

# Safeguard for Privileged Passwords 6.13.1

## Release Notes

**25 March 2022, 02:54**

These release notes provide information about the Safeguard for Privileged Passwords 6.13.1 release. For the most recent documents and product information, see [One Identity Safeguard for Privileged Passwords Technical Documentation](#).

If you are updating a Safeguard for Privileged Passwords version prior to this release, read the release notes for the version found at: [One Identity Safeguard for Privileged Passwords Technical Documentation](#).

## About this release

The 6.13.1 version of Safeguard for Privileged Passwords is to fix an issue during user login.

Safeguard for Privileged Passwords Version 6.13.1 is a minor feature release with resolved issues and known issues.

For more details, see:

- [Resolved issues](#)
- [Known issues](#)

## About the Safeguard product line

The Safeguard for Privileged Passwords 3000 and 2000 Appliances are built specifically for use only with the Safeguard for Privileged Passwords privileged management software, which is pre-installed and ready for immediate use. The appliance is hardened to ensure

the system is secured at the hardware, operating system, and software levels. The hardened appliance approach protects the privileged management software from attacks while simplifying deployment and ongoing management and shortening the time frame to value.

Safeguard for Privileged Passwords virtual appliances and cloud applications are also available. When setting up a virtual environment, carefully consider the configuration aspects such as CPU, memory availability, I/O subsystem, and network infrastructure to ensure the virtual layer has the necessary resources available. See [One Identity's Product Support Policies](#) for more information on environment virtualization.

## Safeguard privileged management software suite

Safeguard privileged management software is used to control, monitor, and govern privileged user accounts and activities to identify possible malicious activities, detect entitlement risks, and provide tamper proof evidence. The Safeguard products also aid incident investigation, forensics work, and compliance efforts.

The Safeguard products' unique strengths are:

- One-stop solution for all privileged access management needs
- Easy to deploy and integrate
- Unparalleled depth of recording
- Comprehensive risk analysis of entitlements and activities
- Thorough Governance for privileged account

The suite includes the following modules:

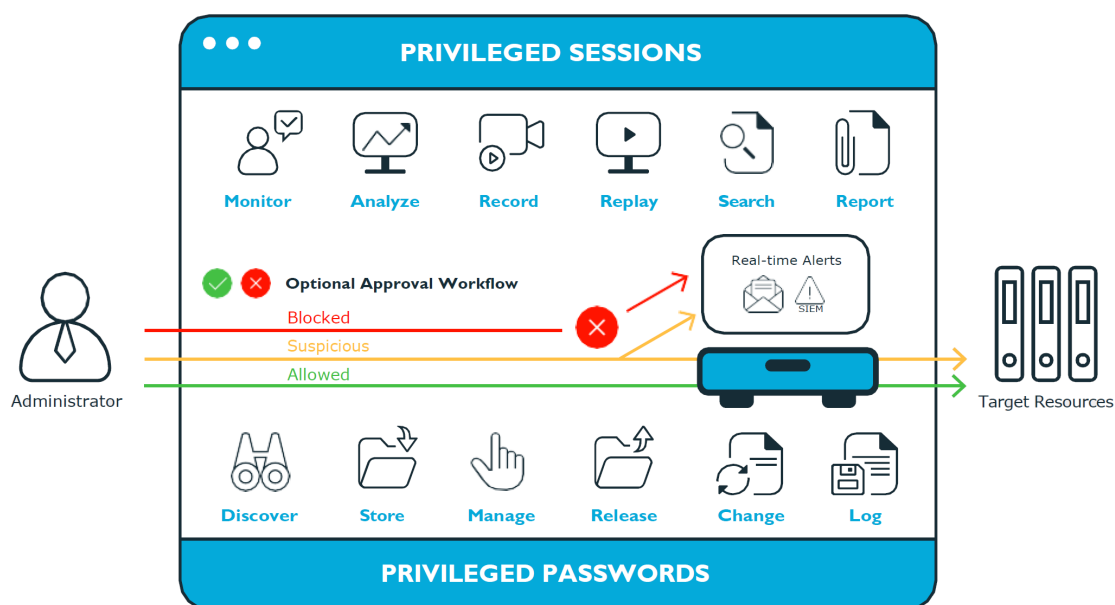
- **Safeguard for Privileged Passwords** automates, controls, and secures the process of granting privileged credentials with role-based access management and automated workflows. Deployed on a hardened appliance, Safeguard for Privileged Passwords eliminates concerns about secured access to the solution itself, which helps to speed integration with your systems and IT strategies. Plus, its user-centered design means a small learning curve and the ability to manage passwords from anywhere and using nearly any device. The result is a solution that secures your enterprise and enables your privileged users with a new level of freedom and functionality.
- **One Identity for Privileged Sessions** is part of One Identity's Privileged Access Management portfolio. Addressing large enterprise needs, Safeguard for Privileged Sessions is a privileged session management solution, which provides industry-leading access control, as well as session monitoring and recording to prevent privileged account misuse, facilitate compliance, and accelerate forensics investigations.

Safeguard for Privileged Sessions is a quickly deployable enterprise appliance, completely independent from clients and servers to integrate seamlessly into existing networks. It captures the activity data necessary for user profiling and enables full user session drill-down for forensics investigations.

- **One Identity Safeguard for Privileged Analytics** integrates data from Safeguard for Privileged Sessions to use as the basis of privileged user behavior

analysis. Safeguard for Privileged Analytics uses machine learning algorithms to scrutinize behavioral characteristics, and generates user behavior profiles for each individual privileged user. Safeguard for Privileged Analytics compares actual user activity to user profiles in real time, and profiles are continually adjusted using machine learning. Safeguard for Privileged Analytics detects anomalies and ranks them based on risk so you can prioritize and take appropriate action and ultimately prevent data breaches.

**Figure 1: Privileged Sessions and Privileged Passwords**



## Resolved issues

Issues addressed by this release follow.

**Table 1: General resolved issues**

Resolved issue	Issue ID
Fixed a login issue.	304230
Fixed a token issue.	304234
Fixed a SAML login issue.	304643
Fixed an unauthenticated client credentials grant issue.	304634

# Known issues

The following is a list of issues known to exist at the time of release.

## Known issue

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Issues may occur when launching telnet sessions after upgrading a Safeguard for Privileged Sessions appliance. If you are experiencing issues, ensure you have downloaded and installed the latest [telnet plugin](#) before contacting support. Additional information on configuring and supporting tenet sessions is also available on the [telnet plugin site](#).

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If session playback is failing for fully indexed sessions, the desktop player may need to be upgraded to 1.9.4 or greater.

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SPS initiated sessions failing when using netbios name.

Workaround: Use the domain name.

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External Integration Email asset account authentication doesn't show any asset accounts.

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(Web client) Searching for discovered accounts by AssetName from **Discovery | Discovered Accounts** is not working.

# System requirements and versions

Safeguard for Privileged Passwords allows you to manage access requests, approvals, and reviews for your managed accounts and systems:

- The Windows desktop client consists of an end-user view and administrator view. The fully featured desktop client exposes all of the functionality of Safeguard based on the role of the authenticated user.
- The web client is especially useful for requesters, reviewers, and approvers. Many administration functions are available as well.
- The web management console displays whenever you connect to the virtual appliance and is used for first time configuration. When setting up a virtual environment, carefully consider the configuration aspects such as CPU, memory availability, I/O subsystem, and network infrastructure to ensure the virtual layer has the necessary resources available. See [One Identity's Product Support Policies](#) for more information on environment virtualization.

**⚠ CAUTION: The Safeguard for Privileged Passwords client version must match the installed Safeguard for Privileged Passwords version.**

Ensure that your system meets the minimum hardware and software requirements for these clients.

