Sentinel LDK 8.0

Supported Platforms

Supported Platforms for Sentinel LDK – End Users

The operating system versions listed in this section were tested by Gemalto and verified to be fully compatible with Sentinel LDK. Older operating system versions are likely to be compatible as well, but are not guaranteed. For reasons of compatibility and security, Gemalto recommends that you always keep your operating system up to date with the latest fixes and service packs.

Sentinel LDK Run-time Environment, Protected Applications

Sentinel LDK Run-Time Environment version 8.11 is provided for Windows, Mac, and Linux Intel systems.

To support all of the latest enhancements in Sentinel LDK, and to provide the best security and reliability, end users should receive the latest Run-time Environment (*RTE*). However, for all pre-existing functionality in Sentinel LDK, earlier versions of the RTE are supported as follows:

> **When using customized vendor API libraries v.8.11 - version-restricted option:**

  Whenever the RTE is required, Sentinel LDK Run-time Environment v.7.90 or later must be provided.

> **When using customized vendor API libraries v.8.11 - version-unrestricted option:**

  The protected application does not check the version number of the RTE. Whenever the RTE is required, the RTE must be from a version of Sentinel LDK that supports the features that you are using to protect and license your applications.

For details, see "Required Version of the Run-time Environment" in the *Sentinel LDK Software Protection and Licensing Guide*.

Sentinel LDK Run-time Environment, and protected applications (with or without the Run-time Environment), can be installed under the following systems:

System	Supported Versions
Windows	> Windows 7 SP1 > Windows 8.1 SP1 > Windows Server 2008 R2 SP1 > Windows Server 2012 R2 > Windows Server 2016 > Windows Server 2019 > Windows 10 IoT Enterprise 2019 LTSC > Windows 10 Version 2004 (See Technical Note in KB0021742) **Note:** Windows 10 Insider Preview builds are not supported. The latest service packs and security updates must be installed.

System	Supported Versions		
Mac	> macOS 10.13.6 High Sierra > macOS 10.14 Mojave > macOS 10.15 Catalina **Note:** The Sentinel Remote Update System (RUS utility) is not supported for Mac systems in this release. To obtain a fingerprint, use Sentinel Admin Control Center.		
Linux	**Linux Intel (x86-64)**	> OpenSUSE Leap 15.1 > Red Hat EL 7.7, 8.1 > Ubuntu Server 16.04, 18.04 > Ubuntu Desktop 18.04 > Debian 10.3 > CentOS 8.1 The latest service packs and security updates must be installed.	
	Linux ARM 32-bit (armel and armhf)	The following hardware/boards have been validated: > BeagleBone Black > Raspberry Pi-4 > NI cRIO-9068	
	Linux ARM 64-bit (arm64)	The following hardware/board has been validated: > Qualcomm DragonBoard 410c	
	Wine	Sentinel LDK Run-time Environment was tested on Linux platforms with Wine 5.0	

System	Supported Versions	
Android	**Android ARM (32-bit and 64-bit)**	Android 8.x, 9.x, 10.x **Note:** For Android 10.x, APKs compiled with API level 29 only support Java protection.
	Android Architecture	The following architectures are supported: > armv7 > armv7a > arm64
	Android ABI	Sentinel LDK Envelope supports Android applications designed for the following Android application binary interfaces: > armeabi > armeabi-v7a > arm64-v8a
	Note: Data file protection is not supported for Android 7.x and later.	
Virtual Machines	The VM detection and VM fingerprinting capabilities provided by Sentinel LDK have been validated on the following technologies: > Parallels Desktop 15 for Mac > VMware Player 6.0.3 (Free for non-commercial use) > VMware Workstation 15 > VMware ESXi 6.5, 6.7 > Hyper-V Server 2019 (SL only) > Xen Project 4.12 > KVM (RHEL 7.7, Ubuntu 18.04 server, Debian 10.x) > Microsoft Azure > VirtualBox 6.1.x > Docker (Linux)	

Data File Protection Plugin for Internet Explorer

The Data File Protection plugin (MSI file) is compatible with Microsoft Internet Explorer version 11.

> **NOTE** The Data File Protection plugin cannot be installed on a virtual machine.

Web Browsers for Sentinel Admin Control Center

> Microsoft Internet Explorer (32-bit) version 11

> Microsoft Edge

> Mozilla Firefox - latest version

> Google Chrome - latest version

> Safari - latest version

Supported Platforms for Sentinel LDK – Vendors

The operating system versions listed in this section were tested by Gemalto and verified to be fully compatible with Sentinel LDK. Older operating system versions are likely to be compatible as well, but are not guaranteed. For reasons of compatibility and security, Gemalto recommends that you always keep your operating system up to date with the latest fixes and service packs.

