

# ***Intel<sup>®</sup> Software Guard Extensions (Intel<sup>®</sup> SGX) Platform Software for Linux\* OS***

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## **Release Notes**

19 August 2020

Revision: 2.11 Open Source (version: 2.11.100.2)

## **Contents:**

[Introduction](#)

[What's New](#)

[System Requirements](#)

[Disclaimer and Legal Information](#)

# *Introduction*

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This document provides system requirements, installation instructions, limitations, and legal information for the Intel® Software Guard Extensions (Intel® SGX) Platform Software (PSW).

## **Product Contents**

The Intel® Software Guard Extensions PSW package includes:

- Intel® SGX Application Enclaves
- Intel® SGX Runtime System Library
- Intel® SGX Application Enclave Service Manager (AESM)

# What's New

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Intel® Software Guard Extensions PSW includes the following changes in 2.11.100:

- Supported Red Hat Enterprise Linux 8.2 and SUSE 15
- Provided standalone Intel® SGX DCAP Quote verification library installer
- Added Intel® SGX DCAP Platform Certificate ID Retrieval Tool and Multi-package Registration Agent (MPA) installers into SGX installation repo.
- Fixed bugs

## Changes in Previous Releases

Intel® Software Guard Extensions PSW includes the following changes in 2.10.100:

- Supported Fedora 31, CentOS 8.1 and Red Hat Enterprise Linux 8.1.
- Supported user to specify platform id in PCK Cert ID Retrieval Tool's command line option.
- Added ability to execute Platform Cert ID Retrieval Tool on multi-package platforms without loading enclaves. PCCS now supports this functionality. The platform still needs to support SGX.
- Updated Platform Cert ID Retrieval Tool and Multi-package registration tool to align with BIOS platform manifest changes.
- Added .deb and .rpm installers for Platform Cert ID Retrieval Tool and Multi-package Registration Agent.
- Fixed bugs.

Intel® Software Guard Extensions PSW includes the following changes in 2.9.101:

- Supported to query Intel® SGX attestation key ID list
- Provided Intel® SGX Data Center Attestation Primitive (DCAP) driver to support ECDSA attestation on platforms which support Intel® SGX Flexible Launch Control.
  - Please note this new DCAP driver does not support Intel® SGX EDMM feature.
  - This DCAP driver is in addition to the existing SGX driver (Out of Tree driver) which is still provided in the download point, side by side.
  - So now there are two drivers in the download repo and user should and only needs to install one of the two drivers.
  - Please refer to <<[Intel SGX Installation Guide for Linux OS.pdf](#)>>'s "Intel® SGX Driver Installation" section to know when to use and know how to install Intel® SGX DCAP driver.
- Fixed bugs.

Intel® Software Guard Extensions PSW includes the following changes in 2.9.100:

- Changes to address CVE-2020-0551.

- Fixed bugs.

Intel® Software Guard Extensions PSW includes the following changes in 2.8.100:

- Added support for modularized installation.
- Added support for running SGX applications inside Docker containers.
- Fixed bugs.

Intel® Software Guard Extensions PSW includes the following changes in 2.7.101:

- Fixed bugs.

Intel® Software Guard Extensions PSW includes the following changes in 2.7.100:

- Added support for new version Intel® Provisioning Certification Server interfaces.
- Added new libraries libsgx\_epid.so, libsgx\_launch.so, libsgx\_platform.so and libsgx\_quote\_ex.so.
- Removed Intel® SGX Platform Service Operation and Provisioning bundles. As a result, tae\_service library API and sgx\_report\_attestation\_status() API would return error code which indicates the service is unavailable.
- Fixed bugs.

Intel® Software Guard Extensions PSW includes the following changes in 2.6.100:

- Added support for both EPID and ECDSA-based quote for quoting related interfaces in sgx\_uae\_service library.
- Updated key exchange library to support both EPID and ECDSA-based remote attestation.
- Added support for a new interface to check platform information blob from remote attestation response message.
- Fixed bugs.

Intel® Software Guard Extensions PSW includes the following changes in 2.5.100:

- Added support for ECDSA quote based remote attestation.
- Fixed bugs.

Intel® Software Guard Extensions PSW includes the following changes in 2.4.100.48163

- Supported Intel® SGX Enclave Common Loader library
- Updated Intel® Architecture Enclaves to use Intel® IPP Cryptography 2019 Update 1 library
- Fixed bugs

Intel® Software Guard Extensions PSW includes the following changes in 2.3.100.46354:

- Added support for Ubuntu\* 18.04 LTS 64-bit Desktop and Server version
- Updated the Intel® SGX PSW installer for Ubuntu\*. The following changes are introduced:
  - Using .deb installer
  - Using name libsgx-enclave-common\_{version string}-1\_amd64.deb.
  - Installing the Intel® SGX Enclave Common loader library.
- Fixed SGX Quoting enclave bug, which caused the invalid signature error when a user upgraded the SGX PSW 1.6 version to a higher version and did remote attestation
- Updated the SGX Provisioning Cert Enclave to fix error code bug
- Fixed bugs.