If a Safeguard Sessions Appliance is linked to Safeguard for Privileged Passwords, session recording is handled via Safeguard for Privileged Session. The link is initiated from Safeguard for Privileged Sessions. For details about the link steps and issue resolution, see the [One Identity Safeguard for Privileged Sessions Administration Guide](#).

## Bandwidth

It is recommended that connection, including overhead, is faster than 10 megabits per second inter-site bandwidth with a one-way latency of less than 500 milliseconds. If you are using traffic shaping, you must allow sufficient bandwidth and priority to port 655 UDP/TCP in the shaping profile. These numbers are offered as a guideline only in that other factors could require additional network tuning. These factors include but are not limited to: jitter, packet loss, response time, usage, and network saturation. If there are any further questions, please check with your Network Administration team.

## Desktop client system requirements

The desktop client is a Windows application suitable for use on end-user machines. You install the desktop client by means of an MSI package that you can download from the appliance web client portal. You do not need administrator privileges to install Safeguard for Privileged Passwords.

**NOTE:** PuTTY is used to launch the SSH client for SSH session requests and is included in the install. The desktop client looks for any user-installed PuTTY in the following locations:

- Any reference to putty in the PATH environment variable
- c:/Program Files/Putty
- c:/Program Files(x86)/Putty
- c:/Putty

If PuTTY is not found, the desktop client uses the version of PuTTY that it installed at:

<user-home-dir>/AppData/Local/Safeguard/putty.

If the user later installs PuTTY in any of the locations above, the desktop client uses that version which ensures the user has the latest version of PuTTY.

**Table 2: Desktop client requirements**

Component	Requirements
Technology	Microsoft .NET Framework 4.7.2 (or later)
Windows platforms	64-bit editions of: <ul style="list-style-type: none"><li>• Windows 7</li><li>• Windows 8.1</li></ul>

Component	Requirements
	<ul style="list-style-type: none"> <li>Windows 10</li> <li>Windows Server 2008 R2</li> <li>Windows Server 2012</li> <li>Windows Server 2012 R2</li> <li>Windows Server 2016</li> <li>Windows Server 2019</li> </ul> <p>If the appliance setting, <b>TLS 1.2 Only</b> is enabled, (<b>Administrative Tools   Settings   Appliance   Appliance Information</b>), ensure the desktop client also has TLS 1.2 enabled. If the client has an earlier version of TLS enabled, you will be locked out of the client and will not be able to connect to Safeguard for Privileged Passwords.</p> <p><b>IMPORTANT:</b> The Windows 7 Desktop client has additional requirements in order to enable TLS 1.2. For information, see <a href="#">Update to enable TLS 1.1 and TLS 1.2 as default secure protocols in WinHTTP in Windows</a>.</p> <p>Considerations:</p> <ul style="list-style-type: none"> <li>To use FIDO2 two-factor authentication, you will need a web browser that supports the WebAuthn standard.</li> </ul>
Desktop Player	See <i>One Identity Safeguard for Privileged Sessions Safeguard Desktop Player User Guide</i> available at: <a href="#">One Identity Safeguard for Privileged Sessions - Technical Documentation</a> .

## Web client system requirements

Table 3: Web requirements

Component	Requirements
Web browsers	<p>Desktop browsers:</p> <ul style="list-style-type: none"> <li>Apple Safari 13.1 for desktop (or later)</li> <li>Google Chrome 80 (or later)</li> <li>Microsoft Edge 80 (or later)</li> <li>Mozilla Firefox 69 (or later)</li> </ul> <p>Mobile device browsers:</p> <ul style="list-style-type: none"> <li>Apple iOS 13 (or later)</li> <li>Google Chrome on Android version 80 (or later)</li> </ul>

# Web management console system requirements

**Table 4: Web kiosk requirements**

Component	Requirements
Web management console	Desktop browsers: <ul style="list-style-type: none"><li>• Apple Safari 13.1 for desktop (or later)</li><li>• Google Chrome 80 (or later)</li><li>• Microsoft Edge 80 (or later)</li><li>• Mozilla Firefox 69 (or later)</li></ul>

Platforms and versions follow.

- You must license the VM with a Microsoft Windows license. We recommend using either the MAK or KMS method. Specific questions about licensing should be directed to your Sales Representative.
- Supported hypervisors:
  - Microsoft Hyper-V (VHDX) version 8 or higher
  - VMware vSphere with vSphere Hypervisor (ESXi) versions 6.5 or higher
  - VMware Workstation version 13 or higher
- Minimum resources: 4 CPUs, 10GB RAM, and a 500GB disk. The virtual appliances default deploy does not provide adequate resources. Ensure these minimum resources are met.

## Supported platforms

Safeguard for Privileged Passwords supports a variety of platforms, including custom platforms.

### Safeguard for Privileged Passwords tested platforms

The following table lists the platforms and versions that have been tested for Safeguard for Privileged Passwords (SPP). Additional assets may be added to Safeguard for Privileged Passwords. If you do not see a particular platform listed when adding an asset, use the **Other**, **Other Managed**, **Other Directory**, or **Linux** selection on the **Management** tab of the **Asset** dialog.

**NOTE:** Prior to Safeguard for Privileged Passwords 6.8, the version and architecture information was readonly. It was stored with the platform and formed part of the platform name. As of Safeguard for Privileged Passwords 6.8, this information is no

longer associated with the platform. It is now optional, and can be configured on each asset.

A new set of platforms are defined in Safeguard for Privileged Passwords 6.8 to replace the legacy platforms. See the table below for details on how the legacy platforms are mapped to the new platforms.

For customers upgrading from a pre-6.8 version of Safeguard for Privileged Passwords, the legacy platform will automatically be mapped to the corresponding new platform for each existing asset. Following an upgrade, the platform id of each existing asset will have changed. Some platform names may also have changed. From the desktop UI, only the new platforms are available when creating an asset. By default, the API will also only report the new platforms. For example, a GET request to the following URI will report only the new platforms:

```
https://<appliance>/serve/core/V3/Platforms
```

The legacy platforms still exist within Safeguard for Privileged Passwords for reference, but can only be retrieved using a filter query with the API. For example, the following will retrieve the legacy Active Directory platform:

```
https://<appliance>/serve/core/V3/Platforms?filter=Id%20eq%203
```

## SPP linked to SPS: Sessions platforms

**CAUTION:** When linking your One Identity Safeguard for Privileged Sessions (SPS) deployment to your One Identity Safeguard for Privileged Passwords (SPP) deployment, ensure that the SPS and SPP versions match exactly, and keep the versions synchronized during an upgrade. For example, you can only link SPS version 6.6 to SPP version 6.6, and if you upgrade SPS to version 6.7, you must also upgrade SPP to 6.7.

**Make sure that you do not mix Long Term Supported (LTS) and feature releases. For example, do not link an SPS version 6.0 to an SPP version 6.1.**

When Safeguard for Privileged Passwords (SPP) is linked with a Safeguard for Privileged Sessions (SPS) appliance, platforms are supported that use one of these protocols:

- SPP 2.8 or lower: RDP, SSH
- SPP 2.9 or higher: RDP, SSH, or Telnet

Some platforms may support more than one protocol. For example, a Linux (or Linux variation) platform supports both SSH and Telnet protocols.

