



syslog-ng Store Box 6.1

User Guide

Copyright 2019 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 Web site (<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. 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.

Contents

Preface	5
Target audience and prerequisites	5
Introduction	6
What SSB is	6
What SSB is not	7
Why is SSB needed	7
Who uses SSB	8
SSB web interface	9
Supported web browsers	9
Searching log messages	11
Using the search interface	11
Customizing columns of the log message search interface	18
Metadata collected about log messages	19
Using complex search queries	20
Searching encrypted logspaces	28
Using persistent decryption keys	28
Using session-only decryption keys	30
Creating reports from log data	32
Creating custom statistics from log data	32
Displaying log statistics	32
Creating reports from custom statistics	35
Configuring custom reports	36
Browsing reports	38
Creating content-based alerts	40
Setting up alerts on the search interface	41
Setting up alerts on the Search > Content-Based Alerts page	43
Format of alert messages	45
About us	46
Contacting us	46

Technical support resources46

Preface

Welcome to the syslog-ng Store Box 6.1 User Guide.

This document describes how to use the syslog-ng Store Box (SSB). Background information for the technology and concepts used by the product are also discussed.

Target audience and prerequisites

This guide is intended for auditors, consultants, and security experts responsible for auditing, monitoring, and troubleshooting applications and server administration processes. It is also useful for IT decision makers looking for a tool to improve the security and auditability of their servers, or to help compliance with the Sarbanes-Oxley (SOX), the Health Insurance Portability and Accountability Act (HIPAA), Basel II, or the Payment Card Industry (PCI) standard.

Introduction

This chapter introduces the syslog-ng Store Box (SSB), discussing how and why it is useful, and what benefits it offers to an existing IT infrastructure.

What SSB is

SSB is a device that collects, processes, stores, monitors, and manages log messages. It is a central log server appliance that can receive system (syslog and eventlog) log messages and Simple Network Management Protocol (SNMP) messages from your network devices and computers, store them in a trusted and signed logstore, automatically archive and back up the messages, and also classify the messages using artificial ignorance.

The most notable features of SSB are as follows:

- Secure log collection using Transport Layer Security (TLS).
- Trusted, encrypted, and timestamped storage.
- Ability to collect log messages from a wide range of platforms, including Linux, Unix, BSD, Sun Solaris, HP-UX, IBM AIX, IBM System i, as well as Microsoft Windows.
- Forwards messages to log analyzing engines.
- Classifies messages using customizable pattern databases for real-time log monitoring, alerting, and artificial ignorance.
- High Availability (HA) support to ensure continuous log collection in business-critical environments.
- Real-time log monitoring and alerting.
- Retrieves group memberships of the administrators and users from a Lightweight Directory Access Protocol (LDAP) database.
- Strict, yet easily customizable access control to grant users access only to selected log messages.
- Ability to search log data in multiple logspaces, whether on the same SSB appliance or located on a different appliance, even in a remote location.

SSB is configured and managed from any modern web browser that supports HTTPS connections, JavaScript, and cookies.

Supported browsers:

Mozilla Firefox 52 ESR

We also test SSB on the following, unsupported browsers. The features of SSB are available and usable on these browsers as well, but the look and feel might be different from the supported browsers. Internet Explorer 11, Microsoft Edge, and the currently available version of Mozilla Firefox and Google Chrome.

What SSB is not

SSB is not a log analyzing engine, though it can classify individual log messages using artificial ignorance. SSB comes with a built-in feature to store log message patterns that are considered "normal". Messages matching these patterns are produced during the legitimate use of the applications (for example sendmail, Postfix, MySQL, and so on), and are unimportant from the log monitoring perspective, while the remaining messages may contain something "interesting". The administrators can define log patterns on the SSB interface, label matching messages (for example, security event, and so on), and request alerts if a specific pattern is encountered. For thorough log analysis, SSB can also forward the incoming log messages to external log analyzing engines.

Why is SSB needed

Log messages contain information about the events happening on the hosts. Monitoring system events is essential for security and system health monitoring reasons. A well-established log management solution offers several benefits to an organization. It ensures that computer security records are stored in sufficient detail, and provides a simple way to monitor and review these logs. Routine log reviews and continuous log analysis help to identify security incidents, policy violations, or other operational problems.

