

# 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
<a href="#">Developer Guide</a>		An introduction to developing for the Roku platform (this manual)
	<a href="#">Device Registration and Linking</a>	Linking the Roku Streaming Player channel to an account on your site
	<a href="#">Streaming Specifications</a>	Contains information on video encoding guidelines, trick play, and closed caption support
	<a href="#">Debug Console Commands</a>	Summarizes the debugging console commands
<a href="#">BrightScript Language Reference</a>		BrightScript programming language reference information
<a href="#">BrightScript Component Reference</a>		Reference information for the components exposed to the BrightScript programming language
<a href="#">Channel Packaging And Publishing</a>		Information on creating a channel package and uploading it to the Developer Site
<a href="#">Eclipse Plugin Guide</a>		Installing and using the Brightscript programming language in the Eclipse IDE
<a href="#">External Control Guide</a>		Information on the external control protocol that allows control of the Roku player over the network
<a href="#">Web Service API</a>		Information on the web service APIs developers can use to connect to the Channel Store
<a href="#">Roku Advertising Framework</a>		Information on using the Roku ad insertion API
<a href="#">SceneGraph Core Concepts</a>		A guide for developing applications using the Roku SceneGraph XML APIs
<a href="#">SceneGraph API Reference</a>		Reference material for the Roku SceneGraph XML APIs
<a href="#">SceneGraph Samples</a>		A repository of sample channels that use the Roku SceneGraph XML APIs
<a href="#">Release Notes</a>		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
<b>Code Name</b>	Gilbert	Gilbert	Amarillo 1080	Amarillo 4K	Bryan	Liberty	Ft. Worth	Longview	Midland
<b>roDeviceInfo.GetModel()</b>	3900X	3910X	3800X	3810X	4660X	5000X	6000X	7000X	8000X
<b>CPU</b>	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
<b>Accelerated Graphics API <sup>1</sup></b>	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
<b>RAM</b>	512 MB	512 MB	512 MB	1 GB	1 GB	512 MB	1.5 GB	1 GB	512MB (256M internal; 256M external)
<b>NVM (Flash) Storage</b>	256 MB	256 MB	256 MB	512 MB	512 MB	256 MB	512 MB	512 MB	512 MB
<b>HDMI/HDCP</b>	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
<b>Composite Video Out</b>	N/a	Yes	N/a	N/a	N/a	N/a	N/a	N/a	N/a
<b>Max UI Resolution</b>	720p	720p	720p	1080p	1080p	1280x720	1920x1080	1920x1080	720p
<b>Max Playback Resolution</b>	1080p	1080p	1080p	4K60fps, HDR	4K60fps, HDR	1920x1080, 60fps <sup>2</sup>	3840x2160	3840x2160	1080p
<b>HDR</b>	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
<b>Remote</b>	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
<b>Code Name</b>	Briscoe	Littlefield	Littlefield	Cooper	Cooper	Cooper
<b>roDeviceInfo.GetModel()</b>	3600X	3700X	3710X	4620X	4630X	4640X

<b>CPU</b>	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
<b>Accelerated Graphics API <sup>1</sup></b>	OpenGL ES 2.0	n/a	n/a	OpenGL ES 2.0	OpenGL ES 2.0	OpenGL ES 2.0
<b>RAM</b>	512 MB	512 MB	512 MB	1 GB	1 GB	1 GB
<b>NVM (Flash) Storage</b>	256 MB	256 MB	256 MB	512 MB	512 MB	1 GB
<b>HDMI Version</b>	1.3a	1.4	1.4	2.0a	2.0a	2.0a
<b>HDCP Version</b>	1.4	1.4	1.4	2.2	2.2	2.2
<b>Composite Video Out</b>	n/a	n/a	yes	n/a	n/a	n/a
<b>HDMI 720p Video Out</b>	yes	yes	yes	yes	yes	yes
<b>HDMI 1080p Video Out</b>	yes	yes	yes	yes	yes	yes
<b>HDMI 2160p Video Out</b>	n/a	n/a	n/a	yes	yes	yes
<b>Max UI Resolution</b>	1280x720	1280x720	1280x720	1920x1080	1920x1080	1920x1080
<b>Max Playback Resolution</b>	1920x1080	1920x1080	1920x1080	4K UHD, 60fps	4K UHD, 60fps	4K UHD, 60fps
<b>HDR</b>	n/a	n/a	n/a	n/a	HDR10	HDR10
<b>S/PDIF Port</b>	n/a	n/a	n/a	n/a	n/a	yes
<b>Wi-Fi</b>	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
<b>Ethernet Port</b>	n/a	n/a	n/a	n/a	10/100 Mbps	10/100 Mbps
<b>USB Port</b>	n/a	n/a	n/a	n/a	n/a	yes
<b>microSD Slot</b>	n/a	n/a	n/a	n/a	yes	yes
<b>Enhanced Remote</b>	Supported	n/a	n/a	Supported, not included	Supported	Supported
<b>Gaming Buttons</b>	n/a	n/a	n/a	Supported, not included	Supported, not included	Supported
<b>Motion Control</b>	n/a	n/a	n/a	n/a	n/a	n/a
<b>Private Listening</b>	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
<b>Voice Remote Search</b>	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
<b>Code Name</b>	Giga	Giga	Giga	Giga	Paolo	Paolo	Jackson	Austin	Tyler	Tyler	Tyler	Sugarland	Mustang	Mustang	Dallas
<b>roDeviceInfo.GetModel()</b>	2400X	3000X	3050X	3100X	2450X	2500X	3400X, 3420X	4200X	2700X	2710X	2720X	3500X	4210X	4230X	4400X
<b>CPU</b>	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
<b>Accelerated Graphics API <sup>1</sup></b>	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
<b>RAM</b>	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

<b>NVM (Flash) Storage</b>	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
<b>HDMI Version</b>	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
<b>HDCP Version</b>	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
<b>Composite Video Out</b>	yes	yes	yes	yes	yes	yes	n/a	n/a	yes	yes	yes	n/a	n/a	n/a	n/a
<b>HDMI 720p Video Out</b>	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
<b>HDMI 1080p Video Out</b>	n/a	n/a	yes	yes	n/a	n/a	yes	yes	n/a	yes	yes	yes	yes	yes	yes
<b>HDMI 2160p Video Out</b>	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
<b>Max UI Resolution</b>	1280x720	1280x720	1280x720	1280x720	1280x720	1280x720	1280x720	1280x720	1280x720	1280x720	1280x720	1280x720	1280x720	1280x720	1920x1080
<b>Max Playback Resolution</b>	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
<b>S/PDIF Port</b>	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
<b>Wi-Fi</b>	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
<b>Ethernet Port</b>	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
<b>USB Port</b>	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
<b>microSD Slot</b>	n/a	yes	yes	yes	n/a	n/a	n/a	n/a	no	n/a	no	n/a	yes	yes	yes
<b>Enhanced Remote</b>	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
<b>Gaming Buttons</b>	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
<b>Motion Control</b>	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
<b>Private Listening</b>	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
<b>Voice Remote Search</b>	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**

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

<sup>2</sup> 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.

<sup>3</sup> Supports 60fps at 720p. Supports 30fps at 1080p.

**Legacy Models**

These models are discontinued and are no longer supported.

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

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

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