once the upload has completed successfully you will see the green "Next Step" button.

		Mac Installer				
Mac Installer					:	
			Version 1.0.0	Manual	🌣 Settings	
Info App (sign	) App (notarize) A	pp (check) App (staple)	Inst. (create) Ins	st. (notarize)	Inst. (check)	
Signed App (.app)						
/Users/geo/dev/MacInstal	er/build-mac/Mac Ins	tallerDemo-signed.app				
	(+) Enter the path abo	ove or drag & drop the SIGNE	ED App (.app) here.			
Credentials for notarizati	on					
Enter your notarization cre	dentails.					
		/ com				
	V122456790					
	VIZ3430769					
Password (Is not saved)	• • • • • • • • • • • • • • • • • • •					
Manual and documentation	on:					
Apple Manua	al	Unity Manual		Ø Manua		
		Send notarization request				
Notary submission sent. Si						
5c8a642c-710a-4927-adb7-f7bd14ec6571						
<b>NOTICE</b> : This does not yet mean the notarization succeeded. Apple servers are working on it and the result can be fetched by using the SUBMISSION ID shown above.						
	Next S	Step: Check notarization res	ults			
▶ Logs						

**NOTICE:** Having successfully uploaded your app for notarization does NOT mean it has been notarized.

Now would be the right time to grab a cup of coffee as you will have to wait until the Apple servers have analyzed your app. Usually this takes just about one minute but it may take longer (up to 24 hours according to Apple).

In order to check the status of you submission you can go to the next step "App (check)".

Press the "Next Step" button once you are ready to proceed.

### 3) App Check (Notarization)

You need to wait for the notarization to finish and then check if it was successful. Only after the app has been successfully notarized you can create a notarized installer from it.

This is how the screen will look like if your App has not yet been processed by Apple:

			Mac In	staller			
Mac Installer							:
					Version 1.0	.0 🛛 🛛 Manual	🌣 Settings
Info	App (sign)	App (notarize)	App (check)	App (staple)	Inst. (create)	Inst. (notarize)	Inst. (check)
Notarization S	Submission ID:						
5c8a642c-710	)a-4927-adb7	-f7bd14ec6571					
Credentials fo	or notarization						
Apple ID	0	ffice@yourcompa	any.com				
TeamID	V	123456789					
Password (is n	ot saved) *	******	**				
			Check Sı	Ibmission			
Your submission Message: Sub id: 5c8a642c	on is still being mission log is r -710a-4927-a	processed. iot yet available c db7-f7bd14ec65	or submissionId 71	does not exist			
For more inforr	mation please o	check the logs be	low.				
▼Logs							
ProcessHelper: Executing in /Users/geo/dev/MacInstaller/UnityMacInstaller/Assets/Kamgam/MacInstaller/MacInstallerBuild~/: bash -c 'xcrun notarytool log "5c8a642c-710a-4927-adb7-f7bd14ec6571"apple-id "**secret**"team-id "**secret**"password "**secret**"' Submission log is not yet available or submissionId does not exist id: 5c8a642c-710a-4927-adb7-f7bd14ec6571 ProcessHelper: Exec was done with exitCode 1 after 2 seconds.							

Usually it takes just a few minutes to notarize an app. If it takes longer then maybe something went wrong or the Apple servers are very busy.

If something went wrong then the logs will contains detailed information about that in the JSON format.

HINT: The notarization is be done by a bash script located in the MacInstallerBuild~ directory. Take a look at it in case you want to investigate the process.



After a while you should be able to get a positive response from the notarization servers.