Logs also often form the basis of auditing and forensic analysis, product troubleshooting and support. There are also several laws, regulations and industrial standards that explicitly require the central collection, periodic review, and long-time archiving of log messages. Examples of such regulations are the Sarbanes-Oxley Act (SOX), the Basel II accord, the Health Insurance Portability and Accountability Act (HIPAA), or the Payment Card Industry Data Security Standard (PCI-DSS).

Built around the popular syslog-ng application used by thousands of organizations worldwide, the syslog-ng Store Box (SSB) brings you a powerful, easy-to-configure appliance to collect and store your logs. Using the features of the latest syslog-ng Premium Edition to their full power, SSB allows you to collect, process, and store log messages from a wide range of platforms and devices.

All data can be stored in encrypted and optionally timestamped files, preventing any modification or manipulation, satisfying the highest security standards and policy compliance requirements.

Who uses SSB

SSB is useful for everyone who has to collect, store, and review log messages. In particular, SSB is invaluable for:

- *Central log collection and archiving:* SSB offers a simple, reliable, and convenient way of collecting log messages centrally. It is essentially a high-capacity log server with high availability support. Being able to collect logs from several different platforms makes it easy to integrate into any environment.
- *Secure log transfer and storage:* Log messages often contain sensitive information and also form the basis of audit trails for several applications. Preventing eavesdropping during message transfer and unauthorized access once the messages reach the log server is essential for security and privacy reasons.
- *Policy compliance:* Many organization must comply with regulations like the Sarbanes-Oxley Act (SOX), the Basel II accord, the Health Insurance Portability and Accountability Act (HIPAA), or the Payment Card Industry Data Security Standard (PCI-DSS). These regulations often have explicit or implicit requirements about log management, such as the central collection of log messages, the use of log analysis to prevent and detect security incidents, or guaranteeing the availability of log messages for an extended period of time — up to several years. SSB helps these organizations to comply with these regulations.
- *Automated log monitoring and log pre-processing:* Monitoring log messages is an essential part of system-health monitoring and security incident detection and prevention. SSB offers a powerful platform that can classify tens of thousands of messages real-time to detect messages that deviate from regular messages, and promptly raise alerts. Although this classification does not offer as complete an inspection as a log analyzing application, SSB can process many more messages than a regular log analyzing engine, and also filter out unimportant messages to decrease the load on the log analyzing application.

SSB web interface

syslog-ng Store Box (SSB) is configured via the web interface. Configuration changes take effect automatically after clicking **Commit**. Only the modifications of the current page or tab are activated — each page and tab must be committed separately.

Supported web browsers

The SSB web interface can be accessed only using TLS encryption and strong cipher algorithms. The browser must support HTTPS connections, JavaScript, and cookies. Make sure that both JavaScript and cookies are enabled.

NOTE:

SSB displays a warning message if your browser is not supported or JavaScript is disabled.

If you have successfully accessed the SSB web interface using HTTPS at least once, your browser will remember this, and on any subsequent occasions, it will force you to access SSB using HTTPS, even if you try loading it through an HTTP connection. This is thanks to the HTTP Strict Transport Security (HSTS) policy, which enables web servers to enforce web browsers to restrict communication with the server over an encrypted SSL/TLS connection for a set period. Web servers declare the HSTS policy using a special Strict-Transport-Security response header field.

This might, however, cause issues in any of the following cases:

- When the SSL certificate of SSB's web interface has expired. In this case, any attempt to access the web interface using a secure connection will fail with an error message.
- When you switch the trusted CA-signed certificate to a self-signed certificate for SSB's web interface. As per HSTS design, a self-signed certificate is not taken to have been issued by a trusted CA, therefore any secure connections to the SSB web interface will fail with an error message.

The resolution to the above-mentioned issues is to:

- Remove the HSTS settings in your browser. This must be done locally, in a browser-specific way. For detailed instructions, consult the support site of the browser you are using.

OR

- Upload a new certificate, using a different browser on a different machine. For detailed instructions on how to upload external certificates to SSB, see "[Uploading external certificates to SSB](#)" in the [Administration Guide](#).

