

One Identity Safeguard for **Privileged Sessions 7.5**

Release Notes

08 March 2024, 09:51

These release notes provide information about the One Identity Safeguard for Privileged Sessions release. For the most recent documents and product information, see One Identity Safeguard for Privileged Sessions - Technical Documentation.

About this release

One Identity Safeguard for Privileged Sessions Version 7.5 is a release with new features and resolved issues. For details, see:

- New features
- · Resolved issues
- Known issues

NOTE: For a full list of key features in One Identity Safeguard for Privileged Sessions, see *Administration Guide*.

About the Safeguard product line

The One Identity Safeguard Appliance is built specifically for use only with the Safeguard 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 timeframe to value.

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:

- One Identity 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 Safeguard 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 integrating 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.



New features

New features in One Identity Safeguard for Privileged Sessions (SPS) version 7.5

• Single web UI session per user

To improve security, SPS does not allow parallel logins to the web UI for the same user. If a user logs in from a different browser or a different computer, SPS immediately invalidates the previous session.

New indexer status page view

You can monitor the status of your indexer services in a summarized view on the new **Indexer Status** page of the **Main Menu**, or switch to a more detailed view on the classic view of the page.

For more information, see *Monitoring the status of the indexer services* and *Monitoring the status of the indexer services in classic view* in the *Administration Guide*.

Other improvements

Improved navigation experience

The navigation menu of the home page has been improved.

Deprecated features

Apache lucene database

In SPS 7.0 LTS, One Identity modified the search for screen content in session data to use the search database only. The Apache lucene database support is phased out, but the query language remained lucene-like.

After the switch to the search database, you will be able to access content stored in an Apache lucene database only if you regenerate the content with the reindex tool. For more information, see Regenerate content stored in lucene indices.

Due to the removal of lucene indices, users are not able to search for content in lucene indices with the **content request** parameter on the **/api/audit/sessions** and **/api/audit/sessions/stats** endpoints.

For more information, see Searching in the session database with the basic search method in the REST API Reference Guide and Session statistics in the REST API Reference Guide.

Additionally, in **Reporting**, statistics subchapters that included the **audit_content** filter will not work. Alternatively, you can use Search-based subchapters with the **screen.content** filter to create statistic reports from connection metadata that included a specific content in the audit trail.



For more information, see *Creating search-based report subchapters from search results* in the *Administration Guide*.

Content search option deprecation

On the **Sessions** page, the **Content search** option has been deprecated.

Advanced statistics

Creating statistics from custom queries using the **Reporting** > **View & edit subchapters** > **Advanced statistics** page has been deprecated. The

/api/configuration/reporting/custom_subchapters REST API endpoint has also been deprecated.

During the upgrade process, existing advanced statistics subchapters and their references are removed from the SPS configuration. Additionally, advanced statistics ACLs assigned to user groups are also removed from the SPS configuration. Note that if a user group only had the advanced statistics ACL assigned under **Users & Access Control** > **Appliance Access**, the whole ACL entry is removed during the upgrade process.

Alternatively, you can use search-based subchapters to query connection metadata. For more information, see *Creating search-based report subchapters from search results* in the *Administration Guide*.

User lists

On the **Policies** page, **User lists** are allow lists or deny lists of usernames that allow fine-control over who can access a connection or a channel. However, the configuration and the semantics of this policy can be ambiguous. Therefore, One Identity is planning the deprecation and removal of the **User lists** feature in a future SPS release. If you want to maintain the list of allowed usernames, you can use AD/LDAP groups instead.

NOTE: This feature will be deprecated and removed in a future SPS release. The feature is still available in SPS 7.5.

Resolved issues

The following is a list of issues addressed in this release.

Table 1: General resolved issues in release 7.5

Resolved Issue	Issue ID
When adding a subchapter to a report, the 'Restbased Subchapters' group is now properly named 'Search-based Subchapters'.	447621
Fixed the DNS resolution timeout problem.	418170
Previously, when SPS tried to resolve a domain name and the DNS server	



Resolved Issue Issue ID

was unresponsive, SPS waited for too long to time out. This has been fixed, and now the timeouts are correctly enforced when resolving domain names.

Fixed authentication can be blocked by other users issue.

420845

SPS worked in a way that the authentication and authorization attempts of a user could possibly block the authentication of other users. This limitation did not cause problems while the authentication or authorization were performed nearly instantaneously. However, if the process was waiting for the slow response of a remote AD/LDAP or RADIUS server, then every authentication request of other users was blocked too. This was especially noticeable when the remote server was overloaded or when it was waiting for some interaction with the user (for example, MFA), and in this case, users might have experienced slow page load times or authentication timeout errors.

