

The Roku Channel Developer Program

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Roku offers content owners and publishers the ability to create their own channels on the Roku devices and to make those channels available to Roku users. The Roku SDK documentation contains the necessary information for creating a Roku channel, including design tools and sample applications. The [Roku Developer Tools License Agreement](#) contains the terms of use of the Roku SDK and associated tools. After creating a channel application, content owners and publishers may upload the application to the Roku Developer Site for distribution to Roku users. They have to agree to the terms of [Roku Application Distribution Agreement](#) to distribute their content on the Roku Platform. The agreement stipulates commercial terms including revenue and/or advertising inventory revenue share.

There are two methods for distributing Roku channels through the Roku Developer Site after they have been uploaded: the Roku Channel Store for Public Channels, or as a non-certified channel.

Roku Public Channels

Public Channels created for the Channel Store should be those intended for the widest possible distribution, without restriction other than as required for business reasons, such as payment of a monthly subscription. Public channels should be submitted to Roku for acceptance into the Channel Store. If accepted by Roku, a channel is made available through the Channel Store to all Roku users.

Roku non-certified channels

A channel may be uploaded to the Roku Developer Site and made available to users through the non-certified channel mechanism. These channels are not available through the Channel Store, but can be accessed by Roku users by means of a unique channel access code provided to users. Channels intended for a very narrow audience, or carrying restrictions on access, such as membership in a group or organization, are better suited for non-certified channels. There is no Roku approval process necessary to publish a non-certified channel.

Welcome to the Roku Streaming Player Developer Guide

This Developer Guide is designed to help you quickly come up to speed on the Roku platform architecture, Channel Store, and the basics of how to develop and deploy an application to the Roku player in development mode, and to the Channel Store as a published application to end users. In this Developer Guide we refer to the development of new channels on the Roku player as "applications" since they consist of a set of scripts and related assets. Channels can access video streams, music, photos, or perform other functions enabled by the SDK.

Developing with the Roku SDK

The Roku SDK consists of a set of documentation and sample applications that enable channels to be developed for the Roku Streaming Player. To understand the Roku SDK, here are the key documents:

- The Developer Guide covers the architecture, programming language, development process, and channel deployment requirements.
- The BrightScript Reference Manual will bring you up to speed on the language and serves as a reference for the core components. BrightScript is the programming language used to develop channel applications on the Roku Streaming Player. BrightScript is a scripting language optimized to be the high level glue that ties together BrightScript Components and the Internet.
- The Component Reference guide describes the Roku Streaming Player platform components that expose APIs to BrightScript.

The entire documentation set includes the following:

Manual	Section	Description
Developer Guide		An introduction to developing for the Roku platform (this manual)
	Device Registration and Linking	Linking the Roku Streaming Player channel to an account on your site
	Streaming Specifications	Contains information on video encoding guidelines, trick play, and closed caption support
	Debug Console Commands	Summarizes the debugging console commands
BrightScript Language Reference		BrightScript programming language reference information
BrightScript Component Reference		Reference information for the components exposed to the BrightScript programming language
Channel Packaging And Publishing		Information on creating a channel package and uploading it to the Developer Site
Eclipse Plugin Guide		Installing and using the Brightscript programming language in the Eclipse IDE
External Control Guide		Information on the external control protocol that allows control of the Roku player over the network
Web Service API		Information on the web service APIs developers can use to connect to the Channel Store
Roku Advertising Framework		Information on using the Roku ad insertion API
SceneGraph Core Concepts		A guide for developing applications using the Roku SceneGraph XML APIs
SceneGraph API Reference		Reference material for the Roku SceneGraph XML APIs
SceneGraph Samples		A repository of sample channels that use the Roku SceneGraph XML APIs
Release Notes		A list of the SDK changes for each Roku player firmware revision

What Do I Need to Get Started?

Here's a list of the things you'll need to get started writing applications for the Roku Streaming Player:

- Roku Streaming Player with Software Release 2.7 or later
- Roku SDK (Development Kit Documentation and Sample Applications)
- Development Workstation with Text Editor and Terminal Application
- Standard Web Browser (Firefox, Internet Explorer or equivalent)

Roku Models and Features

With the release of the Roku 2 platform, Roku's product line has expanded to the point that there are significant capability differences between many of the models. While all the models have the same basic streaming video playback support, the hardware internals of the models will support different levels of game play. There is even a new SDK method, `setMaxVideoDecodeResolution()` (a member of `roVideoScreen` or `roVide`

oPlayer), that only has an effect on units with an OpenGL implementation. Please see the [BrightScript Component Reference](#) for more details on this method.