Supported browsers:

Mozilla Firefox 52 ESR

We also test SSB on the following, unsupported browsers. The features of SSB are available and usable on these browsers as well, but the look and feel might be different from the supported browsers. Internet Explorer 11, Microsoft Edge, and the currently available version of Mozilla Firefox and Google Chrome.

Searching log messages

This section describes how to browse the log messages collected on SSB.

- [Using the search interface](#) on page 11 explains how to use and customize the search interface, describes the log message data that is available on SSB, and provides examples of the the wildcard and boolean search operators you can use.
- [Searching encrypted logspaces](#) on page 28 describes how to decrypt and browse encrypted logspaces.

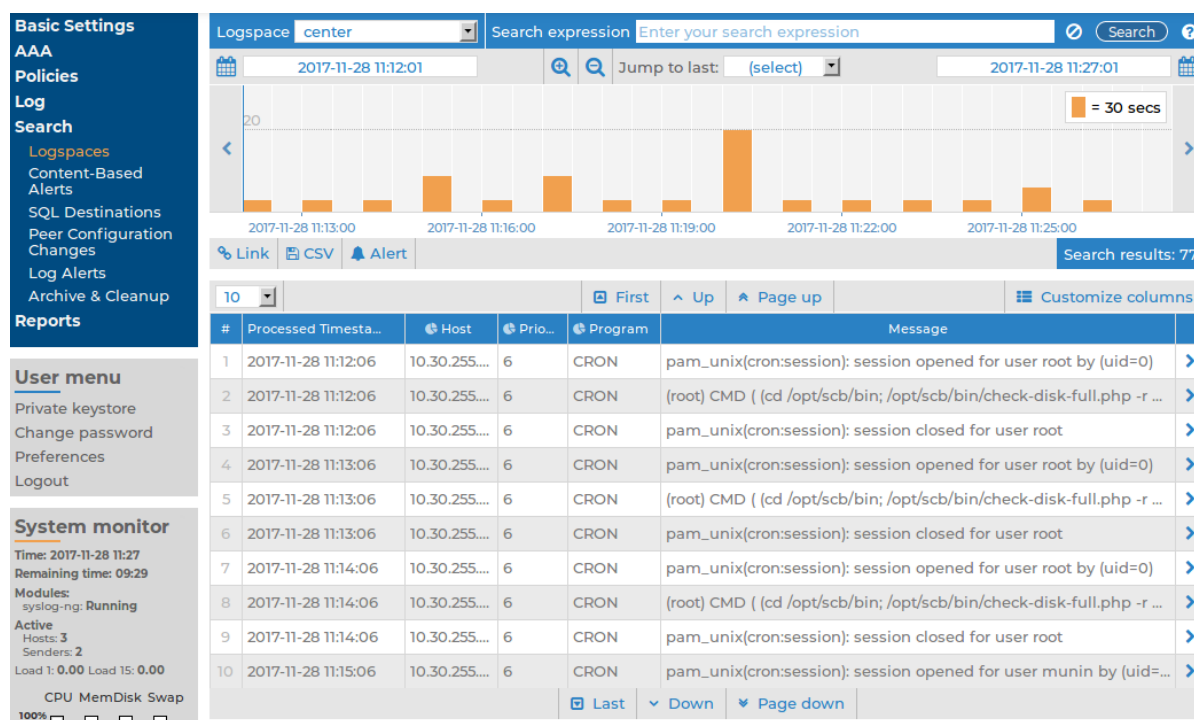
Using the search interface

SSB has a search interface for browsing the collected log messages. You can choose the logspace, enter a search expression, specify the timeframe, and browse the results here.

This section walks you through the main parts of the search interface.

To access the search interface, navigate to **Search > Logspaces**.

Figure 1: Search > Logspaces — The log message search interface



Logspaces:

To choose the appropriate logspace, use the **Logspace name** menu. Note that you cannot access plain text logspaces on the SSB search interface.

For more information on the available logspaces, and how to configure them, see ["Storing messages on SSB" in the Administration Guide](#).

Search:

On the log message search interface, you can use the **Search expression** field to search the full list of log messages. Search expressions are case insensitive, with the exception of operators (like AND, OR, etc.), which must always be capitalized. Click the icon, or see [Using complex search queries](#) for more details.