**Table 5: Supported platforms: Assets that can be managed**

Platform Name	Legacy Platform (ID)	Supports SPP	Supports SPS Access
ACF2 - Mainframe	ACF2 - Mainframe LDAP r14 zSeries ACF2 - Mainframe LDAP r15 zSeries	True	True



<b>Platform Name</b>	<b>Legacy Platform (ID)</b>	<b>Supports SPP</b>	<b>Supports SPS Access</b>
ACF2 - Mainframe LDAP	ACF2 - Mainframe LDAP r14 zSeries ACF2 - Mainframe LDAP r15 zSeries	True	False
Active Directory	Active Directory	True	False
AIX	AIX 6.1 PPC AIX 7.1 PPC AIX 7.2 PPC AIX Other	True	True
Amazon Linux	Amazon Linux 2 x86_64 Amazon Linux Other x86_64	True	True
Amazon Web Services	Amazon Web Services 1	True	False
CentOS Linux	CentOS Linux 6 x86 CentOS Linux 6 x86_64 CentOS Linux 7 x86_64 CentOS Linux 8 x86_64 CentOS Linux Other	True	True
Check Point GAIa (SSH)	Check Point GAIa (SSH) R76 Check Point GAIa (SSH) R77 Check Point GAIa (SSH) R80.30	True	True
Cisco ASA	Cisco ASA 7.X Cisco ASA 8.X Cisco ASA 9.X Cisco ASA Other	True	True
Cisco IOS (510)	Cisco IOS 12.X Cisco IOS 15.X Cisco IOS 16.X Cisco IOS Other	True	True
Cisco ISE	Cisco ISE 2.7 Cisco ISE 3	True	False
Cisco ISE CLI	Cisco ISE CLI 2.7 Cisco ISE CLI 3	True	True

<b>Platform Name</b>	<b>Legacy Platform (ID)</b>	<b>Supports SPP</b>	<b>Supports SPS Access</b>
Cisco NX-OS	Cisco NX-OS 9.3(7) Cisco NX-OS 9.3(7a)	True	True
Debian GNU/Linux (511)	Debian GNU/Linux 10 MIPS Debian GNU/Linux 10 PPC Debian GNU/Linux 10 x86 Debian GNU/Linux 10 x86_64 Debian GNU/Linux 10 zSeries Debian GNU/Linux 6 MIPS Debian GNU/Linux 6 PPC Debian GNU/Linux 6 x86 Debian GNU/Linux 6 x86_64 Debian GNU/Linux 6 zSeries Debian GNU/Linux 7 MIPS Debian GNU/Linux 7 PPC Debian GNU/Linux 7 x86 Debian GNU/Linux 7 x86_64 Debian GNU/Linux 7 zSeries Debian GNU/Linux 8 MIPS Debian GNU/Linux 8 PPC Debian GNU/Linux 8 x86 Debian GNU/Linux 8 x86_64 Debian GNU/Linux 8 zSeries Debian GNU/Linux 9 MIPS Debian GNU/Linux 9 PPC Debian GNU/Linux 9 x86 Debian GNU/Linux 9 x86_64 Debian GNU/Linux 9 zSeries Debian GNU/Linux Other	True	True
Dell iDRAC	Dell iDRAC 7 Dell iDRAC 8 Dell iDRAC 9	True	True

<b>Platform Name</b>	<b>Legacy Platform (ID)</b>	<b>Supports SPP</b>	<b>Supports SPS Access</b>
eDirectory LDAP	eDirectory LDAP 9.0	True	False
ESXi	ESXi 5.5 ESXi 6.0 ESXi 6.5 ESXi 6.7 ESXi 7.0	True	False
F5 Big-IP	F5 Big-IP 12.1.2 F5 Big-IP 13.0 F5 Big-IP 14.0 F5 Big-IP 15.0	True	True
Facebook (Deprecated)	Facebook (Deprecated)		
Fedora	Fedora 21 x86 Fedora 21 x86_64 Fedora 22 x86 Fedora 22 x86_64 Fedora 23 x86 Fedora 23 x86_64 Fedora 24 x86 Fedora 24 x86_64 Fedora 25 x86 Fedora 25 x86_64 Fedora 26 x86 Fedora 26 x86_64 Fedora 27 x86 Fedora 27 x86_64 Fedora 28 x86 Fedora 28 x86_64 Fedora 29 x86 Fedora 29 x86_64 Fedora 30 x86 Fedora 30 x86_64	True	True

Platform Name	Legacy Platform (ID)	Supports SPP	Supports SPS Access
	Fedora 31 x86 Fedora 31 x86_64 Fedora 32 x86 Fedora 32 x86_64 Fedora Other		
Fortinet FortiOS	Fortinet FortiOS 5.2 Fortinet FortiOS 5.6 Fortinet FortiOS 6.0 Fortinet FortiOS 6.2	True	True
FreeBSD	FreeBSD 10.4 x86 FreeBSD 10.4 x86_64 FreeBSD 11.1 x86 FreeBSD 11.1 x86_64 FreeBSD 11.2 x86 FreeBSD 11.2 x86_64 FreeBSD 12.0 x86 FreeBSD 12.0 x86_64	True	True
HP iLO	HP iLO 2 x86 HP iLO 3 x86 HP iLO 4 x86 HP iLO 5 x86	True	True
HP iLO MP	HP iLO MP 2 IA-64 HP iLO MP 3 IA-64	True	True
HP-UX	HP-UX 11iv2 (B.11.23) IA-64 HP-UX 11iv2 (B.11.23) PA-RISC HP-UX 11iv3 (B.11.31) IA-64 HP-UX 11iv3 (B.11.31) PA-RISC HP-UX Other	True	True
IBM i (formerly AS400)	IBM i 7.1 PPC IBM i 7.2 PPC IBM i 7.3 PPC	True	True

Platform Name	Legacy Platform (ID)	Supports SPP	Supports SPS Access
	IBM i 7.4 PPC		
Junos - Juniper Networks	Junos - Juniper Networks 12	True	True
	Junos - Juniper Networks 13		
	Junos - Juniper Networks 14		
	Junos - Juniper Networks 15		
	Junos - Juniper Networks 16		
	Junos - Juniper Networks 17		
	Junos - Juniper Networks 18		
	Junos - Juniper Networks 19		
LDAP	OpenLDAP 2.4	True	False
Linux	Other Linux	True	True
macOS	macOS 10.10 x86_64	True	True
	macOS 10.11 x86_64		
	macOS 10.12 x86_64		
	macOS 10.13 x86_64		
	macOS 10.14 x86_64		
	macOS 10.15 x86_64		
	macOS 10.9 x86_64		
	macOS Other		
MongoDB	MongoDB 3.4	True	False
	MongoDB 3.6		
	MongoDB 4.0		
	MongoDB 4.2		
MySQL	MySQL 5.6	True	False
	MySQL 5.7		
	MySQL 8.0		
Oracle	Oracle 11g Release 2	True	False
	Oracle 12c Release 1		
	Oracle 12c Release 2		
	Oracle 18c		
	Oracle 19c		

<b>Platform Name</b>	<b>Legacy Platform (ID)</b>	<b>Supports SPP</b>	<b>Supports SPS Access</b>
Oracle Linux (OL)	Oracle Linux (OL) 6 x86 Oracle Linux (OL) 6 x86_64 Oracle Linux (OL) 7 x86_64 Oracle Linux (OL) 8 x86_64 Oracle Linux (OL) Other	True	True
Other	Other	False	False
Other Directory	Other Directory	True	False
Other Managed	Other Managed	True	False
PAN-OS	PAN-OS 6.0 PAN-OS 7.0 PAN-OS 8.0 PAN-OS 8.1 PAN-OS 9.0	True	True
PostgreSQL	PostgreSQL 10 PostgreSQL 10.2 PostgreSQL 10.3 PostgreSQL 10.4 PostgreSQL 10.5 PostgreSQL 11 PostgreSQL 12 PostgreSQL 9.6	True	False
RACF - Mainframe	RACF - Mainframe z/OS V2.1 Security Server zSeries RACF - Mainframe z/OS V2.2 Security Server zSeries RACF - Mainframe z/OS V2.3 Security Server zSeries	True	True
RACF - RACF - Mainframe LDAP	RACF - Mainframe LDAP z/OS V2.1 Security Server zSeries RACF - RACF - Mainframe LDAP z/OS V2.2 Security Server zSeries RACF - RACF - Mainframe LDAP z/OS V2.3 Security Server zSeries	True	False