Intel® Software Guard Extensions PSW includes the following changes in 2.2.100.45311:

- Added support for Switchless Calls, a new mode of operation to perform calls from/to SGX enclaves
- Fixed bugs.

Intel® Software Guard Extensions PSW includes the following changes in 2.1.103.44322 release:

- Updated the cryptography lib to the Intel® Integrated Performance Primitives Cryptography 2018 Update 2.1. Mitigated security vulnerability CVE-2018-3617(<https://cve.mitre.org/cgi-bin/cvename.cgi?name=2018-3617>). For more details, refer to Intel Security Advisory INTEL-SA-00106(<https://security-center.intel.com/advisory.aspx?intelid=INTEL-SA-00106&languageid=en-fr>) and INTEL-SA-00135(<https://security-center.intel.com/advisory.aspx?intelid=INTEL-SA-00135&languageid=en-fr>).
- Updated the Intel® SGX platform service Dal applet.
- Fixed bugs.

Intel® Software Guard Extensions PSW includes the following changes in 2.1.102.43402 release:

- Mitigated security vulnerability CVE-2018-3689 (<https://cve.mitre.org/cgi-bin/cvename.cgi?name=CVE-2018-3689>). For more details, refer to Security Advisory INTEL-OSS-10004 (<https://01.org/security/advisories/intel-oss-10004>)
- Mitigated security vulnerability CVE-2018-3626 (<https://cve.mitre.org/cgi-bin/cvename.cgi?name=CVE-2018-3626>). For more details, refer to Security Advisory INTEL-SA-00117 (<https://security-center.intel.com/advisory.aspx?intelid=INTEL-SA-00117&languageid=en-fr>).

Intel® Software Guard Extensions PSW includes the following changes in 2.1.101.42529 release:

- Updated security to the Intel® SGX PSW.

Intel® Software Guard Extensions PSW includes the following changes in version 2.1.100.42002:

- Added support for CentOS\* 7.4
- Added support for SUSE\* Linux Enterprise Server 12
- Fixed bugs.

Intel® Software Guard Extensions PSW includes the following changes in version 2.0.100.40905:

- Added support for 3072 bit Intel® SGX provisioning server public key
- Added support for the Intel® SGX Enclave Dynamic Memory Management (EDMM)
- Added support for Red Hat\* Enterprise Linux\* Server 7.4.

Intel® Software Guard Extensions PSW includes the following changes in version 1.9.100.39124:

- Fixed bugs.

Intel® Software Guard Extensions PSW includes the following changes in version 1.8.100.37689:

- Added support for the Trusted Platform Service
- Added support for RedHat\* and CentOS\*.

# System Requirements

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## Hardware Requirements

- 6th Generation Intel® Core™ Processor or newer.

## Software Requirements

- Supported Linux\* OS distributions:
  - Ubuntu\* 16.04 LTS 64-bit Desktop and Server version
  - Ubuntu\* 18.04 LTS 64-bit Desktop and Server version
  - Red Hat\* Enterprise Linux\* Server 8.2 (for x86\_64)
  - Red Hat\* Enterprise Linux\* Server 7.6 (for x86\_64)
  - CentOS 8.1
  - Fedora 31
  - SUSE 15

### Note:

1. Intel® SGX PSW supports the Intel® Xeon® Processor E3 Server V5 and onwards platforms if the platform processor and BIOS supports the Intel® SGX. Please check with OEM/ODM regarding BIOS support for enabling the Intel® SGX.
2. If you need to use the Intel® SGX platform service, install the Intel® Management Engine (Intel® ME) software components. This is optional, you can skip this if you do not need to use the Intel® SGX platform service.
3. Intel® SGX platform service is not supported on the Intel® Xeon® Processor E3 Server platforms.

## *Known Issues and Limitations*

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- Intel® SGX PSW 2.9.1 does not include the latest functional and security updates in 3rd part components (OpenSSL). The next release of the Intel® SGX SDK for Windows is targeted to be released in May 2020 and will include additional functional and security updates. Customers should update to the latest version as it becomes available.
- Intel® SGX PSW 2.8 does not include the latest functional and security updates. Intel® SGX PSW 2.8.1 is targeted to be released in March 2020 and will include additional functional and security updates. Customers should update to the latest version as it becomes available.
  - OpenSSL 1.1.1d with an unmitigated CVE ([CVE-2019-1551](#)) is used in untrusted part. The CVE is not exploitable in SGX software stack.
- Occasionally Intel® SGX aesmd service fail to retrieve enclave launch white-list from internet, this may cause failure to load those enclaves which need latest enclave launch white-list support. User can work around this through restarting Intel® SGX aesmd service.

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