The Roku models ship with incompatible power supplies as specified in the table below. If the wrong power supply is used, there is a risk of damaging the Roku unit when the power current of the supply is greater than what is specified for your Roku unit. On the other hand, if the power supply current is less than the Roku's specified power current, you run the risk of spontaneous reboots when the Roku unit cannot draw enough current.

When publishing your channel, you will have the opportunity to specify hardware requirements like "USB", "Roku 2", or "Bluetooth Game Remote". The tables below should help you in determining the target models for your channel.

Current Models

	Roku Express	Roku Express+	Roku Streaming Stick	Roku Streaming Stick+	Roku Ultra	Roku TV	4K Roku TV	4K Roku TV	Roku TV
Code Name	Gilbert	Gilbert	Amarillo 1080	Amarillo 4K	Bryan	Liberty	Ft. Worth	Longview	Midland
roDeviceInfo.GetModel()	3900X	3910X	3800X	3810X	4660X	5000X	6000X	7000X	8000X
CPU	ARM Cortex A53	ARM Cortex A53	ARM Cortex A53	ARM Cortex A53	ARM Cortex A53	MIPS 1 GHz	ARM quad core	ARM quad core	ARM
Accelerated Graphics API ¹	OpenGL ES 2.0	OpenGL ES 2.0	OpenGL ES 2.0	OpenGL ES 2.0	OpenGL ES 2.0	N/a	OpenGL ES 2.0	OpenGL ES 2.0	OpenGL ES 2.0
RAM	512 MB	512 MB	512 MB	1 GB	1 GB	512 MB	1.5 GB	1 GB	512MB (256M internal; 256M external)
NVM (Flash) Storage	256 MB	256 MB	256 MB	512 MB	512 MB	256 MB	512 MB	512 MB	512 MB
HDMI/HDCP	1.4/2.2	1.4/2.2	1.4/2.2	2.0a/2.2	2.0a/2.2	1.4	2.0/2.2	2.0a/2.2	1.4
Composite Video Out	N/a	Yes	N/a	N/a	N/a	N/a	N/a	N/a	N/a
Max UI Resolution	720p	720p	720p	1080p	1080p	1280x720	1920x1080	1920x1080	720p
Max Playback Resolution	1080p	1080p	1080p	4K60fps, HDR	4K60fps, HDR	1920x1080, 60fps ²	3840x2160	3840x2160	1080p
HDR	N/a	N/a	N/a	N/a	HDR 10	N/a	N/a	HDR10 and/or Dolby Vision supported, varies by model	N/a
Remote	IR + TV Power/Vol	IR + TV Power/Vol	WiFi	WiFi	WiFi w/HP	IR	IR, Trinity3	Trinity RF (HP, Voice, Locator)	IR

Supported Models

These models are no longer manufactured but still run the latest Roku OS and are still supported.

	Roku Streaming Stick	Roku Express	Roku Express Plus	Roku Premiere	Roku Premier Plus	Roku Ultra
Code Name	Briscoe	Littlefield	Littlefield	Cooper	Cooper	Cooper
roDeviceInfo.GetModel()	3600X	3700X	3710X	4620X	4630X	4640X