<b>Platform Name</b>	<b>Legacy Platform (ID)</b>	<b>Supports SPP</b>	<b>Supports SPS Access</b>
Red Hat Enterprise Linux (RHEL)	Red Hat Enterprise Linux (RHEL) 6 PPC	True	True
	Red Hat Enterprise Linux (RHEL) 6 x86		
	Red Hat Enterprise Linux (RHEL) 6 x86_64		
	Red Hat Enterprise Linux (RHEL) 6 zSeries		
	Red Hat Enterprise Linux (RHEL) 7 PPC		
	Red Hat Enterprise Linux (RHEL) 7 x86_64		
	Red Hat Enterprise Linux (RHEL) 7 zSeries		
	Red Hat Enterprise Linux (RHEL) 8 PPC		
	Red Hat Enterprise Linux (RHEL) 8 x86_64		
	Red Hat Enterprise Linux (RHEL) 8 zSeries		
Red Hat Enterprise Linux (RHEL) Other			
Red Hat Directory Server	Red Hat Directory Server 11	True	False
SAP HANA	SAP HANA 2.0 Other	True	False
SAP Netweaver Application Server	SAP Netweaver Application Server 7.3	True	False
	SAP Netweaver Application Server 7.4		
	SAP Netweaver Application Server 7.5		
Solaris	Solaris 10 SPARC	True	True
	Solaris 10 x86		
	Solaris 10 x86_64		
	Solaris 11 SPARC		
	Solaris 11 x86_64		
Solaris Other			
SonicOS	SonicOS 5.9	True	False

Platform Name	Legacy Platform (ID)	Supports SPP	Supports SPS Access
	SonicOS 6.2 SonicOS 6.4 SonicOS 6.5		
SonicWALL SMA or CMS	SonicWALL SMA or CMS 11.3.0	True	False
SQL Server	SQL Server 2012 SQL Server 2014 SQL Server 2016 SQL Server 2017 SQL Server 2019	True	False
SUSE Linux Enterprise Server (SLES)	SUSE Linux Enterprise Server (SLES) 11 IA-64 SUSE Linux Enterprise Server (SLES) 11 PPC SUSE Linux Enterprise Server (SLES) 11 x86 SUSE Linux Enterprise Server (SLES) 11 x86_64 SUSE Linux Enterprise Server (SLES) 11 zSeries SUSE Linux Enterprise Server (SLES) 12 PPC SUSE Linux Enterprise Server (SLES) 12 x86_64 SUSE Linux Enterprise Server (SLES) 12 zSeries SUSE Linux Enterprise Server (SLES) 15 PPC SUSE Linux Enterprise Server (SLES) 15 x86_64 SUSE Linux Enterprise Server (SLES) 15 zSeries SUSE Linux Enterprise Server (SLES) Other	True	True
Sybase (Adaptive	Sybase (Adaptive Server Enterprise)	True	False



Platform Name	Legacy Platform (ID)	Supports SPP	Supports SPS Access
Server Enterprise)	15.7 Sybase (Adaptive Server Enterprise) 16 Sybase (Adaptive Server Enterprise) 17		
Top Secret - Mainframe	Top Secret - Mainframe r14 zSeries Top Secret - Mainframe r15 zSeries Top Secret - Mainframe r16 zSeries	True	False
Top Secret - Mainframe LDAP	Top Secret - Mainframe LDAP r14 zSeries Top Secret - Mainframe LDAP r15 zSeries Top Secret - Mainframe LDAP r16 zSeries	True	True
Twitter (Deprecated)	Twitter (Deprecated)		
Ubuntu	Ubuntu 14.04 LTS x86 Ubuntu 14.04 LTS x86_64 Ubuntu 15.04 x86 Ubuntu 15.04 x86_64 Ubuntu 15.10 x86 Ubuntu 15.10 x86_64 Ubuntu 16.04 LTS x86 Ubuntu 16.04 LTS x86_64 Ubuntu 16.10 x86 Ubuntu 16.10 x86_64 Ubuntu 17.04 x86 Ubuntu 17.04 x86_64 Ubuntu 17.10 x86 Ubuntu 17.10 x86_64 Ubuntu 18.04 LTS x86 Ubuntu 18.04 LTS x86_64 Ubuntu 18.10 x86 Ubuntu 18.10 x86_64	True	True

Platform Name	Legacy Platform (ID)	Supports SPP	Supports SPS Access
	Ubuntu 19.04 x86		
	Ubuntu 19.04 x86_64		
	Ubuntu 19.10 x86_64		
	Ubuntu 20.04 x86_64		
	Ubuntu Other		
Windows Desktop	Windows (SSH) 10	True	True
Windows Desktop (SSH)	Windows (SSH) 7		
	Windows (SSH) 8		
Windows Desktop (WinRM)	Windows (SSH) 8.1		
Windows Server	Windows (SSH) Other		
Windows Server (SSH)	Windows (SSH) Server 2008 R2		
	Windows (SSH) Server 2012		
Windows Server (WinRM)	Windows (SSH) Server 2012 R2		
	Windows (SSH) Server 2016		
	Windows (SSH) Server 2019		
	Windows 10		
	Windows 7		
	Windows 8		
	Windows 8.1		
	Windows Other		
	Windows Server 2008		
	Windows Server 2008 R2		
	Windows Server 2012		
	Windows Server 2012 R2		
	Windows Server 2016		
	Windows Server 2019		
	Windows Vista		

**Table 6: Supported platforms: Directories that can be searched**

Platform Name	Platform Version
Microsoft Active Directory	Windows 2008+ DFL/FFL
LDAP	2.4

For all supported platforms, it is assumed that you are applying the latest updates. For unpatched versions of supported platforms, Support will investigate and assist on a case-by-case basis but it may be necessary for you to upgrade the platform or use SPP's custom platform feature.

## Custom platforms

The following example platform scripts are available:

- Custom HTTP
- Linux SSH
- Telnet
- TN3270 transports are available

For more information, see *Custom Platforms and Creating a custom platform script* in the *Safeguard for Privileged Passwords Administration Guide*.

Sample custom platform scripts and command details are available at the following links available from the [Safeguard Custom Platform Home](#) wiki on GitHub:

- Command-Reference:  
<https://github.com/OneIdentity/SafeguardCustomPlatform/wiki/Command-Reference>
- Writing a custom platform script:  
<https://github.com/OneIdentity/SafeguardCustomPlatform/wiki/WritingACustomPlatformScript>
- Example platform scripts are available at this location:  
<https://github.com/OneIdentity/SafeguardCustomPlatform/tree/master/SampleScripts>

**CAUTION:** Example scripts are provided for information only. Updates, error checking, and testing are required before using them in production. Safeguard for Privileged Passwords checks to ensure the values match the type of the property that include a string, boolean, integer, or password (which is called secret in the API scripts). Safeguard for Privileged Passwords cannot check the validity or system impact of values entered for custom platforms.

## Licenses

### Hardware appliance

The Safeguard for Privileged Passwords 3000 Appliance and 2000 Appliance ship with the Privileged Passwords module which requires a valid license to enable functionality.