Mac Installer     Mac Installer     Mac Installer     Info     App (sign)     App (notarize)     App (check)     App (staple)   Inst. (notarize)     Notarization Submission ID:     5c8a642c-710a-4927-adb7-f7bd14ec6571     Credentials for notarization     Apple ID        Office@yourcompany.com     TeamID   V123456789   Password (is not saved)        Check Submission     Result received. Submission status is:   Accordings   Image: App Stapping        Details							
Mac Installer							
Version 1.0.0  Manual  Settings Info App (sign) App (notarize) App (check) App (staple) Inst. (create) Inst. (notarize) Inst. (check) Notarization Submission ID:							
Info App (sign) App (notarize) App (check) App (staple) Inst. (create) Inst. (notarize) Inst. (check)   Notarization Submission ID:   Sc8a642c-710a-4927-adb7-f7bd14ec6571   Credentials for notarization   Apple ID office@yourcompany.com   TeamID V123456789   Password (is not saved)   ************************************							
Into       App (sign)       App (notarize)       App (check)       App (staple)       Inst. (create)       Inst. (notarize)       Inst. (check)         Notarization Submission ID:       5c8a642c-710a-4927-adb7-f7bd14ec6571       Inst. (check)       Inst. (check)         Credentials for notarization       Apple ID       office@yourcompany.com       Inst. (check)         TeamID       V123456789       V123456789         Password (is not saved)       ***************************       Check Submission         Result received. Submission status is:       Next Step: App stapling       Details         {       Next Step: App stapling       Inst. (check)							
Notarization Submission ID:         5c8a642c-710a-4927-adb7-f7bd14ec6571         Credentials for notarization         Apple ID       office@yourcompany.com         TeamID       V123456789         Password (is not saved)       ************************************							
5c8a642c-710a-4927-adb7-f7bd14ec6571         Credentials for notarization         Apple ID       office@yourcompany.com         TeamID       V123456789         Password (is not saved)       ************************************							
Credentials for notarization         Apple ID       office@yourcompany.com         TeamID       V123456789         Password (is not saved)       ************************************							
Apple ID       office@yourcompany.com         TeamID       V123456789         Password (is not saved)       ************************************							
TeamID V123456789 Password (is not saved) ************ Check Submission Result received. Submission status is: Avrophen Next Step: App stapling Details {							
Password (is not saved)  ************  Check Submission  Result received. Submission status is: Accepted  Next Step: App stapling  Details {							
Check Submission Result received. Submission status is: Accorptica Next Step: App stapling Details {							
Check Submission Result received. Submission status is: Accepted Next Step: App stapling Details {							
Result received. Submission status is: Accepted Next Step: App stapling Details {							
Next Step: App stapling Details {							
Details							
"logFormatVersion": 1.							
"jobld": "5c8a642c-710a-4927-adb7-f7bd14ec6571",							
"status": "Accepted",							
▼ Logs							
"issues": null							
ProcessHelper: Exec was done with exitCode 0 after 3 seconds.							

If you are having trouble getting the notarization to work then please refer to the Apple Notarization Manual.

Press the "Next Step" button once you are ready to proceed.

### 4) App Stapling

Once the app has been notarized successfully you need to staple it (meaning you need to add some notarization data to the app to make it work even if the user is offline).

The only input required for stapling is the path to the notarized app. In your case that's the signed app. Usually the path is set automatically by the previous notarization step.

	Mac Installer								
Mac Installer							:		
					Version 1.0.0	Ø Manual	🌣 Settings		
Info	App (sign)	App (notarize)	App (check)	App (staple)	Inst. (create) Ir	nst. (notarize)	Inst. (check)		
Signed & nota	rized App (.ap	p)							
/Users/geo/dev/MacInstaller/build-mac/Mac InstallerDemo-signed.app									
(+) Enter the path above or drag & drop the SIGNED & NOTARIZED App (.app) here.									
Manual and documentation									
	Stapling Manual (Apple) 🛛 🚱 Manual								
Staple App									
Stapling succeded.									
Next Step: Installer creation									
► Logs	►Logs								

Press the "Next Step" button once you are ready to proceed.

### 5) Installer Creation and Signing

The installer has to be created and signed as well. It will contain the notarized app and some extra files (like a post install script, your logos, license text, ...).