When searching log messages, the capabilities of the search engine depend on the delimiters used to index the particular logspace. For details on how to configure the delimiters used for indexing, see ["Creating logstores" in the Administration Guide](#).

NOTE:

You can search in indexed logspaces even if log traffic is disabled.

You can create complex searches using wildcards and boolean expressions. For more information and practical examples, see [Using complex search queries](#).

NOTE:

SSB only indexes the first 59 characters of every name-value pair (parameter). This has two consequences:

- If the parameter is longer than 59 characters, an exact search might deliver multiple, imprecise results.

Consider the following example. If the parameter is:

```
.sdata.security.uid=2011-12-08T12:32:25.024+01:00-hostname-12345
```

SSB indexes it only as:

```
.sdata.security.uid=2011-12-08T12:32:25.024+01:00-hostname-
```

This corresponds to the first 59 characters. As a result, searching for:

```
nvpair:.sdata.security.uid=2011-12-08T12:32:25.024+01:00-hostname-12345
```

returns all log messages that contain:

```
.sdata.security.uid=2011-12-08T12:32:25.024+01:00-hostname-
```

- Using wildcards might lead to the omission of certain messages from the search results.

Using the same example as above, searching for the value:

```
nvpair:*=2011-12-08T12:32:25.024+01:00-hostname-12345
```

does not return any results (as the 12345 part was not indexed). Instead, you have to search for:

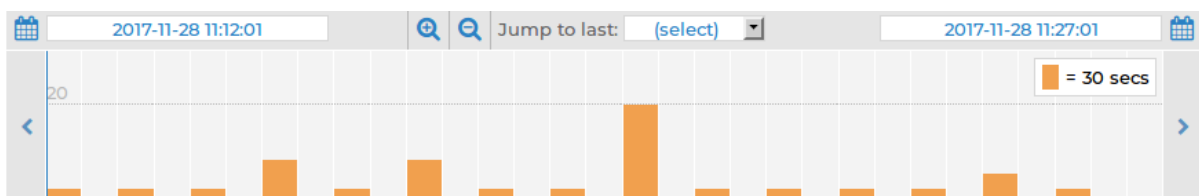
```
nvpair:*=2011-12-08T12:32:25.024+01:00-hostname-*
```



This, as explained above, might find multiple results.

Overview:

Displays the number of log messages in the selected time interval.

Figure 2: Search > Logspaces — Log message overview



Use the  and  icons to zoom, and the arrows to display the previous or the next intervals. To change the timeframe, you can:

- Change the beginning and the end date.
- Click and drag the pointer across a period on the calendar bars to select a specific interval and zoom in.
- Use the **Jump to last** option to select the last 15 minutes, hour, 6 hours, day, or week.

Hovering the mouse above a bar displays the number of results, and the start and end date of the period that the bar represents. Click a bar to display the results of that period in the table. Use Shift+Click to select multiple bars.

Action bar:

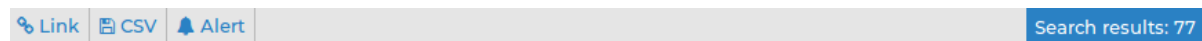
The search interface provides an action bar that allows you to:

- Fetch a [link to a search query](#).
- Export search results into a [csv](#) file.
- Create a [content-based alert](#).

It also displays the following information:

- [Error and warning messages](#).
- The number of [search results](#) returned by a search query.

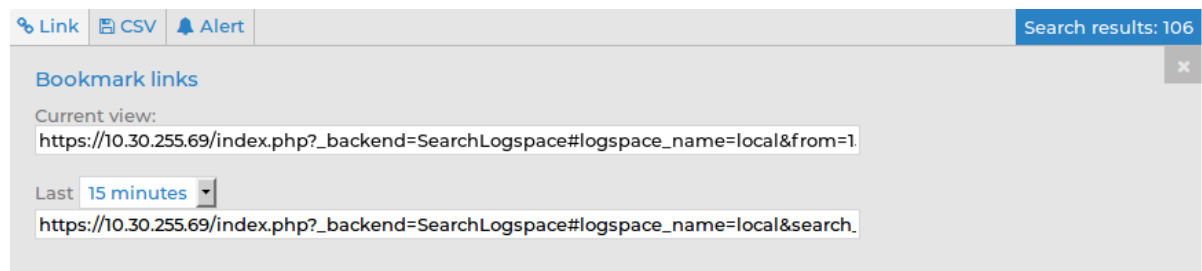
Figure 3: Search > Logspaces: Action bar