You must install a valid license. Once the module is installed, Safeguard for Privileged Passwords shows a license state of **Licensed** and is operational. If the module license is

not installed, you have limited functionality. That is, even though you will be able to configure access requests, if a Privileged Passwords module license is not installed, you will not be able to request a password release.

## Virtual appliance Microsoft Windows licensing

You must license the virtual appliance with a Microsoft Windows license. We recommend using either the MAK or KMS method. Specific questions about licensing should be directed to your Sales Representative. The virtual appliance will not function unless the operating system is properly licensed.

### Licensing setup and update

#### ***To enter licensing information when you first log in***

The first time you log in as the Appliance Administrator, you are prompted to add a license. The **Success** dialog displays when the license is added.

On the virtual appliance, the license is added as part of Initial Setup.

#### ***To configure reminders for license expiration***

To avoid disruptions in the use of Safeguard for Privileged Passwords, the Appliance Administrator must configure the SMTP server, and define email templates for the License Expired and the License Expiring Soon event types. This ensures you will be notified of an approaching expiration date.

Users are instructed to contact their Appliance Administrator if they get an "appliance is unlicensed" notification.



As an Appliance Administrator, if you receive a "license expiring" notification, apply a new license.

#### ***To update the licensing file***

Licensing update is only available using a virtual machine, not via the hardware.

#### ***web client: To perform licensing activities***

Go to the licensing page:

1. Navigate to  **Appliance | Licensing**.
  - To upload a new license file, click **+Upload new license file** and browse to select the current license file.
  - To remove the license file, select the license and click  **Remove selected license**.

## **desktop client: To perform licensing activities**

1. Navigate to **Administrative Tools | Settings | Appliance | Licensing**.
  - To upload a new license file, click **+Add License** and browse to select the license file.
  - To update a license file, select the license then select **Update License** in the lower left corner of a module's licensing information pane, select the license file, and click **Open**.

## Long Term Support (LTS) and Feature Releases

Releases use the following version designations:

- Long Term Support (LTS) Releases: The first digit identifies the release and the second is a zero (for example, 6.0 LTS).
- Maintenance LTS Releases: A third digit is added followed by LTS (for example, 6.0.6 LTS).
- Feature Releases: The Feature Releases version numbers are two digits (for example, 6.6).

Customers choose between two paths for receiving releases: Long Term Support (LTS) Release or Feature Release. See the following table for details.

**Table 7: Comparison of Long Term Support (LTS) Release and Feature Release**

	<b>Long Term Support (LTS) Release</b>	<b>Feature Release</b>
<b>Release frequency</b>	<b>Frequency:</b> Typically, every 2 years <b>Scope:</b> Includes new features, resolved issues and security updates <b>Versioning:</b> The first digit identifies the LTS and the second digit is a 0 (for example, 6.0 LTS, 7.0 LTS, and so on).	<b>Frequency:</b> Typically, every 3 months <b>Scope:</b> Includes the latest features, resolved issues, and other updates, such as security patches for the OS <b>Versioning:</b> The first digit identifies the LTS and the second digit is a number identifying the Feature Release (for example, 6.6, 6.7, and so on).
<b>Maintenance Release</b>	<b>Frequency:</b> Typically, every 3 months during full support <b>Scope:</b> Includes critical resolved issues	<b>Frequency:</b> Only for highly critical issues <b>Scope:</b> Includes highly critical resolved issues

	<b>Versioning:</b> A third digit designates the maintenance LTS Release (for example, 6.0.6 LTS).	<b>Versioning:</b> A third digit designates the maintenance Feature Release (for example, 6.6.1).
<b>Support</b>	Support extends typically 3 years after the original publication date or until the next LTS is published (whichever date is later).	Support extends typically 6 months after the original publication date or until the next feature or LTS Release is published (whichever date is later).

Release details can be found at [Product Life Cycle](#).

**CAUTION:** Downgrading from the latest Feature Release, even to an LTS release, voids support for SPP.

One Identity strongly recommends always installing the latest revision of the release path you use (Long Term Support path or Feature Release path).

### Moving between LTS and Feature Release versions

You can move from an LTS version (for example, 6.0.7 LTS) to the same feature version (6.7) and then patch to a later feature version. After that, you can patch from the minimum version for the patch, typically N-3. If you move from an LTS version to a feature version, you will receive a warning like the following which informs you that you will only be able to apply a Feature Release until the next LTS Release:

Warning: You are patching to a Feature Release from an LTS Release. If you apply this update, you will not be able to upgrade to a non-Feature Release until the next LTS major release version is available. See the Administration Guide for details.

You cannot move from a Feature Release to LTS Release. For example, you cannot move from 6.7 to 6.0.7 LTS. You have to keep upgrading with each new Feature Release until the next LTS Release version is published. For this example, you would wait until 7.0 LTS is available.

### Patching

You can only patch from a major version. For example, if you have version 6.6 and want to patch to 7.7, you must patch to 7.0 LTS and then apply 7.7.

An LTS major version of Safeguard for Privileged Passwords (SPP) will only work with the same LTS major version of Safeguard for Privileged Sessions (SPS). For the best experience, it is recommended you use the latest supported version.

## Appliance specifications

The Safeguard for Privileged Passwords Appliance is built specifically for use only with the Safeguard for Privileged Passwords privileged management software that is already

installed and ready for immediate use. It comes hardened to ensure the system is secure at the hardware, operating system, and software levels.

The following two tables list the Safeguard for Privileged Passwords 3000 Appliance and 2000 Appliance specifications and power requirements.

**Table 8: 3000 Appliance: Feature specifications**

<b>3000 Appliance</b>	<b>Feature / Specification</b>
Processor	Intel Xeon E3-1275v6 3.8 GHz
# of Processors	1
# of Cores per Processor	4 cores (8 threads)
L2/L3 Cache	8MB L3 Cache
Chipset	Intel C236 Chipset
DIMMs	Unbuffered ECC UDIMM DDR4 2400MHz
RAM	32 GB
Internal HD Controller	LSI MegaRAID SAS 9361-4i Single
Disk Hard Drive	4 x Seagate 7E2000 2TB SAS 512E
Availability	TPM 2.0, EEC Memory, Redundant PSU
I/O Slots	x16 PCIe 3.0, x8 PCIe 3.0
RAID	RAID10
NIC/LOM	4 port - dual GbE LAN with Intel i210-AT
Power Supplies	Redundant, 700W, Auto Ranging (100v~240V), ACPI compatible
Fans	1 Supermicro SNK-P0046P and 2 Micron 16GB 2666MHz 2R ECC Unb Z01B Dual Label
Chassis	1U Rack
Dimensions (HxWxD)	43 x 437.0 x 597.0 (mm) 1.7 x 17.2 x 23.5 (in)
Weight	Max: 37 lbs (16.78 Kg)

**Table 9: 2000 Appliance: Feature specifications**

<b>2000 Appliance</b>	<b>Feature / Specification</b>
Processor	Intel Xeon E3-1275v5 3.60 GHz
# of Processors	1

<b>2000 Appliance</b>	<b>Feature / Specification</b>
# of Cores per Processor	4
L2/L3 Cache	4 x 256KB L2, 8MB L3 SmartCache
Chipset	Intel C236 Chipset
DIMMs	DDR4-2400 ECC Unbuffered DIMMs
RAM	32GB
Internal HD Controller	LSI MegaRAID SAS 9391-4i 12Gbps SAS3
Disk	4 x Seagate EC2.5 1TB SAS 512e
Availability	TPM 2.0, EEC Memory, Redundant PSU
I/O Slots	x16 PCIe 3.0, x8 PCIe 3.0
RAID	RAID10
NIC/LOM	3 x Intel i210-AT GbE
Power Supplies	Redundant, 700W, Auto Ranging (100v~240V), ACPI compatible
Fans	4 x 40mm Counter-rotating, Non-hot-swappable
Chassis	1U Rack
Dimensions (HxWxD)	43 x 437.0 x 597.0 (mm) 1.7 x 17.2 x 23.5 (in)
Weight	Max: 46 lbs (20.9 Kg)
Miscellaneous	FIPS Compliant Chassis

**Table 10: 3000 Appliance and 2000 Appliance: Power requirements**

Input Voltage	100-240 Vac
Frequency	50-60Hz
Power Consumption (Watts)	170.9
BTU	583

Safeguard for Privileged Passwords is also available as a virtual appliance and from the cloud.