		Mac Ir	nstaller						
Mac Installer						:			
				Version 1.0.0	0 😯 Manual	🌣 Settings			
Info App (sig	n) App (notarize	) App (check)	App (staple)	Inst. (create)	Inst. (notarize)	Inst. (check)			
Source App (.app bundle)									
/Users/geo/dev/MacInstaller/build-mac/Mac InstallerDemo-signed.app									
	(+) Enter ti	ne path above or	drag & drop the	bundle here.					
Target (.pkg):	Target (.pkg):								
{path}{name}-{version}.p	kg								
/Users/geo/dev/MacInsta	iller/build-mac/Ma	c InstallerDemo-s	signed-0.1.pkg	Reset	Сору	Show			
Infos									
Product Name:	UnityMacInstalle	erDemo				override			
Product ID:	com.Kamgam.Ur	nityMacInstallerD				override			
						override			
Installer Content									
Modify the TEMPLATE assets to customize the installer texts, logo and license.									
Open Templ	ate	Distrib	ution Manual		🕑 Manu	al			
Signing									
Signing	for notarization)								
Developer Installer (D: Vour Name (V123456780)									
	Create Installer								
►Logs									

**Source App:** The path to the signed and notarized app. Usually that's set automatically by the previous step.

Target: The path where the installer package (.pkg file) should be created.

**Infos**: Some of the infos for the installer are taken from the Unity build settings. If you want you can override them here.

**Installer Content**: The texts, logos, etc. used for creating the installer are located in the Template folder. Edit them to change the contents of your installer.

< > /Users/geo/dev/MacIns	staller/UnityMacInst ≔ 🗸 C		
<ul> <li>MacInstaller.asmdef</li> <li>MacInstaller.asmdef.meta</li> <li>MacInstallerBuild~</li> <li>Scripts &gt;</li> <li>Scripts.meta</li> </ul>	<ul> <li>app-signed &gt;&gt;</li> <li>build-macos-x64.sh</li> <li>LICENSE.txt</li> <li>notarize-macos-x64.sh</li> <li>NOTICE.txt</li> <li>sign-app.sh</li> <li>staple-app.sh</li> <li>target &gt;&gt;</li> <li>Template &gt;&gt;</li> </ul>	<ul> <li>Distribution</li> <li>Entitlements.plist</li> <li>Resources</li> <li>scripts</li> </ul>	<ul> <li>banner.png</li> <li>conclusion.html</li> <li>LICENSE.txt</li> <li>welcome.html</li> </ul>

There are some strings that will be replaced in any of the \*.html files.

\_\_PRODUCT\_\_ => Will be replaced with the Product Name from the Infos section. \_\_VERSION\_\_ => Will be replaced with the Version from the Infos section.



**Signing**: Enter your Developer **Installer** ID. You can copy it from your "Developer ID Installer" certificate.

HINT: If you need help getting one please read the "Prerequisites for Signing" section.

Name	Kind	Date Modified	~ Expires	Keychain
🔄 Developer ID Certification Authority	certificate		01.02.2027 at 2	System Roots
📴 Developer ID Application:	certificate		01.02.2027 at 2	login
📷 Developer ID <u>Installer</u> :	certificate		01.02.2027 at 2	login
Developer ID Certification Authority	certificate		01.02.2027 at 2	login
📷 Developer ID Certification Authority	certificate		17.09.2031 at 0	login

NOTICE: You can disable the signing process but then you won't be able to notarize your installer.

During the signing process you may be asked multiple times to enter your password to allow the "productsign" command access to the certificates in the keystore.

•••			Mac Ir	staller			
Mac Installer							:
					Version 1.0.	.0 🕑 Manual	🌣 Settings
Info	App (sign)	App (notarize)	App (check)	App (staple)	Inst. (create)	Inst. (notarize)	lnst. (check)
Source App (.a	app bundle)						
/Users/geo/de	v/MacInstaller	/build-mac/Mac	InstallerDemo-	signed.app			
		(+) Enter the	e path above or	drag & drop the	bundle here.		
Target (.pkg):	:						
{path}{name}-	{version}.pkg						
/Users/geo/de	v/MacInstaller,	/build-mac/Mac I	InstallerDemo-s	signed-0.1.pkg	Reset	Сору	Show
Infos			Build	ding Installer			
Product Name	:						override
Product ID:		Building You may	v be asked to unlo	ock the key chain f	or signing	Cancel	override
Version:		Building Fourma			or organing.		override
Installer Conte	ent		_				
Modify the TE	MPLATE as		oductsign wa	nts to sian usi	na kev "KAM	GAM	
0	pen Templa	e.L	J." in your key	chain.		Manu	al
Signing		exec To a	allow this, enter	the "login" keych	ain password.		
Sign installe	er (required	Dev					
Developer Inst	aller ID:	Pas	sswora:			_	
		<b>?</b> A	lwavs Allow	De	nv All	low	
Creating instal	ller		,				
▼ Logs							
Target packa	ge (.pkg) path	: {path}{name}-{v	ersion}.pkg		io orginodiapp		<b>^</b>
[2022-10-18]	14:03:58][INF(	D] Installer genera	ating process st	arted.			
/Users/geo/de	ev/MacInstalle	r/UnityMacInstall	ler/Assets/Kam	gam/MacInstalle	er/MacInstallerE	Build~/target dire	ctory.
[2022-10-18]	14:03:58][INF(	D] Application ins	taller generatio	n process starte	ed.(4 Steps)		
pkgbuild: Infe	rring bundle co	omponents from c	contents of	building started.			
/Users/geo/de	ev/MacInstalle	r/UnityMacInstall	ler/Assets/Kam	gam/MacInstalle	er/MacInstallerE	Build~/target/dar	winpkg
/Users/geo/de	ev/MacInstalle	r/UnityMacInstall	ler/Assets/Kam	gam/MacInstalle	er/MacInstallerE	Build~/target/dar	win/Info.pli
st							-