This issue was fixed, and now the authentication attempts are performed concurrently. Note that although remote resource consumption manifests in parallel authentication requests, these can still be slow when the remote resources are overloaded.

When editing a previously committed RADIUS login option, the RADIUS server's edit, add, or delete functionality now triggers the **Save** button of the login options sidesheet.

432762

Long-running background jobs could trigger an xcbInitSystemUnitFailed alert due to an automatic service restart by the internal message queue. The restart is handled gracefully by the runner of the background jobs, but the monitoring system will display the xcbInitSystemUnitFailed alerts.

438684

The unwanted service restart issue has been fixed.

Fixed RDP crashing during server authentication if the SPNEGO response contains only an error code.

439931

The server responded with a vendor-specific error code (HResult 80090302: unsupported function) only in the SPNEGO response, which format was not expected by SPS.

This has been fixed, and SPS now properly handles such responses.

The **SSH Control** > **Options** page only allowed uploading or deleting the Kerberos keytab for the local administrator, even when other users were granted write and perform access to this page.

442599

This has been fixed, and now all users with the proper access permissions can upload and delete the keytab.

Double-clicking the **No policy** button on the preview cleanup policy page now properly inverts the selection, even if only one policy is added.

447020



Resolved Issue Issue ID

When trying to commit changes that included the deletion of a subchapter that is referenced in a report either under **Reporting** > **Create & Manage Reports** or via the REST API, SPS displayed an error with an ambiguous error message: "The referenced subchapter 'subchapter-id' does not exist.".

393727

This has been fixed so that when deleting a subchapter, SPS checks whether the subchapter is referenced in a report, and if so, it will immediately display an error with a meaningful error message indicating that the subchapter is referenced in a report and that it should be unreferenced first.

Fixed the Remote Desktop Gateway packet overload can cause an out-of-memory crash issue.

340013

If the RDP proxy acts as a Desktop Gateway, it caches packets temporarily when the client is unable to consume them. In cases of heavy and permanent packet loads, this cache could increase until the resource limit is reached.

This has been fixed, and the buffer is now involved in the flow control decision.

A strict hostname check was ignored for certificates protecting HTTP, MSSQL, Telnet, and VNC connections.

340142

When using HTTP, MSSQL, Telnet, and VNC connections with TLS serverside certificate validation enabled and only accepting certificates authenticated by a trusted CA list with the **Strict hostname check** option enabled, the previous versions of SPS did not validate whether the common name field of the server certificate contained the server's IP address or domain name.

This has been fixed, and SPS now correctly enforces the **Strict hostname check** option.

There were only 3 time ranges previously:

340221

- Hour: if the time range was shorter than / equal to a day.
- Day: if the time range was shorter than / equal to 30 days.
- Month: if the time range was longer than 30 days.

A new time range (week) has been introduced, and the time period distributions have changed to the following:

- Hour: if the time range is shorter than / equal to a day.
- Day: if the time range is shorter than / equal to 14 days.
- Week: if the time range is shorter than / equal to 12 weeks.
- Month: if the time range is longer than 14 weeks.



Resolved Issue	Issue ID
Columns containing 0 items are also presented.	
Typing spaces and HTML tags to the quick search input no longer breaks the suggestion layout text.	431674
By fixing the issue, if we encounter an issue while creating a new SAML2 login method, we display a more specific error message instead of a generic one.	427645
When creating or editing an audit data cleanup policy, the sidesheets show the backend validation for the query field properly.	427772
When you create a new audit data cleanup policy, it will be selected in the page preview automatically.	427963
CSRF protection for the SPS REST API was optional. With this fix, SPS will force CSRF protection if the User-Agent refers to a browser.	428406
Due to an error during plugin API check, plugins with two-digit plugin API versions (for example, 1.7) could not be uploaded. The version check is fixed and the two-digit API version can be used from now on.	441702
On the analytics page of a session, all window title chips/pills were displayed in green. This is fixed and now each of them is displayed in the corresponding color to represent the user behavior correctly.	446474
When generating a report that includes content subchapters either from the SPS UI or via the SPS REST API, if approximately more than 1000 sessions matched the content query, report generation could fail.	431434
When generating reports that include content subchapters, Reporting collects sessions that match the content query. For each session, a QR code image is generated in temporary files that are embedded in the generated PDF file. Unfortunately, file descriptors had not been closed properly for these temporary files. As a result, if there were so many sessions matching the content query that the number of open file descriptors exceeded the operation system's limit, report generation failed and the following backtrace was written in the /var/log/messages log file: "ERROR OSError: [Errno 24] Too many open files.".	
This issue has been fixed by making sure that file descriptors are properly closed.	
When the user used the Automatically update session data on the Sessions page toggle, the Save button was not working on the User preferences UI. This issue has been fixed.	432800
	437840
When the SPS appliance was run as an Azure virtual machine, the boot firmware became tainted while upgrading to version 7.4. This necessitated applying a hotfix before further upgrades could be performed.	43/040