# Appliance LCD and controls

The front panel of the Safeguard for Privileged Passwords 3000 Appliance and 2000 Appliance contain the following controls for powering on, powering off, and scrolling through the LCD display.

- ✓ Green check mark button: Use the **Green check mark** button to start the appliance. Press the **Green check mark** button for NO more than one second to power on the appliance.
  - ⚠ **CAUTION: Once the Safeguard for Privileged Passwords Appliance is booted, DO NOT press and hold the Green check mark button. Holding this button for four or more seconds will cold reset the power of the appliance and may result in damage.**
- Red X button: Use the **Red X** button to shut down the appliance. Press and hold the **Red X** button for four seconds until the LCD displays POWER OFF.
  - ⚠ **CAUTION: Once the Safeguard for Privileged Passwords Appliance is booted, DO NOT press and hold the Red X button for more than 13 seconds. This will hard power off the appliance and may result in damage.**
- Down, up, left, and right arrow buttons: When the appliance is running, the LCD home screen displays: Safeguard for Privileged Passwords <version number>. Use the arrow buttons to scroll through the following details:
  - Serial: <appliance serial number>
  - X0: <appliance IP address>
  - MGMT: <management IP address>
  - MGMT MAC: <media access control address>
  - IPMI: <IP address for IPMI>

**Table 11: Appliance LCD and controls**

Control	Description
Green check mark button	Use the <b>Green check mark</b> button to start the appliance. Press the <b>Green check mark</b> button for NO MORE THAN one second to power on the appliance. <ul style="list-style-type: none"> <li> <span>⚠</span> <b>CAUTION: Once the Safeguard for Privileged Passwords Appliance is booted, DO NOT press and hold the Green check mark button. Holding this button for four or more seconds will cold reset the power of the appliance and may result in damage.</b> </li> </ul>
Red X button	Use the <b>Red X</b> button to shut down the appliance. Press and hold the <b>Red X</b> button for four seconds until the LCD displays POWER OFF.

Control	Description
Down, up, left, and right arrow buttons	<p data-bbox="464 271 1358 409"><b>CAUTION:</b> Once the Safeguard for Privileged Passwords Appliance is booted, DO NOT press and hold the Red X button for more than 13 seconds. This will hard power off the appliance and may result in damage.</p> <p data-bbox="448 443 1273 472">When the appliance is running, the LCD home screen displays:</p> <ul data-bbox="496 495 1254 524" style="list-style-type: none"> <li data-bbox="496 495 1254 524">• Safeguard for Privileged Passwords &lt;version number&gt;</li> </ul> <p data-bbox="448 546 1249 575">Use the arrow buttons to scroll through the following details:</p> <ul data-bbox="496 598 1126 824" style="list-style-type: none"> <li data-bbox="496 598 983 627">• Serial: &lt;appliance serial number&gt;</li> <li data-bbox="496 649 898 678">• X0: &lt;appliance IP address&gt;</li> <li data-bbox="496 701 994 730">• MGMT: &lt;management IP address&gt;</li> <li data-bbox="496 752 1126 781">• MGMT MAC: &lt;media access control address&gt;</li> <li data-bbox="496 804 903 833">• IPMI: &lt;IP address for IPMI&gt;</li> </ul>

## Product licensing

The Safeguard for Privileged Passwords 3000 Appliance and 2000 Appliance ship with the following modules, each requiring a valid license to enable functionality:

- One Identity Safeguard for Safeguard for Privileged Passwords (SPP)
- One Identity Safeguard for Privileged Sessions (SPS)  
SPS is a separate product. To update the SPS license, see the *Safeguard for Privileged Sessions Administration Guide*, Updating the SPS license.

### **To add a Safeguard for Privileged Passwords module license**

The first time you log in to the Safeguard for Privileged Passwords desktop client as the Appliance Administrator, it prompts you to add a license. In addition, you can add additional Safeguard for Privileged Passwords module licenses.

1. Navigate to **Administrative Tools | Settings | Appliance | Licensing** in the desktop client.
2. Click **+**.
3. **Browse** to select the license file.

Once you add a license, Safeguard for Privileged Passwords displays the current license information and additional links that allow you to update the license.

4. To add another module license, click **Add Another License** from the **Success** dialog.

**NOTE:** To avoid disruptions in the use of Safeguard for Privileged Passwords, the Appliance Administrator must configure the SMTP server, and define email templates for

the *License Expired* and the *License Expiring Soon* event types. This ensures you will be notified of an approaching expiration date.

## Update and installation instructions

The Safeguard for Privileged Passwords 3000 and 2000 Appliances are built specifically for use only with the Safeguard for Privileged Passwords privileged management software, which is pre-installed and ready for immediate use on the hardened appliances.

Safeguard for Privileged Passwords virtual appliances and cloud applications are also available.

### To set up a new deployment: 3000 Appliance, 2000 Appliance, Virtual Machine, or Cloud

If this is a new physical appliance, virtual machine, or cloud deployment, see the *Safeguard for Privileged Passwords Appliance Setup Guide*. The guide is also included in the package with a physical appliance.

### To update an existing physical appliance or virtual appliance with this patch

It is the responsibility of the Appliance Administrator to upgrade Safeguard for Privileged Passwords by installing an update file (patch). Consider the following:

- **Minimum patch version:** 6.0.0.12276. If you are running an earlier version of the Safeguard for Privileged Passwords Appliance, you must upgrade to this version before applying the 6.13.1 patch.
- **Clustered environment:** See the Patching cluster members section in the *Safeguard for Privileged Passwords Administration Guide* for instructions on how to deploy a patch so all appliances in the cluster are on the same version.
- During initial installation and when applying a patch, make sure the desktop client file is the one supplied with the appliance version. If the versions are not compatible, errors may occur. For more information, see [To install the desktop client](#) on page 28.


#### Prepare to install a patch

1. Backup your appliance before you install a patch. Once you install a patch, you cannot uninstall it. See the *Safeguard for Privileged Passwords Administration Guide*, Backup and restore topic.
2. Download the latest physical appliance patch or virtual appliance patch from the One Identity Support Portal:  
<https://support.oneidentity.com/one-identity-safeguard-for-privileged-passwords/download-new-releases>

### To install the hardware patch

1. As an Appliance Administrator, log in to the Safeguard for Privileged Passwords desktop client.
2. From the **Home** page, select **Administrative Tools**.
3. Select **Settings | Appliance | Updates**.  
The current appliance and client versions are displayed.
4. Click **Upload a File** and browse to select the update file you downloaded from the One Identity support web site.  
**NOTE:** When you select a file, Safeguard for Privileged Passwords uploads it to the server, but does not install it.
5. Once the file has successfully uploaded, click **Install Now**.

### To install the virtual machine patch

1. Make adequate resources available. The virtual appliances default deploy does not provide adequate resources. The minimum resources required are: 4 CPUs, 10GB RAM, and a 500GB disk. Without adequate disk space, the patch will fail and you will need to expand disk space then re-upload the patch.
2. Go to the web management console and click  **Setup** and follow the wizard.