Sentinel EMS Service

System	Supported Versions
Windows	32-bit and 64-bit versions of the following: > Windows 7 SP1 > Windows 8.1 SP1 > Windows Server 2008 R2 SP1 > Windows Server 2012 R2 > Windows Server 2016 > Windows Server 2019 > Windows 10 Version 2004 (See Technical Note in KB0021742) **Note:** Windows 10 Insider Preview builds are not supported. For all Windows versions, the latest service packs and security updates must be installed.

Sentinel EMS Database

System	Supported Database Server Software
Windows	> Microsoft SQL Server 2014 x86/x64 > Microsoft SQL Server 2014 Express **Note:** Microsoft SQL Server 2014 Express Edition can be installed automatically by the Sentinel EMS Installation wizard. The installer for this version of Microsoft SQL Server is also available on the Sentinel LDK installation drive. > Microsoft SQL Server 2016 > Microsoft SQL Server 2017 Express

Web Browsers for Sentinel EMS

Supported Browser	Notes
Microsoft Internet Explorer version 11	Some functionality in Sentinel EMS does not work if Sentinel EMS is added to **Compatibility View** in Internet Explorer.
Mozilla Firefox version 73 or later	RUS customization is not supported with Firefox due to changes in this browser. For details, see "SM-26872" on page 37.
Google Chrome version 80 or later	RUS customization is not supported with Chrome due to changes in this browser. For details, see "SM-26872" on page 37.
Microsoft Edge	Certain actions in Sentinel EMS that access protection keys (including burning HL keys and online activation of SL keys) do not work by default in Edge under Windows 32-bit. This is due to a bug in Microsoft Edge. To perform the required actions, you can do one of the following: • Use one of the other supported Web browsers. • Enter the command to create an exclusion for Edge on your machine. This enables Edge to work correctly with Sentinel EMS. For details, see "SM-11279" on page 37.

> **NOTE** The Mac Safari Web browser is *not* supported for Sentinel EMS (both Vendor Portal and Customer Portal) in this release.

For more details regarding supported Web browsers for working in Sentinel EMS with HTTPS mode versus HTTP mode, see "Supported Web Browsers for Sentinel EMS" in the *Sentinel LDK-EMS User Guide*.

Java applets: You must use a 32-bit Web browser for any action in Sentinel EMS that accesses a protection key applet (such as burn, recycle, check in key, or online activation). You can perform all other actions in Sentinel EMS using a 32-bit or 64-bit Web browser.

Sentinel LDK Vendor Tools

Important! You must always install the latest version of the Sentinel Run-time Environment on the machines that you use to work with Sentinel LDK Vendor Tools and Sentinel EMS. (Under Windows, the Run-time Environment is installed automatically as part of the Sentinel LDK installation procedure.)

System	Supported Versions
Windows	Same as supported Windows platforms for "Sentinel EMS Service" on page 21. Requires a minimum screen resolution of 1280 by 1024 pixels with 24-bit color quality. **Note:** > **Sentinel LDK Envelope:** To protect and execute the provided .NET sample application under Windows 8.1 or Windows Server 2012 R2, you must install Microsoft .NET Framework 3.5. > **Sentinel LDK Master Wizard:** Your customized Data File Protection plugin for Internet Explorer (to display certain types of protected multimedia files) is generated when you introduce the Master Key. If you plan to use this plugin, .NET Framework 3.5 or later must be installed on the machine where you run the Master Wizard.
Mac	> macOS 10.14 Mojave > macOS 10.15 Catalina Applications built on the Cocoa framework are supported. **Web Browsers for Sentinel Vendor Tools Help Systems:** > Mozilla Firefox > Mac Safari with configuration option **Cross-Origin Restriction** disabled. (This option can be accessed from the **Developer** menu.)

System	Supported Versions
Linux Intel	Sentinel LDK Envelope for Linux and Master Wizard for Linux are supported on the x86-64 version of the following distributions of Linux: > OpenSUSE Leap 15.1 > Red Hat EL 8.1 > Ubuntu Server 18.04 > Ubuntu Desktop 18.04 > Debian 10.3 > CentOS 8.1 The latest service packs and security updates must be installed.
Linux ARM	Sentinel LDK Envelope for Linux (on a Linux Intel platform) is required to protect applications that will run on ARM 32-bit and ARM 64-bit platforms.
Android	Android ARM platforms
Java	Java 8

Supported Platforms for Code Samples

The code samples are supported on the same platforms as listed for "Sentinel LDK Vendor Tools " on the previous page.