Once the installer has been created you will see the green "Next Step" button.

		Mac II	nstaller			
Mac Installer						:
				Version 1.0	0.0 😢 Manual	🌣 Settings
Info App (sign)	) App (notarize)	App (check)	App (staple)	Inst. (create)	Inst. (notarize)	Inst. (check)
Source App (.app bundle)						
/Users/geo/dev/MacInstall	er/build-mac/Mac	c InstallerDemo-	signed.app			
	(+) Enter th	ne path above or	drag & drop the	bundle here.		
Target (.pkg):						
{path}{name}-{version}.pkg	9					
/Users/geo/dev/MacInstall	er/build-mac/Mac	: InstallerDemo-	signed-0.1.pkg	Reset	Сору	Show
Infos						
Product Name:	UnityMacInstalle	erDemo				override
Product ID:	com.Kamgam.Un	nityMacInstaller	)emo			override
Version:						override
Installer Content						
Modify the TEMPLATE ass	ets to customize t	he installer texts	, logo and licens	se.		
Open Templat	e	Distrik	oution Manual		😮 Manı	Jal
Signing						
Signing	or notarization)					
Developer Installer ID:	Your Name (V121	3456789)				
		Create	Installer			
Installer created successfu						
Go to Installer		Nex	t Step: Installer i	notarization		
▼ Logs						
SHA256 Fingerprint:						
68 C5 BE 91 B5 A1 10 01 F0 24						
Copying final result from						
'/Users/geo/dev/MacInstaller/UnityMacInstaller/Assets/Kamgam/MacInstaller/MacInstallerBuild~/target/pkg-signed/U nityMacInstallerDemo-macos-installer-x64-0.1.pkg' to '/Users/geo/dev/MacInstaller/build-mac/Mac						
InstallerDemo-signed-0.1	.pkg'. -Ol Application in:	stallar gaparatio	a stope finished			
[2022-10-18 14:11:25][INF	FO] Installer gener	ating process fir	hished			
ProcessHelper: Exec was	done with exitCo	de 0 after 10 sec	conds.			
						▼

Now you will have an installer package (.pkg) right next to your app.



But we still need to notarize this package.

Press the "Next Step" button once you are ready to proceed.

### 6) Installer Notarization

The signed installer has to be upladed to Apple servers for notarization.

**INFO:** Both the APP and the INSTALLER need to be notarized separately.

The reason is that the installer needs to be trusted while installing the app and the app needs to be trusted when it is started (thus two notarizations are needed).