### To install the desktop client

Be sure to update the desktop client when you apply a new patch. The version of the appliance and desktop client must be compatible.

To define and enforce security policy for your enterprise, install the Windows desktop client application, which gives you access to the Administrative Tools. You install the Windows desktop client by means of an .msi package that can be downloaded from the appliance web client portal. You do not need administrator privileges to install the desktop client.

**NOTE:** PuTTY is used to launch the SSH client for SSH session requests and is included in the install. The desktop client looks for any user-installed PuTTY in the following locations:

- Any reference to putty in the PATH environment variable
- c:/Program Files/Putty
- c:/Program Files(x86)/Putty
- c:/Putty

If PuTTY is not found, the desktop client uses the version of PuTTY that it installed at:  
<user-home-dir>/AppData/Local/Safeguard/putty.

If the user later installs PuTTY in any of the locations above, the desktop client uses that version which ensures the user has the latest version of PuTTY.

## ***Installing the Safeguard for Privileged Passwords desktop client application***

**▲ CAUTION:** The Safeguard for Privileged Passwords client version must match the installed Safeguard for Privileged Passwords version.

1. To download the Safeguard for Privileged Passwords desktop client Windows installer .msi file, open a browser and navigate to:  
`https://<Appliance IP>/Safeguard.msi`  
Save the **Safeguard.msi** file in a location of your choice.
2. Run the MSI package.
3. Select **Next** in the **Welcome** dialog.
4. Accept the **End-User License Agreement** and select **Next**.
5. Select **Install** to begin the installation.
6. Select **Finish** to exit the desktop client setup wizard.
7. Check your desktop resolution. The desktop client works the best at a resolution of 1024 x 768 or greater.

## ***Installing the Desktop Player***

**▲ CAUTION:** If the Desktop Player is not installed and a user tries to play back a session from the Activity Center, a message like the following will display: No Desktop Player. The Safeguard Desktop Player is not installed. Would you like to install it now? The user will need to click **Yes** to go to the download page to install the player following step 2 below.

1. Once the Safeguard for Privileged Passwords installation is complete, go to the Windows **Start** menu, **Safeguard** folder, and click **Download Safeguard Player** to be taken to the [One Identity Safeguard for Privileged Sessions - Download Software](#) web page.
2. Follow the *Install Safeguard Desktop Player* section of the player user guide found here:
  - a. Go to [One Identity Safeguard for Privileged Sessions - Technical Documentation](#).
  - b. Scroll to **User Guide** and click *One Identity Safeguard for Privileged Sessions [version] Safeguard Desktop Player User Guide*.
3. For Safeguard Desktop player version 1.8.6 and later, ensure your signed web certificate has a Subject Alternative Name (SAN) that includes each IP address of each of your cluster members. If the settings are not correct, the Safeguard Desktop Player will generate a certificate warning like the following when replaying sessions: Unable to verify SSL certificate. To resolve this issue, import the appropriate certificates including the root CA.

## **New Desktop Player versions**

When you have installed a version of the Safeguard Desktop Player application, you will need to uninstall the previous version to upgrade to a newer player version.

# Verify successful installation

You can verify that the correct version has been successfully installed from the Safeguard for Privileged Passwords desktop client or the LCD on the Safeguard for Privileged Passwords Appliance.

## ***To verify the uploaded patch was installed***

1. Log in to the Safeguard for Privileged Passwords desktop client as an Operations Administrator or an Appliance Administrator.
2. Select ✕ **Administrative Tools**.
3. Select **Settings | Appliance | Appliance Information**.
4. Verify the correct appliance version is displayed in the appliance properties pane.

In addition, when the appliance is running, the LCD home screen on the front panel of the appliance displays **Safeguard for Privileged Passwords** <version number>. Therefore, you can verify the correct appliance version is running from there, as well.

## More resources

Additional information is available from the following:

- Online product documentation: <https://support.oneidentity.com/one-identity-safeguard-for-privileged-passwords/technical-documents>
- One Identity Communities: <https://www.quest.com/community/one-identity/>
- Knowledge Base: <https://support.oneidentity.com/one-identity-safeguard-for-privileged-passwords/kb>

## Globalization

This section contains information about installing and operating this product in non-English configurations, such as those needed by customers outside of North America. This section does not replace the materials about supported platforms and configurations found elsewhere in the product documentation.

This release is Unicode-enabled and supports any character set. It supports simultaneous operation with multilingual data. This release is targeted to support operations in the following regions: North America, Western Europe and Latin America, Central and Eastern Europe, Far-East Asia, Japan. It supports bidirectional writing (Arabic and Hebrew). The release supports Complex Script (Central Asia – India, Thailand).

The release is localized to the following languages: Arabic (Saudi Arabia), Chinese (Traditional), Dutch, French, German, Italian, Japanese, Korean, Russian, Spanish.

## About us

One Identity solutions eliminate the complexities and time-consuming processes often required to govern identities, manage privileged accounts and control access. Our solutions enhance business agility while addressing your IAM challenges with on-premises, cloud and hybrid environments.

## Contacting us

For sales and other inquiries, such as licensing, support, and renewals, visit <https://www.oneidentity.com/company/contact-us.aspx>.

## Technical support resources

Technical support is available to One Identity customers with a valid maintenance contract and customers who have trial versions. You can access the Support Portal at <https://support.oneidentity.com/>.

The Support Portal provides self-help tools you can use to solve problems quickly and independently, 24 hours a day, 365 days a year. The Support Portal enables you to:

- Submit and manage a Service Request
- View Knowledge Base articles
- Sign up for product notifications
- Download software and technical documentation
- View how-to videos at [www.YouTube.com/OneIdentity](http://www.YouTube.com/OneIdentity)
- Engage in community discussions
- Chat with support engineers online
- View services to assist you with your product

## Third-party components

This product contains third-party components (listed below). Copies of component licenses may be found at <https://www.oneidentity.com/legal/license-agreements.aspx>. Source code for components marked with an asterisk (\*) is available at <http://opensource.quest.com>.



**Table 12: List of third-party components**

<b>Component</b>	<b>License or acknowledgment</b>
@angular/animations 7.2.15	Copyright (c) 2010-2019 Google LLC License Text - MIT N/A
@angular/cdk 7.3.7	Copyright (c) 2019 Google LLC. License Text - MIT N/A
@angular/common 7.2.15	Copyright (c) 2015 Cameron Spear License Text - MIT N/A
@angular/compiler 7.2.15	Copyright (c) 2010-2019 Google LLC. <a href="http://angular.io/license">http://angular.io/license</a> License Text - MIT N/A
@angular/core 7.2.15	Copyright (c) 2010-2019 Google LLC. <a href="http://angular.io/license">http://angular.io/license</a> License Text - MIT N/A
@angular/forms 7.2.15	Copyright (c) 2010-2019 Google LLC. <a href="http://angular.io/license">http://angular.io/license</a> License Text - MIT N/A
@angular/http 7.2.15	Copyright (c) 2010-2019 Google LLC. <a href="http://angular.io/license">http://angular.io/license</a> License Text - MIT N/A
@angular/material 7.3.7	Copyright (c) 2010-2019 Google LLC. <a href="http://angular.io/license">http://angular.io/license</a> License Text - MIT N/A
@angular/material-moment-adapter 7.3.7	Copyright (c) 2010-2019 Google LLC. <a href="http://angular.io/license">http://angular.io/license</a> License Text - MIT N/A
@angular/platform-browser 7.2.15	Copyright (c) 2010-2019 Google LLC. <a href="http://angular.io/license">http://angular.io/license</a> License Text - MIT N/A
@angular/platform-browser-dynamic 7.2.15	Copyright (c) 2010-2019 Google LLC. <a href="http://angular.io/license">http://angular.io/license</a> License Text - MIT N/A
@angular/router 7.2.15	Copyright (c) 2010-2019 Google LLC. <a href="http://angular.io/license">http://angular.io/license</a> License Text - MIT N/A