CPU	ARM Cortex A7 quad core 800 MHz	MIPS 900 MHz	MIPS 900 MHz	ARM Cortex A53 quad core 1.2 GHz	ARM Cortex A53 quad core 1.2 GHz	ARM Cortex A53 quad core 1.2 GHz
Accelerated Graphics API ¹	OpenGL ES 2.0	n/a	n/a	OpenGL ES 2.0	OpenGL ES 2.0	OpenGL ES 2.0
RAM	512 MB	512 MB	512 MB	1 GB	1 GB	1 GB
NVM (Flash) Storage	256 MB	256 MB	256 MB	512 MB	512 MB	1 GB
HDMI Version	1.3a	1.4	1.4	2.0a	2.0a	2.0a
HDCP Version	1.4	1.4	1.4	2.2	2.2	2.2
Composite Video Out	n/a	n/a	yes	n/a	n/a	n/a
HDMI 720p Video Out	yes	yes	yes	yes	yes	yes
HDMI 1080p Video Out	yes	yes	yes	yes	yes	yes
HDMI 2160p Video Out	n/a	n/a	n/a	yes	yes	yes
Max UI Resolution	1280x720	1280x720	1280x720	1920x1080	1920x1080	1920x1080
Max Playback Resolution	1920x1080	1920x1080	1920x1080	4K UHD, 60fps	4K UHD, 60fps	4K UHD, 60fps
HDR	n/a	n/a	n/a	n/a	HDR10	HDR10
S/PDIF Port	n/a	n/a	n/a	n/a	n/a	yes
Wi-Fi	b/g/n dual-band	b/g/n	b/g/n	b/g/n/ac dual-band	b/g/n/ac dual-band	b/g/n/ac dual-band
Ethernet Port	n/a	n/a	n/a	n/a	10/100 Mbps	10/100 Mbps
USB Port	n/a	n/a	n/a	n/a	n/a	yes
microSD Slot	n/a	n/a	n/a	n/a	yes	yes
Enhanced Remote	Supported	n/a	n/a	Supported, not included	Supported	Supported
Gaming Buttons	n/a	n/a	n/a	Supported, not included	Supported, not included	Supported
Motion Control	n/a	n/a	n/a	n/a	n/a	n/a
Private Listening	Supported, Roku Mobile App	Supported, Roku Mobile App	Supported, Roku Mobile App	Supported, Roku Mobile App	Supported, via remote and Roku Mobile App	Supported, via remote and Roku Mobile App
Voice Remote Search	Supported, not included	n/a	n/a	Supported, not included	Supported, not included	yes

	Roku LT	Roku 2 HD	Roku 2 XD	Roku 2 XS	Roku LT	Roku HD	Roku Streaming Stick	Roku 3	Roku LT	Roku 1, Roku SE	Roku 2	Roku Streaming Stick	Roku 2	Roku 3	Roku 4
Code Name	Giga	Giga	Giga	Giga	Paolo	Paolo	Jackson	Austin	Tyler	Tyler	Tyler	Sugarland	Mustang	Mustang	Dallas
roDeviceInfo.GetModel()	2400X	3000X	3050X	3100X	2450X	2500X	3400X, 3420X	4200X	2700X	2710X	2720X	3500X	4210X	4230X	4400X
CPU	ARM11 600 MHz	ARM11 600 MHz	ARM11 600 MHz	ARM11 600 MHz	MIPS 400 MHz	MIPS 400 MHz	ARM11 600 MHz	ARM Cortex A9 dual core 1 GHz	MIPS 600 MHz	MIPS 600 MHz	MIPS 600 MHz	ARM11 600 MHz	ARM Cortex A9 dual core 1 GHz	ARM Cortex A9 dual core 1 GHz	ARM quad core
Accelerated Graphics API ¹	OpenGL ES 2.0	OpenGL ES 2.0	OpenGL ES 2.0	OpenGL ES 2.0	n/a	n/a	OpenGL ES 2.0	OpenGL ES 2.0	n/a	n/a	n/a	OpenGL ES 2.0	OpenGL ES 2.0	OpenGL ES 2.0	OpenGL ES 2.0
RAM	256 MB	256 MB	256 MB	256 MB	256 MB	256 MB	256 MB	512 MB	512 MB	512 MB	512 MB	512 MB	512 MB	512 MB	1.5 GB