		Mac Installer							
Mac Installer				:					
			Version 1.0.0 🛛 😧 Ma	anual 🌣 Settings					
Info App (sign	ı) App (notarize	e) App (check) App (staple)	Inst. (create) Inst. (nota	rize) Inst. (check)					
Installer (.pkg)									
/Users/geo/dev/MacInstal	ler/build-mac/Ma (+) Enter the r	c InstallerDemo-signed-0.1.pkg bath above or drag & drop the insta	ller (.pkg) here.						
Credentials for notarizat	ion								
Apple ID	office@yourcon	npany.com							
TeamID	V123456789								
Password (is not saved)	*****	****							
Manual and documentati	on:								
Apple Manu	al	Unity Manual	<b>9</b> N	lanual					
		Send notarization request							
▶ Logs									
	Noo Insteller								
		Maginetallor							
		Mac Installer		;					
Mac Installer		Mac Installer		:					
Mac Installer		Mac Installer	Version 1.0.0 🛛 Mi	i anual 🌣 Settings					
Mac Installer	n) App (notarize	Mac Installer	Version 1.0.0 🕑 Ma Inst. (create) Inst. (nota	anual 🌣 Settings arize) Inst. (check)					
Mac Installer Info App (sigr Installer (.pkg)	n) App (notarize	Mac Installer	Version 1.0.0 🛛 Mi Inst. (create) Inst. (nota	anual 🌣 Settings arize) Inst. (check)					
Mac Installer Info App (sigr Installer (.pkg) /Users/geo/dev/MacInsta	n) App (notarize	Mac Installer         e)       App (check)       App (staple)         ac InstallerDemo-signed-0.1.pkg	Version 1.0.0 😧 Mi Inst. (create) Inst. (nota	ianual 🌣 Settings arize) Inst. (check)					
Mac Installer Info App (sign Installer (.pkg) /Users/geo/dev/MacInsta	n) App (notarize ller/build-mac/Ma (+) Enter the p	Mac Installer	Version 1.0.0 Ø M: Inst. (create) Inst. (nota Iler (.pkg) here.	anual 🌣 Settings arize) Inst. (check)					
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Mac Installer Info App (sign Installer (.pkg) /Users/geo/dev/MacInsta Credentials for notarizat Apple ID TeamID	n) App (notarize ller/build-mac/Ma (+) Enter the p ion office@yourcon	Mac Installer	Version 1.0.0 Ø Ma Inst. (create) Inst. (nota Iler (.pkg) here.	ianual 🌣 Settings arize) Inst. (check)					
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Mac Installer Info App (sign Installer (.pkg) /Users/geo/dev/MacInsta Credentials for notarizat Apple ID TeamID Password (is not saved) Manual and documentati Apple Manual	n) App (notarize ller/build-mac/Ma (+) Enter the p ion office@yourcon V123456789 ************************************	Mac Installer a) App (check) App (staple) ac InstallerDemo-signed-0.1.pkg bath above or drag & drop the insta npany.com	Version 1.0.0  Mainst. (create) Inst. (nota Iler (.pkg) here.	i anual 🌣 Settings arize) Inst. (check)					
Mac Installer Info App (sign Installer (.pkg) /Users/geo/dev/MacInsta Credentials for notarizat Apple ID TeamID Password (is not saved) Manual and documentati Apple Manua	n) App (notarize ller/build-mac/Ma (+) Enter the ion office@yourcon V123456789 ************************************	Mac Installer          a) App (check)       App (staple)         ac InstallerDemo-signed-0.1.pkg         path above or drag & drop the insta         npany.com         *****         Unity Manual	Version 1.0.0 P Ma Inst. (create) Inst. (nota Iler (.pkg) here.	ianual Settings arize) Inst. (check)					
Mac Installer Info App (sign Installer (.pkg) /Users/geo/dev/MacInsta Credentials for notarizat Apple ID TeamID Password (is not saved) Manual and documentati Apple Manua	n) App (notarize ller/build-mac/Ma (+) Enter the ion office@yourcon V123456789 ************************************	Mac Installer App (check) App (staple) ac InstallerDemo-signed-0.1.pkg path above or drag & drop the insta npany.com ***** Unity Manual Send notarization request	Version 1.0.0  Mainst. (create) Inst. (nota Iler (.pkg) here.	i anual 🌣 Settings arize) Inst. (check)					
Mac Installer Info App (sign Installer (.pkg) /Users/geo/dev/MacInsta Credentials for notarizat Apple ID TeamID Password (is not saved) Manual and documentati Apple Manua Credentials	n) App (notarize Iler/build-mac/Ma (+) Enter the ion office@yourcon V123456789 ************************************	Mac Installer          App (check)       App (staple)         ac InstallerDemo-signed-0.1.pkg         path above or drag & drop the instal         npany.com         *****         Unity Manual         Send notarization request         Send notarization request	Version 1.0.0 P Mi Inst. (create) Inst. (nota Iler (.pkg) here.	ianual 🌣 Settings arize) Inst. (check) Manual					
Mac Installer Info App (sign Installer (.pkg) /Users/geo/dev/MacInsta Credentials for notarizat Apple ID TeamID Password (is not saved) Manual and documentati Apple Manua Apple Manua 2ab95c8-066e-4d06-aa	n) App (notarize ller/build-mac/Ma (+) Enter the ion office@yourcon V123456789 ************************************	Mac Installer Mac Installer Mac Installer Mac Installer App (check) App (staple) App (st	Version 1.0.0  Mainst. (create) Inst. (nota Iler (.pkg) here.	ianual 🌣 Settings arize) Inst. (check) Manual					