> **NOTE** The **hasp_net_windows.dll** provided in the Licensing API vb.net and C# samples for Windows has been compiled with .NET Framework 4.5.
>
> To work with this DLL, .NET Framework 4.5 or later must be installed on your machine.
>
> Prior to Sentinel LDK v.7.4, this DLL was compiled with .NET Framework 2.0, which is now known to contain security vulnerabilities. Because of these vulnerabilities, Gemalto highly recommends that you upgrade to .NET Framework 4.5 or later.
>
> If you do not want to upgrade your old .NET Framework, you can obtain and use the **hasp_net_windows.dll** for Windows from a Sentinel LDK release earlier than v.7.4. To obtain an earlier version of Sentinel LDK, contact Technical Support.

Tested Compilers for Code Samples

API	Programming Language	Tested Compilers
Licensing API for Windows	AutoCAD	AutoCAD 2009, 2010, 2014
	C	Microsoft Visual Studio 2015, 2017, 2019 C++ Builder Developer Studio 2006
	Visual Basic .NET	Microsoft Visual Studio 2017, 2019
	C#	Microsoft Visual Studio 2017, 2019
	C++	Microsoft Visual Studio 2015, 2017, 2019 C++ Builder Developer Studio 2006 GCC
	Delphi	Delphi XE3
	Java	Oracle Java Developer Kit 1.8 Oracle Java Developer Kit 11
	C# - .NET Core	.NET Core 3.1
	Note: An application linked with **libhasp_windows_bcc_vendorld.lib** always requires Sentinel LDK Run-time Environment on the machine.	
Licensing API for macOS	Java	Oracle Java Developer Kit 1.8 Oracle Java Developer Kit 11
	C	Clang 9.0.0 or later Xcode 9.0 or later
Licensing API for Linux	Java	Oracle Java Developer Kit 1.8 Oracle Java Developer Kit 11
	C	GCC
	C++	GCC
	C# - .NET Core	.NET Core 3.1

API	Programming Language	Tested Compilers
Licensing API for Android	Java	Oracle Java Developer Kit 1.8
License Generation API for Windows	C, C#, Visual Basic .NET	Microsoft Visual Studio 2017, 2019
	Java	Oracle Java Developer Kit 1.8 Oracle Java Developer Kit 11
License Generation API for Linux	C	GCC
Activation API for Windows	C	Microsoft Visual Studio 2015, 2017, 2019 You may need to convert the provided workspace for the VS version used.
	Java	Oracle Java Developer Kit 1.8 Oracle Java Developer Kit 11
Activation API for macOS	Java	Oracle Java Developer Kit 1.8 Oracle Java Developer Kit 11
Activation API for Linux	Java	Oracle Java Developer Kit 1.8 Oracle Java Developer Kit 11
Runtime Environment Installer	C	Microsoft Visual Studio 2015, 2017, 2019
	MSI	InstallShield 12 InstallShield 2013 or later
Admin API for Windows	Java	Oracle Java Developer Kit 1.8 Oracle Java Developer Kit 11
	C, C#, C++, Visual Basic .NET	Microsoft Visual Studio 2017, 2019
Admin API for Linux	C	GCC
Admin API for macOS	C	Clang 9.0.0 or later Xcode 9.0 or later

API	Programming Language	Tested Compilers
Envelope .NET Runtime API	C#	Microsoft Visual Studio 2015, 2017, 2019
Java Envelope Configuration API	Java	Oracle Java Developer Kit 1.8 Oracle Java Developer Kit 11
Android Envelope	Java	Oracle Java Developer Kit 1.7, 1.8 Android Studio 3.6

Current Firmware Version

The table that follows indicates the firmware version on Sentinel HL keys when Sentinel LDK was released.

Sentinel LDK Version	Firmware Version on...		
	Sentinel HL (Driverless Configuration) Keys	**Sentinel HL (HASP Configuration) Keys**	**(Legacy) Sentinel HASP Keys**
8.0	4.x Firmware keys: 4.60 4.x Firmware keys with microSD: 4.61 6.x Firmware keys: 6.08	4.x Firmware keys: 4.35 6.x Firmware keys: 6.08	3.25
7.8, 7.9, 7.10	4.54	4.33	3.25
7.6, 7.7	4.53	4.33	3.25
7.5	4.27	4.27	3.25

To determine the version of the firmware for any given Sentinel HL key, connect the key to a computer where Sentinel LDK Run-time Environment is installed. View the list of keys in Admin Control Center.

Dropped Support

This section lists platforms and compilers that were supported in the past, but have not been tested with (or are no longer supported by) Sentinel LDK 8.0. Gemalto will continue to accept queries for issues related to these platforms and compilers, and will attempt to provide information to resolve related issues.

Platforms for Protected Applications for End Users

Support for the following platforms has been discontinued for protected applications:

> Android 7.x

> Linux Intel 32-bit

Platforms for 32-bit Linux Vendor Tools, APIs, and Sample

The following Sentinel LDK components for Linux are no longer supported on 32-bit Linux Intel platforms:

> Sentinel LDK Envelope for Linux

> Sentinel LDK Master Wizard

> Sentinel Licensing API

> Samples