Link to a search query:

On clicking  , the **Bookmark links** panel is displayed:

Figure 4: Search > Logspaces — Bookmark links panel



Bookmark links allow you to fetch a link to a search query so that you can:

- Share your search queries with colleagues, who can then access the relevant search results in one click.
- Save frequently used search queries as bookmark links.

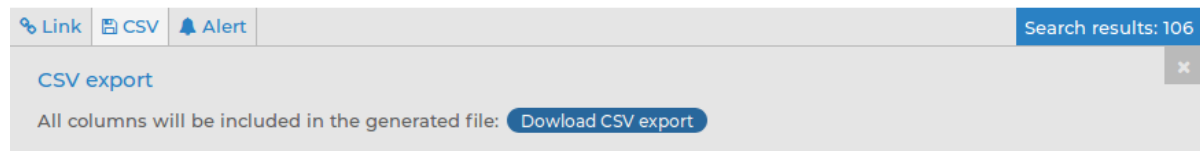
The link in the **Current view** field provides a direct link to your search query and its results currently displayed on your screen. Whenever you open the bookmarked link from your browser, it will always return the same, fixed set of results. The start and end date that you set when executing the search query and fetching the link from the **Bookmark links** panel remain fixed.

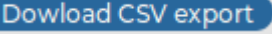
The **Last** menu, on the other hand, allows you to specify an interval of time, for example, the last 15 minutes or the last hour, and fetch search results generated within that period. The search results that you access using this link may differ on two different occasions as the start point of the specified interval is always the moment you open the bookmarked link from your browser.

CSV export:

On clicking , the **CSV export** panel is displayed:

Figure 5: Search > Logspaces – CSV export panel



Clicking  exports your search results into a CSV file. This saves the table as a text file containing comma-separated values. Note that if an error occurs when exporting the data, the exported CSV file will include a line (usually as the last line of the file) starting with a zero and the details of the problem, for example, 0<description_of_the_error>.

CAUTION:

Do not use Download CSV export to export large amounts of data, as exporting data can be very slow, especially if the system is under heavy load. If you regularly need a large portion of your data in plain text format, consider using the SSB RPC API (for details, see "[The SSB RPC API](#)" in the Administration Guide), or sharing the log files on the network and processing them with external tools (for details, see "[Accessing log files across the network](#)" in the Administration Guide).

Alert:

The alert functionality enables you to set up content-based alerts for search expressions of your choice. You will receive an alert when a match is found between the search expression and the contents of a log message. Note that the alerts are generated for only those log messages that are stored in the logspace(s) for which you set up the alert.

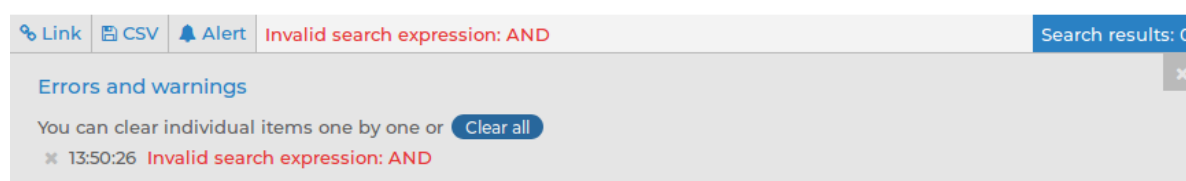
For detailed information on content-based alerts, see ["Creating content-based alerts" in the Administration Guide](#).

Errors and warnings:


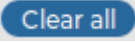
When any user action results in an error condition (for example, if you enter an invalid search expression, display statistics for a column that has not been indexed), an error or warning notification will be displayed on the action bar. Errors are shown in red letters, warnings are displayed in amber.