Next Step: Check notarization results

### 7) Installer Check (Notarization)

Now the only thing left to do is to wait for the results of the installer package notarization.

Time for another coffee.

			Mac II	nstaller			
Mac Installer							:
					Version 1.0.0	<ul><li>Manual</li></ul>	Settings
Info	App (sign)	App (notarize)	App (check)	App (staple)	Inst. (create)	nst. (notarize)	Inst. (check)
Submission ID	:						
12ab95c8-066	e-4d06-aat	5d-5a10cb939bc7					
Credentials fo	r notarizatio	on					
Apple ID		office@yourcomp	any.com				
TeamID		V123456789					
Password (is no	ot saved)	*****	***				
			Check S	ubmission			
Notary submiss Accepted							
			Go to	Installer			
Details							
{							
"logFormatVe "iobld": "12ah	ersion": 1, 95c8-066e	-4d06-aa5d-5a10	ch939hc7"				
"status": "Acc	cepted",						
"statusSumm	ary": "Ready	/ for distribution",					
	. 0,						•
Logs							
}							-
"issues": null							
<pre>}</pre>							
Processmelpe		uone with exitCod		mas.			
C							

Congratulations! It is done.

Press the "Go to Installer" to open the folder with the final installer in it.

< > /Users/geo/	∵ <u> </u>	Q			
🚞 _stuff	>	😻 Mac InstallerDer	no-signed	-0.1.pk	g
📄 .git	>	🍇 Mac InstallerDer	no-signed	.app	
.gitignore		🍇 Mac InstallerDer	no.app		
📄 build-mac	>				
📄 UnityMacInstaller	>				

This is how the installer should look like once you start it:



### **Modifying Templates**

Most likely you will want to define your own license text, logo and welcome message.

The MacInstaller/MacInstallerBuild~/Template directory contains template files for the app entitlements and the installer content.



#### Distribution

This is an xml file which contains the configuration for the installer content. The language used in the Distribution <script> tags is JavaScript.

For more details about the distribution file please refer to the Apple Distribution Manual.

#### Entitlements

The entitlements are added to the .app with the signature. It is a .plist file and defines what permissions your app will request.

For more details about the entitlements file please refer to the Apple Entitlements Manual.

#### Resources

The resources folder is where the files used by the installer are stored. Each html or txt file is one page of the installer. The banner.png is the logo background (origin bottom left).



#### Scripts

Scripts is the folder where the post-install bash script is located. By default the script does nothing. Add your own post-build commands there if you need any.



### **Prerequisites for Signing**

To get a properly working installer you will have to do two things:

1) You need to <u>sign</u> it.

2) For macOS 10.14.5 or later Apple has to <u>notarize</u> it for you. - If you distribute through the Mac App Store then notarization is not needed as it's already part of the review process. Though in that case you would not create an installer anyways.

### Signing the app created by Unity.

In order to sign the app created by Unity you will need a "Developer ID <u>Application</u>" certificate. Do NOT confuse this with the "Developer ID <u>Installer</u>" certificate which you will need to sign the installer.

In total you will need two certificates ("Application ID" and "Installer ID").

Here is how to get them:

1) Go to <u>https://developer.apple.com/support/certificates/</u> and follow the "Certificates, Identifiers & Profiles" link.