Resolved Issue ID

This issue has been fixed.

Table 2: Resolved Common Vulnerabilities and Exposures (CVE) in release 7.5

Resolved Issue	Issue ID
avahi:	CVE-2023-38469
	CVE-2023-38470
	CVE-2023-38471
	CVE-2023-38472
	CVE-2023-38473
bind9:	CVE-2023-2828
	CVE-2023-2911
	CVE-2023-3341
	CVE-2023-4408
	CVE-2023-50387
	CVE-2023-50868
	CVE-2023-5517
	CVE-2023-5679
curl:	CVE-2023-38545
	CVE-2023-38546
	CVE-2023-46218
freerdp2:	CVE-2022-41877
	CVE-2023-39350
	CVE-2023-39351
	CVE-2023-39352
	CVE-2023-39353
	CVE-2023-39354
	CVE-2023-39356
	CVE-2023-40181
	CVE-2023-40186



Resolved Issue	Issue ID		
	CVE-2023-40188		
	CVE-2023-40567		
	CVE-2023-40569		
	CVE-2023-40589		
glibc:	CVE-2023-4806		
	CVE-2023-4813		
	CVE-2023-4911		
	CVE-2023-5156		
gnutls28:	CVE-2023-5981		
	CVE-2024-0553		
	CVE-2024-0567		
jinja2:	CVE-2024-22195		
krb5:	CVE-2023-36054		
less:	CVE-2022-48624		
libssh:	CVE-2023-48795		
	CVE-2023-6004		
	CVE-2023-6918		
libuv1:	CVE-2024-24806		
libvpx:	CVE-2023-44488		
	CVE-2023-5217		
libx11:	CVE-2023-43785		
	CVE-2023-43786		
	CVE-2023-43787		
libxml2:	CVE-2024-25062		
libxpm:	CVE-2023-43786		
	CVE-2023-43787		
	CVE-2023-43788		
	CVE-2023-43789		
linux:	CVE-2023-1206		



Resolved Issue	Issue ID
	CVE-2023-20569
	CVE-2023-20588
	CVE-2023-25775
	CVE-2023-31083
	CVE-2023-31085
	CVE-2023-32252
	CVE-2023-34319
	CVE-2023-37453
	CVE-2023-3772
	CVE-2023-3863
	CVE-2023-39189
	CVE-2023-39192
	CVE-2023-39193
	CVE-2023-40283
	CVE-2023-4128
	CVE-2023-4155
	CVE-2023-4194
	CVE-2023-4244
	CVE-2023-4273
	CVE-2023-42752
	CVE-2023-42753
	CVE-2023-42754
	CVE-2023-42755
	CVE-2023-42756
	CVE-2023-4569
	CVE-2023-45871
	CVE-2023-4622
	CVE-2023-4623
	CVE-2023-46813



Resolved Issue	Issue ID
	CVE-2023-4881
	CVE-2023-4921
	CVE-2023-5158
	CVE-2023-5178
	CVE-2023-51780
	CVE-2023-51781
	CVE-2023-5197
	CVE-2023-5717
	CVE-2023-6039
	CVE-2023-6040
	CVE-2023-6111
	CVE-2023-6176
	CVE-2023-6606
	CVE-2023-6622
	CVE-2023-6817
	CVE-2023-6915
	CVE-2023-6931
	CVE-2023-6932
	CVE-2024-0193
	CVE-2024-0565
	CVE-2024-0646
nghttp2:	CVE-2023-44487
open-vm-tools:	CVE-2023-20867
	CVE-2023-20900
	CVE-2023-34058
	CVE-2023-34059
openjdk-17:	CVE-2023-22025
	CVE-2023-22081
	CVE-2023-22091