Component	License or acknowledgment
@types/humanize-duration 3.18.0	Copyright (c) 2010-2019 Google LLC. <a href="http://angular.io/license">http://angular.io/license</a> License Text - MIT N/A
@types/jquery 3.3.31	Copyright Notice - @types/jquery 3.3.31 Leonard Thieu, Boris Yankov, Christian Hoffmeister, Steve Fenton, Diullei Gomes, Tass Iliopoulos, Jason Swearingen, Sean Hill, Guus Goossens, Kelly Summerlin, Basarat Ali Syed, Nicholas Wolverson, Derek Cicerone, Andrew Gaspar, Seikichi Kondo, Benjamin Jackman, Poul Sorensen, Josh Strobl, John Reilly, Dick van den Brink, Thomas Schulz, Terry Mun License MIT 1.0
@types/qrcode 1.3.3	Copyright Notice - @types/qrcode 1.3.4 York Yao, Michael Nahkies, Rémi Sormain License MIT 1.0
@types/signalr 2.2.35	Copyright Notice - @types/signalr 2.2.35 Boris Yankov, T. Michael Keeseey, Giedrius Grabauskas License MIT 1.0
ANTLR 3.5.0.2	Copyright © 2012 Terence Parr and Sam Harwell. All rights reserved. The component is governed by <i>BSD ANTRL 4</i> license.
Antlr.Unofficial 3.4.1	Copyright 2009-2014 The Apache Software Foundation This component is governed by the <a href="#">Apache 2.0 License</a> . Version 2.0, January 2004 <a href="http://www.apache.org/licenses/">http://www.apache.org/licenses/</a>
Apache Cassandra 3.11.1	Copyright 2009-2014 The Apache Software Foundation This component is governed by the <a href="#">Apache 2.0 License</a> .

Component	License or acknowledgment
	Version 2.0, January 2004 <a href="http://www.apache.org/licenses/">http://www.apache.org/licenses/</a>
AsyncIO 0.1.61*	Copyright © 2016 Doran Somech This component is governed by the <i>Mozilla Public License v2</i> .
Autofac 4.6.2 Autofac 4.8.1 Autofac.Extensions.DependencyInjection 4.3.1 Autofac.Extras.AttributedMetadata 4.0.1 Autofac.mef 4.0.0 Autofac.Owin 4.2.0	Copyright © 2014 Autofac Project The component is governed by the <i>MIT Autofac Project</i> license.
Autofac.WebApi 4.2.0	Copyright © 2015 Autofac Project This component is governed by the <i>MIT Autofac Project 2015</i> license.
Autofac.WebApi2.Owin 4.0.0	Copyright 2007 James Newton-King
AutoMapper 6.2.2 AutoMapper 7.0.1	Copyright © 2010 Jimmy Bogard This component is governed by the <i>MIT AutoMapper</i> license.
AWSSDK.Core 3.3.10.1 AWSSDK.Core 3.3.29.4 AWSSDK.IdentityManagement 3.3.2.3	Copyright 2009-2017 Amazon.com, Inc. or its affiliates. All Rights Reserved. This component is governed by the <a href="#">Apache 2.0 License</a> . Version 2.0, January 2004 <a href="http://www.apache.org/licenses/">http://www.apache.org/licenses/</a>
billboard.js 1.8.1	Copyright (c) 2017 ~ present NAVER Corp. License Text - MIT N/A
BouncyCastle 1.8.4	Copyright (c) 2000 - 2020 The Legion of the Bouncy Castle Inc. License Text - MIT N/A
BouncyCastle.Crypto.dll 1.8.1	Copyright (c) 2000 - 2017 The Legion of the Bouncy Castle Inc. ( <a href="http://www.bouncycastle.org">http://www.bouncycastle.org</a> ) This component is governed by the <i>MIT</i>

Component	License or acknowledgment
	<i>BouncyCastleCrypto dll 1_8_1</i> license.
Cake.Core N/A	Copyright © .NET Foundation and Contributors This component is governed by the <i>MIT Cake</i> license.
CassandraCSharpDriver 3.11.0	Copyright © 2015 DataStax Inc. This component is governed by the <a href="#">Apache 2.0 License</a> . Version 2.0, January 2004 <a href="http://www.apache.org/licenses/">http://www.apache.org/licenses/</a>
Castle.Core 4.3.1	Copyright 2004-2017 Castle Project - <a href="http://www.castleproject.org/">http://www.castleproject.org/</a> This component is governed by the <a href="#">Apache 2.0 License</a> . Version 2.0, January 2004 <a href="http://www.apache.org/licenses/">http://www.apache.org/licenses/</a>
Cfa533Rs232Driver 0.9.23	Copyright © 2017 petrsm This component is governed by the <i>MIT Cfa533Rs232Driver</i> license.
CLAP 4.6.0	Copyright © 2011 Adrian Aisemberg, SharpRegion This component is governed by the <i>MIT CLAP</i> license.
clipboard-polyfill 2.8.6	Copyright © 2014 Lucas Garron This component is governed by the <i>MIT clipboard js</i> license.
CommandLineArgumentsParser 3.0.18	Copyright © 2016 Jakub Maly This component is governed by the <i>MIT CommandLineArgumentsParser 2016</i> license.
CommandLineParser 1.9.71 CommandLineParser 2.3.0 CommandLineParser 2.5.0	Copyright 2005-2012 Giacomo Stelluti Scala License MIT 1.0
Common.Logging 3.4.1	Copyright Aleksander Seovic, Mark Pollack, Erich Eichinger, Stephen Bohlen This component is governed by the Apache 2.0

Component	License or acknowledgment
	license. <a href="#">Apache 2.0 License</a> Version 2.0, January 2004 <a href="http://www.apache.org/licenses/">http://www.apache.org/licenses/</a>
core-js 2.6.10 core-js 2.6.5	Copyright (c) 2014-2019 Denis Pushkarev License MIT N/A
Costura.Fody 3.2.0	Copyright (c) 2012 Simon Cropp and contributors This component is governed by the <i>MIT license</i> .
Credential Management 1.0.2	This component is governed by the <a href="#">Apache 2.0 License</a> . Version 2.0, January 2004 <a href="http://www.apache.org/licenses/">http://www.apache.org/licenses/</a>
CryptSharpOfficial 2.1.0	Copyright 2007 James Newton-King License MIT 1.0
Dapper 1.50.5	2019 Stack Exchange, Inc. This component is governed by the <a href="#">Apache 2.0 License</a> . Version 2.0, January 2004 <a href="http://www.apache.org/licenses/">http://www.apache.org/licenses/</a>
DNParser 1.2.0	Copyright Pete Everett 2005-2015 This component is governed by the <i>Code Project Open License (CPOL) 1.02</i> license.
DnsClient 1.0.7 DnsClient 1.2.0	Copyright Michael Conrad This component is governed by the <a href="#">Apache 2.0 License</a> . Version 2.0, January 2004 <a href="http://www.apache.org/licenses/">http://www.apache.org/licenses/</a>
Draft 1.0.8 Draft 2.0.1-pre	Copyright 2015 Jordan S. Jones This component is governed by the <i>MIT Draft</i> license.
Ensure.That 8.0.0	Copyright © 2015 Daniel Wertheim

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file-saver.js 2.0.2	Copyright © 2016 Eli Grey This component is governed by the <i>MIT FileSaver.js</i> license.
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