O 🛆 http	s://developer.ap	ple.com/support/d	certificates/				Ē	ŝ
É Developer	News	Discover	Design	Develop	Distribute	Support	Account	Q
Support					Overview Articles	Agreements and	Guidelines Cor	ntact us

### Certificates

Apple Developer Program membership is required to request, download, and use signing certificates issued by Apple.

### Using certificates

In most cases, Xcode is the preferred method to request and install digital certificates. However, to request certificates for services such as Apple Pay, the Apple Push Notification service, Apple Wallet, and Mobile Device Management, you'll need to request and download them from Certificates, Identifiers & Profiles in your developer account. Distribution certificates can be requested only by Account Holders and Admins.

For more information on how to use signing certificates, review Xcode Help.

You will have to log in to your developer account. If you do not have one you will have to <u>create</u> <u>one</u>.

#### Sign in to Apple Developer



Once you are logged in you will land on the <u>"Certificates List</u>" page. It looks like this:



### Certificates, Identifiers & Profiles

Certificates	Certificates 🕁			$Q$ All Types $\sim$
Identifiers Devices	NAME ~	ТҮРЕ	PLATFORM CREATED BY	EXPIRATION
Profiles				
Keys				
Services				

If you do not yet have a "Developer ID Application" and a "Developer ID Installer" certificate then create them now.

If you are planning to relase on the Mac Store then you will have to use a "Mac Installer Disctribution" certificate instead, but that's not the focus of this tutorial.

First let's create the "Developer ID Application" certificate (we will use it to sign the .app).

### **Certificates, Identifiers & Profiles**

< All Certificates

#### **Create a New Certificate**

#### Software

0	Apple Development Sign development versions of your iOS, macOS, tvOS, and watchOS apps. For use in Xcode 11 or later.
0	Apple Distribution Sign your apps for submission to the App Store or for Ad Hoc distribution. For use with Xcode 11 or later.
0	<b>iOS App Development</b> Sign development versions of your iOS app.
0	<b>iOS Distribution (App Store and Ad Hoc)</b> Sign your iOS app for submission to the App Store or for Ad Hoc distribution.
0	Mac Development Sign development versions of your Mac app.
0	Mac App Distribution This certificate is used to code sign your app and configure a Distribution Provisioning Profile for submission to the Mac App Store.
0	Mac Installer Distribution This certificate is used to sign your app's Installer Package for submission to the Mac App Store.
0	Developer ID <u>Installer</u> This certificate is used to sign your app's Installer Package for distribution outside of the Mac App Store.
•	<b>Developer ID</b> <u>Application</u> This certificate is used to code sign your app for distribution outside of the Mac App Store.

Download the "Developer ID Application" certificate.

### **Certificates, Identifiers & Profiles**

#### < All Certificates

i

#### **Download Your Certificate**

Download

Software Distribution Reminder If you're generating your first Developer ID certificate, the software that you sign it with must be notarized by Apple in order to run on macOS 10.14.5 or later. Learn how to submit your software for notarization >

You will also need a certificate for the Installer package (.pkg).

- O Mac Installer Distribution This certificate is used to sign your app's Installer Package for submission to the Mac App Store.
- Developer ID Installer This certificate is used to sign your app's Installer Package for distribution outside of the Mac App Store.
- Developer ID Application This certificate is used to code sign your app for distribution outside of the Mac App Store.

Save and install the two certificates.



Now you should have two new certificates in your key chain.

- the "Developer ID Application" certificate
- the "Developer ID Installer" certificate

📷 Developer ID Installer:	certificate	 01.02.2027 at 23:12:15 login	
Developer ID Application:	certificate	 01.02.2027 at 23:12:15 login	

#### Copying the ID

The Installer tool will ask you for your Developer Application/Installer IDs

Signing						
Developer Application ID:	Your Name (V123456789)					

The ID has the form of "Your Name (10-char-id)", like "Harry Pitter (V123456789)". If you open your certificates in the key chain then you can copy it.