Resolved Issue	Issue ID
	CVE-2023-30585
	CVE-2023-30588
	CVE-2023-30589
	CVE-2023-30590
openIdap:	CVE-2023-2953
openssh:	CVE-2023-28531
	CVE-2023-48795
	CVE-2023-51384
	CVE-2023-51385
openssl:	CVE-2023-2975
	CVE-2023-3446
	CVE-2023-3817
	CVE-2023-5363
	CVE-2023-5678
	CVE-2023-6129
	CVE-2023-6237
	CVE-2024-0727
pam:	CVE-2024-22365
perl:	CVE-2022-48522
	CVE-2023-47038
pillow:	CVE-2023-44271
	CVE-2023-50447
postfix:	CVE-2023-51764
postgresql-14:	CVE-2023-5868
	CVE-2023-5869
	CVE-2023-5870
	CVE-2024-0985
procps:	CVE-2023-4016
pycryptodome:	CVE-2023-52323



Resolved Issue	Issue ID		
python-cryptography:	CVE-2023-23931		
	CVE-2023-49083		
python-urllib3:	CVE-2023-43804		
	CVE-2023-45803		
python3.10:	CVE-2023-40217		
rabbitmq-server:	CVE-2023-46118		
samba:	CVE-2023-4091		
	CVE-2023-4154		
	CVE-2023-42669		
shadow:	CVE-2023-4641		
sqlite3:	CVE-2022-46908		
	CVE-2023-7104		
strongswan:	CVE-2023-41913		
tar:	CVE-2023-39804		
tiff:	CVE-2022-40090		
	CVE-2023-1916		
	CVE-2023-3576		
	CVE-2023-52356		
	CVE-2023-6228		
	CVE-2023-6277		
vim:	CVE-2022-1725		
	CVE-2022-1771		
	CVE-2022-1886		
	CVE-2022-1897		
	CVE-2022-2000		
	CVE-2022-2042		
	CVE-2022-3234		
	CVE-2022-3235		
	CVE-2022-3256		



Resolved Issue	Issue ID
	CVE-2022-3278
	CVE-2022-3297
	CVE-2022-3324
	CVE-2022-3352
	CVE-2022-3491
	CVE-2022-3520
	CVE-2022-3591
	CVE-2022-3705
	CVE-2022-4292
	CVE-2022-4293
	CVE-2023-46246
	CVE-2023-4733
	CVE-2023-4734
	CVE-2023-4735
	CVE-2023-4750
	CVE-2023-4751
	CVE-2023-4752
	CVE-2023-4781
	CVE-2023-48231
	CVE-2023-48233
	CVE-2023-48234
	CVE-2023-48235
	CVE-2023-48236
	CVE-2023-48237
	CVE-2023-48706
	CVE-2023-5344
	CVE-2023-5441
	CVE-2023-5535
yajl:	CVE-2017-16516



Resolved Issue	Issue ID	
	CVE-2022-24795	
	CVE-2023-33460	

Known issues

The following is a list of issues, including those attributed to third-party products, known to exist at the time of release.

Table 3: General known issues

Known Issue

The api/audit/sessions endpoint cannot return fields of complex objects nested in lists.

When the api/audit/sessions endpoint receives a query where the fields parameter is provided with list type fields, then these fields will be missing from the response, for example: vault.reviewed.* and vault.approved.*.

Search-based subchapters present some data as missing, regardless of their actual status.

When trying to create a report with subchapters that include the fields listed below, n/a will be presented in the report for these fields, even if data is stored in the database for those fields.

Known affected fields:

- Reviewed user id
- Reviewed user name
- Reviewed domain name
- Reviewed user display name
- Reviewed client ip address
- Reviewed comment
- Reviewed timestamp
- Approved user id
- Approved user name
- Approved domain name
- Approved user display name
- Approved client ip address
- Approved comment
- Approved timestamp



Known Issue

A

CAUTION:

After upgrading to version 7.0 LTS, SPS requires a new license. To avoid possible downtimes due to certain features not being available, before starting the upgrade, ensure that you have a valid SPS license for 7.0 LTS.

Upgrade as follows:

- 1. Perform the upgrade to 7.0 LTS with your current license.
- 2. Update your SPS license to 7.0 LTS.

For a new SPS license for 7.0 LTS, contact our Licensing Team.