NVM (Flash) Storage	256 MB	256 MB	256 MB	256 MB	256 MB	256 MB	256 MB	256 MB	256 MB	256 MB	256 MB	256 MB	256 MB	256 MB	512 MB
HDMI Version	1.3a	1.3a	1.3a	1.3a	1.3a	1.3a	1.3a	1.4	1.4a	1.4a	1.4a	1.3a	1.4	1.4	2.0
HDCP Version	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	2.2
Composite Video Out	yes	yes	yes	yes	yes	yes	n/a	n/a	yes	yes	yes	n/a	n/a	n/a	n/a
HDMI 720p Video Out	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
HDMI 1080p Video Out	n/a	n/a	yes	yes	n/a	n/a	yes	yes	n/a	yes	yes	yes	yes	yes	yes
HDMI 2160p Video Out	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	yes
Max UI Resolution	1280x720	1280x720	1280x720	1280x720	1280x720	1280x720	1280x720	1280x720	1280x720	1280x720	1280x720	1280x720	1280x720	1280x720	1920x1080
Max Playback Resolution	1280x720, 60fps	1280x720, 60fps	1920x1080, 60fps	1920x1080, 60fps	1280x720, 60fps	1280x720, 60fps	1920x1080	1920x1080, 60fps3	1280x720, 60fps	1920x1080, 60fps	1920x1080, 60fps	1920x1080, 60fps	1920x1080, 60fps3	1920x1080, 60fps3	4K UHD, 60fps
S/PDIF Port	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	yes
Wi-Fi	b/g/n	b/g/n	b/g/n	b/g/n	b/g/n	b/g/n	b/g/n	b/g/n dual-band	b/g/n	b/g/n	b/g/n dual-band	b/g/n dual-band	b/g/n dual-band	b/g/n dual-band	b/g/n/ac dual-band
Ethernet Port	n/a	n/a	n/a	10/100 Mbps	n/a	n/a	n/a	10/100 Mbps	n/a	n/a	n/a	n/a	10/100 Mbps	10/100 Mbps	10/100 Mbps
USB Port	n/a	n/a	n/a	yes	n/a	n/a	n/a	yes	n/a	n/a	n/a	n/a	yes	yes	yes
microSD Slot	n/a	yes	yes	yes	n/a	n/a	n/a	n/a	no	n/a	no	n/a	yes	yes	yes
Enhanced Remote	n/a	Bluetooth supported, not included	Bluetooth supported, not included	Bluetooth	n/a	n/a	Bluetooth	Wi-Fi Direct	n/a	n/a	Wi-Fi Direct	Bluetooth	Wi-Fi Direct supported, not included	Wi-Fi Direct	Wi-Fi Direct
Gaming Buttons	n/a	Supported, not included	Supported, not included	Supported	n/a	n/a	Supported	Supported	n/a	n/a	n/a	Supported	Supported, not included	Supported	Supported
Motion Control	n/a	Supported, not included	Supported, not included	Supported	n/a	n/a	Supported	Supported	n/a	n/a	n/a	n/a	Supported, not included	Supported	Supported
Private Listening	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Supported via remote	n/a	n/a	Supported via remote	n/a	Supported via remote, not included	Supported via remote	Supported via remote
Voice Remote Search	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Supported, not included	n/a	n/a	n/a	n/a	Supported, not included	Supported	Supported

Notes

¹ The OpenGL ES 2.0 API is currently only available under NDA to select partners.

² Supports 720@60fps with some frame drops when video is not scaled to 1080. Should set ContentMetaData.maxFrameRate to 60 so that player doesn't scale the video to 1080.

³ Supports 60fps at 720p. Supports 30fps at 1080p.

Legacy Models

These models are discontinued and are no longer supported.

	Roku DVP	Roku SD	Roku HD	Roku HD-XR	Roku HD	Roku XD	Roku XD S
Code Name	Griffin	Redwood	Redwood	Redwood	Pico	Pico	Pico
roDeviceInfo.GetModel()	N1000	N1050	N1100	N1101	2000C	2050X, 2050N	2100X, 2100N
CPU	MIPS 400 MHz	MIPS 400 MHz	MIPS 400 MHz	MIPS 400 MHz	MIPS 400 MHz	MIPS 400 MHz	MIPS 400 MHz
Accelerated Graphics API	n/a	n/a	n/a	n/a	n/a	n/a	n/a
RAM	256 MB	256 MB	256 MB	256 MB	256 MB	256 MB	256 MB
NVM (Flash) Storage	64 MB	64 MB	64 MB	256 MB	64 MB	64 MB	256 MB
Composite Video Out	yes	yes	yes	yes	yes	yes	yes
S-Video Out	yes	n/a	yes	yes	n/a	n/a	n/a

Component Out	yes	n/a	yes	yes	n/a	n/a	yes
HDMI 720p Video Out	yes	no	yes	yes	yes	yes	yes
HDMI 1080p Video Out	no	no	no	yes	no	yes	yes
S/PDIF Port	yes	n/a	yes	yes	n/a	n/a	yes
Wi-Fi	b/g	b/g	b/g	b/g/n dual-band	b/g	b/g/n	b/g/n dual-band
Ethernet Port	yes	yes	yes	yes	yes	yes	yes
USB Port	no	no	no	yes	n/a	n/a	yes
Max. Channel Size	750 KB	750 KB	750 KB	2 MB	750 KB	750 KB	2 MB

FHD User Interface Requirements and Recommendations

The following are the requirements and recommendations for creating and using a 1080p user interface for your channel or application.

To create and use a 1080p user interface in a channel or application, you must set up the manifest file as described in Manifest File.

The following are the graphic image sizes and formats for a 1080p user interface.

Graphic Image	Size	Format
Channel logo	540x405 pixels	JPEG
Splash screen	1920x1080 pixels	JPEG
Roku Search channel buttons	165x60 pixels	PNG
Roku Search brand tiles	147x113 pixels	JPEG