(	Developer ID Application:						
	Certificate Standard Communication Communication Certificate Issued by: De Expires: Mone This certific			<b>ID Application:</b> eveloper ID Certification Authority day, 1. February 2027 at 23:12:15 Central European Standard Time cate is valid			
1.	>	Trust					
i	$\sim$	Details					
L	Subject Name						
L	User ID						
	Common Name			Developer ID Application:			
l	Organisational Unit		sational Unit	Contraction of Contra			
¢	Organisation		Organisation				
o	<b>Country or Region</b>		try or Region	AT			
ł			la autor Manag				
ł		0.	Issuer Name	Developer ID Opertification Authority			
l		Co	mmon Name	Developer ID Certification Authority			
		Organi	sational Unit	Apple Certification Authority			
			Organisation	Apple Inc.			
		Coun	try or Region	US			
		Co Organi Coun	mmon Name sational Unit Organisation try or Region	Developer ID Certification Authority Apple Certification Authority Apple Inc. US			

You can also get them via the commandline by using "security find-identity". That's also a nice way of verifying that they are installed properly.

### Signing Xcode projects (not supported)

If you are using Xcode to build your app (you exported as an Xcode project) then Xcode can manage the signing process for you. Please follow this guide for signing using Xcode:

https://developer.apple.com/documentation/xcode/distributing-your-app-for-beta-testing-and-releases

**NOTICE**: Xcode can only create installers for distribution through the AppStore. It does NOT create standalone installers!

### **Prerequisites for Notarization**

Notarization requires Xcode 10 or later. Building a new app for notarization requires macOS 10.13.6 or later. Stapling an app requires macOS 10.12 or later. These are hard r<u>equirements by</u> <u>Apple</u> and can not be avoided.

To notarize your preexisting software you will have to prepare the following:

### 1. Make sure Xcode 13 or later is used.

If you have multiple versions installed then you can do that by calling "sudo xcode-select -s /path/to/Xcode13.app".

If you have only one Xcode version installed then you can skip this step.

### 2. Create an app-specific password for the notarytool

Because App Store Connect requires two-factor authentication (2FA) on all accounts, you must create an app-specific password for notarytool, as described in <u>Using app-specific passwords</u>.

#### How to generate an app-specific password?

- 1. Sign in to <u>appleid.apple.com</u>.
- 2. In the Sign-In and Security section, select App-Specific Passwords.
- 3. Select Generate an app-specific password or select the Add button Blue plus sign icon., then follow the steps on your screen.
- 4. Enter or paste the app-specific password into the password field of the app.

Upload your software to the Apple notary service, as described in <u>Upload your app to the</u> <u>notarization service</u>.

### Where do I find my Team ID?

Login to <u>https://developer.apple.com/account/</u> and then go to "Membership details". There you will find your TeamID. Usually the Team ID is also listed in your certificates.

#### Membership details

Team ID

Apple Developer Proc

- 100 C (100 C )

Program

Apple Developer Program

### **Frequently Asked Questions**

### I want to use this in Unity Cloud Build or my CI/CD chain.

At the moment CI/CD is not officially supported but it is possible to integrate (you would have to write some code).

One reason I have not yet added this is that Apple states that notarization can take up to 24 hours. So any automated build prozess would have to routinely check for the notarization result for up to 24 hours. Right now that's a manual step. Another big reason is ongoing support (see below).

#### Integration Guide (Unity):

You can write a c# script that goes through all the steps automatically. To do that please check out the "public static async" methods of the "MacInstaller" class. They are named after the steps in the UI so implementation should be pretty straight forward (if you have all the singing infos prepared).

#### Integration Guide (shell scripts):

In the end all the work is done by the shell scripts contained in "Assets\Kamgam\MacInstaller\ MacInstallerBuild". In theory you don't even need Unity to do it all (just call the shell scripts with the correct paramters from your CI/CD build chain). In this scenario you would have to make your toolchain wait for the results of the scripts and in case of the notarization you would have to make your toolchain check the notarization results repeatedly until they have completed or an error occurred or the 24 hours have passed (which would also constitute an error).

At the moment I have no plans to implement cloud build support myself.

The main reason is not the initial workload for adding this but support. That woul be doable. However, I pride myself in giving excellent detailed support, yet cloud builds are inherently tricky and giving support on these external systems is hard and very time consuming (time that I am not getting paid for). Sorry that I have to say it this hard but I just can't afford to spend time debugging peoples cloud builds (that often fail due to errors outside the scope of my assets). -There, I have said it. It's a money issue. If you are determined to get cloud builds to work on your project then we could make a custom deal (just contact me).