TLS version 1.3 is not supported when using the inWebo, Okta or One Identity Starling 2FA plugins. To ensure that TLS 1.2 is used by SPS during negotiation, specify the minimum and maximum TLS version as follows:

- For the minimum TLS version, select TLS version 1.2.
- For the maximum TLS version, select TLS version 1.3.

For more information, see *Verifying certificates with Certificate Authorities using trust stores* in the *Administration Guide*.

The accuracy of replaying audit trails in Asian languages (Traditional Chinese, Korean) has been enhanced. Due to this change, when upgrading SPS to version 6.11.0, all your sessions will be reindexed, and while reindexing is in progress, your sessions on the Search interface are incomplete. For this reason, plan your upgrade to SPS 6.11.0 accordingly.

Report generation may fail if a report subchapter references a connection policy that has been deleted previously.

SPS can create reports giving detailed information about connections of every connection policy. For this, the user can add connection subchapters in the **Report Configuration Wizard**, under **Reporting** > **Create & Manage Reports**.

For a successful report generation, the referenced connection policy must exist on the appliance. However, when deleting a connection policy that is referenced as a connection subchapter, the user is not warned that the report subchapter must be removed, otherwise the subsequent report generation will fail.

This affects scheduled report generation as well.

Table 4: General known issues

Known Issue	Issue ID
External indexer disconnected due to certificates expiry.	PAM-
You are only affected by this issue if you have enabled external indexing while	16883



Known Issue Issue ID

running SPS version 6.0.4 or 6.4.0 or later where the external indexer certificates were created with a limit of 800 days.

To resolve this issue, see External indexer disconnected due to certificates expiry (4368875) (oneidentity.com).

System requirements

Before installing SPS 7.5, ensure that your system meets the following minimum hardware and software requirements.

The One Identity Safeguard for Privileged Sessions Appliance is built specifically for use only with the One Identity Safeguard for Privileged Sessions 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.

For the requirements about installing One Identity Safeguard for Privileged Sessions as a virtual appliance, see one of the following documents:

NOTE: 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. For more information about environment virtualization, see One Identity's Product Support Policies.

Supported web browsers

Supported web browsers

Starting from version 6.13.0, SPS does not support Internet Explorer 11 (IE11). SPS version 6.12.0 and previous versions continue to support IE11.

Your browser must support:

- TLS-encrypted HTTPS connections with strong cipher algorithms
- JavaScript
- Cookies

SPS supports browsers as listed in the following table.



SPS version	IE11	Google Chrome	Safari	Mozzilla Firefox (latest version)	Microsoft EDGE	Microsoft EDGE Legacy
7.4.0	-	√	√	√	√	-
7.3.0	-	✓	✓	✓	✓	-
7.2.0	-	✓	✓	✓	✓	-
7.1.0	-	✓	✓	✓	✓	-
7.0 LTS	-	✓	✓	✓	✓	-
6.13.0	-	✓	✓	✓	✓	-
6.12.0	✓	✓	✓	✓	✓	-
6.11.0	✓	✓	✓	✓	✓	-
6.10.0	✓	✓	✓	✓	✓	-
6.9.0	✓	✓	✓	✓	✓	-
6.8.0	✓	✓	✓	✓	✓	-

Required applications and plugins

To use SPS, install and enable the following applications and plugins.

NOTE: To replay audit trails with SPS 6.9 or earlier versions with Internet Explorer 11 (IE11), install the Google WebM Video for Microsoft Internet Explorer plugin.

SPS version	JavaScipt	Google WebM Video for Microsoft Internet Explorer plugin
7.4.0	✓	-
7.3.0	✓	-
7.2.0	✓	-
7.1.0	✓	-
7.0 LTS	✓	-
6.13.0	✓	-
6.12.0	✓	-
6.11.0	✓	-
6.10.0	✓	-



SPS version	JavaScipt	Google WebM Video for Microsoft Internet Explorer plugin		
6.9.0	✓	Required for IE11		
6.8.0	✓	Required for IE11		

Phased out browsers

SPS does not support anymore the browsers listed in the following table.

Browser	Phased out in
IE10	SPS 4 F3
IE9	SPS 4 F3

Starting from version 4 F3, SPS does not support Internet Explorer 9 and 10, because the official support for them ended in January, 2016.

SPS web UI

Opening the web UI of SPS in multiple browser windows or tabs is not supported.

NOTE: The minimum recommended screen resolution for viewing One Identity Safeguard for Privileged Sessions's (SPS's) web interface is 1366 x 768 pixels on a 14-inch widescreen (standard 16:9 ratio) laptop screen. Screen sizes and screen resolutions that are equal to or are above these values will guarantee an optimal display of the web interface.

Safeguard Desktop Player system requirements

The Safeguard Desktop Player application supports the following operating systems:

Microsoft Windows:

- 64-bit version of Windows 10 (from version 1607)
- 64-bit version of Windows 11
- Windows Server 2016 (from version 1607)
- Windows Server 2019
- Windows Server 2022

Install the appropriate driver for your graphic card.

Linux:



RHEL 7, CentOS 7, or newer. The Safeguard Desktop Player application will probably run on other distributions as well that have at least libc6 version 2.17 installed.

Depending on the distribution, you will need to install the following packages:

- On Debian-based GNU/Linux:
 - libxcb-render-util0
 - libxcb-keysyms1
 - libxcb-image0
 - libxcb-randr0
 - libxcb-xkb1
 - libxcb-xinerama0
 - libxcb-icccm4
- On CentOS/Red Hat:
 - xcb-util-renderutil
 - xcb-util-keysyms
 - xcb-util-image
- Mac:

macOS macOS Monterey 12, or newer.

To install the Safeguard Desktop Player application, you need about 200MB disk space, and a temporarily used disk space to store the audit trails that are replayed. The size of the temporary files depends on the size of the replayed audit trails.

You can install the Safeguard Desktop Player application with user privileges.

Hardware specifications

One Identity Safeguard for Privileged Sessions appliances are built on high performance, energy efficient, and reliable hardware that are easily mounted into standard rack mounts.

Table 5: Hardware specifications

Product	Redundant PSU	Processor	Memory	Capacity	RAID	IPMI
Safeguard Sessions Appliance 3000	Yes	1x Intel Xeon E3- 1275 v6 3.80GHz	2 x 16 GB	4x2 TB NLSAS	LSI MegaRAID SAS 9361-4i Single	Yes
Safeguard Sessions Appliance	Yes	2x Intel Xeon Silver 4110	8 x 8 GB	9x2 TB NLSAS	1 x Broadcom	Yes



Product	Redundant PSU	Processor	Memory	Capacity	RAID	IPMI
3500		2.1GHz			MegaRAID SAS 9361- 16i + LSI Avago CacheVault Power Module 02 (CVPM02) Kit	
Safeguard Sessions Appliance 4000	Yes	1 x Intel Xeon Silver ICX 4310T @ 2.30GHz, 10C/20T	8 x 8 GB	4x20 TB SAS/SATA	1 x Broadcom 9560-8i RAID controller 1 x Broadcom CacheVault battery	Yes

The Safeguard Sessions Appliance 3500 is equipped with a dual-port 10Gbit interface. This interface has SFP+ connectors (not RJ-45) labeled 5 and 6, and can be found right of the Label 1 and 2 Ethernet interfaces. If you want faster communication, for example, in case of high data load, you can connect up to two 10Gbit network cards. These cards are not shipped with the original package and have to be purchased separately.

Product licensing

To enable a trial license

- Visit the Download Trials page, and navigate to One Identity Safeguard for Privileged Sessions > Download Free trial.
- 2. Complete the registration form, and click **Download Trial**.
- 3. You will receive the details on how to access your license key and the download the ISO files in email.

To enable a purchased commercial license

- 1. Navigate to My Account > My License Assets on the support portal.
- 2. To access your license key, click **Retrieve Key** next to your product.
- 3. Once you have the license keys, navigate to My Account > My Products and click



Download next to your product. The **Download Software** page is displayed.

4. Download the ISO image (install cdrom) of your product.

If you need help with accessing your license, navigate to the Licensing Assistance page, and follow the instructions on screen.

Upgrade and installation instructions

The One Identity Safeguard for Privileged Sessions appliance is built specifically for use only with the One Identity Safeguard for Privileged Sessions software that is already installed and ready for immediate use.

To upgrade to One Identity Safeguard for Privileged Sessions 7.5

For step-by-step instructions on upgrading to SPS 7.5, see *Upgrade Guide*.

NOTE: Due to legal reasons, installation packages of the external indexer application will be available only from the SPS web interface. After SPS versions 6.4 and 6.0.3 are released, the installation packages will be removed from our website.

A CAUTION:

Starting from 6.10.0, SPS (SPS) has changed to hardened SSL settings. As a result, during TLS session establishment, the following items are not considered secure:

- Private keys and X.509 certificates having RSA or DSA keys shorter than 2048 bits, or ECC keys shorter than 224 bits.
- Certificates (other than Root CA certificates) with signatures that use the SHA-1 or the MD5 hashing algorithm.

With the hardened SSL settings, SPS will not connect to remote systems that are protected with weak certificates.

You cannot upgrade SPS if your configuration contains insecure certificates, keys or certificate chains in any of the following sections:

- SPS web interface
- internal CA certificate
- connection policy TLS settings
- client X.509 credentials for external LDAP, SMTP or Syslog connections
- server X.509 certificates for external SMTP or Splunk servers
- external indexer credentials (only writable over the REST API)
- CA certificates in Trusted CA Lists and Trust Stores

Note that the certificates and keys that are used for signing, timestamping, encryption or decryption are not affected by this change.



About feature releases

This is a feature release.

For more information on the product support, see Product Support - One Identity Safeguard for Privileged Sessions.

For a full description of long-term-supported and feature releases, see Product Life Cycle & Policies - One Identity Safeguard for Privileged Sessions.

If you have a physical appliance based on MBX hardware

One Identity recommends you to upgrade to SPS 7.5, if you are not running SPS on Pyramid hardware and any of the following is true:

NOTE: If you do not know the type of your hardware, see If you have a physical appliance based on Pyramid hardware.

- You wish to take advantage of any of the new features.
- You are running a previous feature release.
- You are OK with having to continuously upgrade to the latest feature release to remain supported.

We are releasing new feature releases approximately once every 2 months.

If you have a physical appliance based on Pyramid hardware

Do NOT upgrade to SPS 7.5 if you are running SPS on Pyramid hardware:

Downgrading from a feature release

Do NOT downgrade from a feature release.

A CAUTION:

Downgrading from a feature release is not supported. If you upgrade from an LTS release (for example, 4.0) to a feature release (4.1), you have to keep upgrading with each new feature release until the next LTS version (in this case, 5.0) is published.

Verify successful installation

Navigate to **Basic Settings** > **System** > **Version details** and verify that SPS is running version 7.5 of the firmware. If not, it means that the upgrade process did not complete properly and SPS performed a rollback to revert to the earlier firmware version. In this case, complete the following steps:

1. Navigate to **Basic Settings** > **Troubleshooting** > **Create support bundle** and click **Create support bundle**.



- 2. Save the resulting ZIP file.
- 3. contact our Support Team and send them the file. They will analyze its contents to determine why the upgrade was not completed and assist you in solving the problem.

More resources

To obtain more information, read the technical documentation or consult the community:

- One Identity Safeguard for Privileged Sessions Technical Documentation
- One Identity Community

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. In this release, all product components should be configured to use the same or compatible character encodings and should be installed to use the same locale and regional options. 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).

This release has the following known capabilities or limitations: OCR is limited to Nuance supported languages. No support for RTL languages.



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
- Engage in community discussions
- · Chat with support engineers online
- View services to assist you with your product

Third-party contributions

This appendix includes the open source licenses and attributions applicable to One Identity Safeguard for Privileged Sessions.



GNU General Public License

Version 2, June 1991

1989, 1991 Free Software Foundation, Inc.

Free Software Foundation, Inc. 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Version 2, June 1991

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software - to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps:

- 1. copyright the software, and
- 2. offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.



The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

Section 0

This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

Section 1

You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

Section 2

You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a. You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.
- b. You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.
- c. If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user



how to view a copy of this License. (Exception: If the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

Section 3

You may copy and distribute the Program (or a work based on it, under Section 2 in object code or executable form under the terms of Section 1 and Section 2 above provided that you also do one of the following:

- a. Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
- b. Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
- c. Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.



Section 4

You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

Section 5

You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

Section 6

Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

Section 7

If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.



Section 8

If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

Section 9

The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

Section 10

If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY Section 11

BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

Section 12

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE



WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the program's name and a brief idea of what it does.> Copyright
(C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type "show w". This is free software, and you are welcome to redistribute it under certain conditions; type "show c" for details.

The hypothetical commands "show w" and "show c" should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than "show w" and "show c"; they could even be mouse-clicks or menu items-whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program "Gnomovision" (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989 Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Library General Public License instead of this License.



GNU Lesser General Public License

Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.

Free Software Foundation, Inc. 51 Franklin Street, Fifth Floor Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method:

- 1. we copyright the library, and
- 2. we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.



Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the Lesser General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

Section 0

This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed



under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

Section 1

You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

Section 2

You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a. The modified work must itself be a software library.
- b. You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.
- c. You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.
- d. If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still



operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

Section 3

You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

Section 4

You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Section 1 and Section 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Section 1 and Section 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.



Section 5

A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

Section 6

As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

- a. Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Section 1 and Section 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)
- b. Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on



the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

- c. Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.
- d. If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.
- e. Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

Section 7

You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

- a. Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.
- b. Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

Section 8

You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.



Section 9

You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

Section 10

Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

Section 11

If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

Section 12

If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.



Section 13

The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

Section 14

If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY Section 15

BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

NO WARRANTY Section 16

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change.



You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.> Copyright (C) <year>
<name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990 Ty Coon, President of Vice

That's all there is to it!

License attributions

OpenSSL

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (https://www.openssl.org/). This product includes cryptographic software written by Eric Young (eay@cryptsoft.com)

Botan cryptographic library license

Botan http://botan.randombit.net/ is distributed under these terms:

Copyright

1999-2013,2014 Jack Lloyd

2001 Peter J Jones

2004-2007 Justin Karneges



2004 Vaclav Ovsik

2005 Matthew Gregan

2005-2006 Matt Johnston

2006 Luca Piccarreta

2007 Yves Jerschow

2007-2008 FlexSecure GmbH

2007-2008 Technische Universitat Darmstadt

2007-2008 Falko Strenzke

2007-2008 Martin Doering

2007 Manuel Hartl

2007 Christoph Ludwig

2007 Patrick Sona

2010 Olivier de Gaalon

2012 Vojtech Kral

2012-2014 Markus Wanner

2013 Joel Low

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

Redistributions of source code must retain the above copyright notice, this list of conditions, and the following disclaimer.

Redistributions in binary form must reproduce the above copyright notice, this list of conditions, and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.



Copyright 2024 One Identity LLC.

ALL RIGHTS RESERVED.

This guide contains proprietary information protected by copyright. The software described in this guide is furnished under a software license or nondisclosure agreement. This software may be used or copied only in accordance with the terms of the applicable agreement. No part of this guide may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording for any purpose other than the purchaser's personal use without the written permission of One Identity LLC .

The information in this document is provided in connection with One Identity products. No license, express or implied, by estoppel or otherwise, to any intellectual property right is granted by this document or in connection with the sale of One Identity LLC products. EXCEPT AS SET FORTH IN THE TERMS AND CONDITIONS AS SPECIFIED IN THE LICENSE AGREEMENT FOR THIS PRODUCT, ONE IDENTITY ASSUMES NO LIABILITY WHATSOEVER AND DISCLAIMS ANY EXPRESS, IMPLIED OR STATUTORY WARRANTY RELATING TO ITS PRODUCTS INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT. IN NO EVENT SHALL ONE IDENTITY BE LIABLE FOR ANY DIRECT, INDIRECT, CONSEQUENTIAL, PUNITIVE, SPECIAL OR INCIDENTAL DAMAGES (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF PROFITS, BUSINESS INTERRUPTION OR LOSS OF INFORMATION) ARISING OUT OF THE USE OR INABILITY TO USE THIS DOCUMENT, EVEN IF ONE IDENTITY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. One Identity makes no representations or warranties with respect to the accuracy or completeness of the contents of this document and reserves the right to make changes to specifications and product descriptions at any time without notice. One Identity does not make any commitment to update the information contained in this document.

If you have any questions regarding your potential use of this material, contact:

One Identity LLC. Attn: LEGAL Dept 4 Polaris Way Aliso Viejo, CA 92656

Refer to our website (http://www.OneIdentity.com) for regional and international office information.

Patents

One Identity is proud of our advanced technology. Patents and pending patents may apply to this product. For the most current information about applicable patents for this product, please visit our website at http://www.OneIdentity.com/legal/patents.aspx.

Trademarks

One Identity and the One Identity logo are trademarks and registered trademarks of One Identity LLC. in the U.S.A. and other countries. For a complete list of One Identity trademarks, please visit our website at www.OneIdentity.com/legal/trademark-information.aspx. All other trademarks are the property of their respective owners.

Legend

- WARNING: A WARNING icon highlights a potential risk of bodily injury or property damage, for which industry-standard safety precautions are advised. This icon is often associated with electrical hazards related to hardware.
- **CAUTION:** A CAUTION icon indicates potential damage to hardware or loss of data if instructions are not followed.