If there is more than one notification, the latest will be displayed and the number of notifications triggered will also be indicated. Clicking the notification will open an **Errors and warnings** panel:

Figure 6: Search > Logspaces — Errors and warnings panel



The **Errors and warnings** panel displays a list of errors/warnings with their timestamp and details of their cause.

You can clear notifications one by one by clicking  next to the them, or clear all of them by clicking .

Search results:

After running a search query, the action bar displays the number of search results returned by the query. This is useful information when you are trying to find out how often a certain element appears in the logs.

List of log messages:

Use the arrow keys and the Page Up and Page Down keys to navigate the listed log messages, or use the mouse wheel to scroll. You can disable mouse wheel scrolling in your **User menu > Preferences**. If data is too long to fit on one line, it is automatically wrapped and only the first line is displayed.

Figure 7: Search > Logspaces — List of log messages

#	Processed Timesta...	Host	Prio...	Progra...	Message
1	2017-11-28 13:27:48	ssbdemo	6	index-loc...	Indexer performance statistics; tokenizer_queue_length='1', toke...
2	2017-11-28 13:27:48	ssbdemo	6	index-ce...	Indexer performance statistics; tokenizer_queue_length='1', toke...
3	2017-11-28 13:28:01	ssbdemo	6	CRON	pam_unix(cron:session): session opened for user root by (uid=0)
4	2017-11-28 13:28:01	ssbdemo	6	CRON	(root) CMD ([-x /opt/ssb/bin/check-disk-full.php] && (cd /opt/ssb/...
5	2017-11-28 13:28:01	ssbdemo	6	CRON	pam_unix(cron:session): session closed for user root
6	2017-11-28 13:29:01	ssbdemo	6	CRON	pam_unix(cron:session): session opened for user root by (uid=0)
7	2017-11-28 13:29:01	ssbdemo	6	CRON	(root) CMD ([-x /opt/ssb/bin/check-disk-full.php] && (cd /opt/ssb/...
8	2017-11-28 13:29:01	ssbdemo	6	CRON	pam_unix(cron:session): session closed for user root
9	2017-11-28 13:29:01	ssbdemo	6	index-ce...	Scan directory for potential days of logs (YYYY/MM-DD); directory='...
10	2017-11-28 13:29:01	ssbdemo	6	index-loc...	Scan directory for potential days of logs (YYYY/MM-DD); directory='...

Details of a log message:

To expand a row in the list of log messages, click [>](#). The complete log message is displayed:

Figure 8: Search > Logspaces — Viewing a single log message

Message 6 of 2407	
Processed timestamp:	2018-02-23 12:37:01
Timestamp:	2018-02-23 12:37:01
Host:	real
Program[PID]:	CRON[30801]
Facility:	10
Priority:	6
Unique ID:	810062992740732938
Tags:	
Message:	pam_unix(cron:session): session closed for user root
Dynamic columns:	mytag=ALMA sdata.timequality.issynced=0

Use the arrow keys to jump to the previous or the next log message.

Use the Page Up and Page Down to jump to the 10th log message before or after the currently displayed log message. You can also jump to the previous or the next log message with the mouse wheel.

If the displayed log message consists of several pages of data, you can configure the mouse wheel to be able to use it for scrolling the message vertically. To do this, navigate to **User menu > Preferences**, deselect **Mousewheel scrolling of search results** and click **Set options**. This will disable jumping between log messages with the mouse wheel.

You can perform the following actions:

- Click any word in the message to copy it to the Search field.
- Click any of the dynamic columns (name-value pairs) to add it as a column to the list

of log messages.

- Click any of the  icons to view the statistics of the selected category.

To return to the list of all log messages, click .

Customizing columns of the log message search interface

The following describes how to customize the data displayed on the log message search interface.

To customize the data displayed on the log message search interface

1. Click **Customize columns**.

The parameters used for the columns when displaying log messages are listed under **Displayed columns**. All other available parameters are listed under **Available static columns** and **Available dynamic columns**.

Dynamic columns are created from structured data parameters (name-value pairs) in log messages stored on SSB. Structured data parameters are detected and added to the list of customizable columns automatically. (For more information on the structured data part of log messages, see "[The STRUCTURED-DATA message part](#)" in the [Administration Guide](#).)

 **NOTE:**


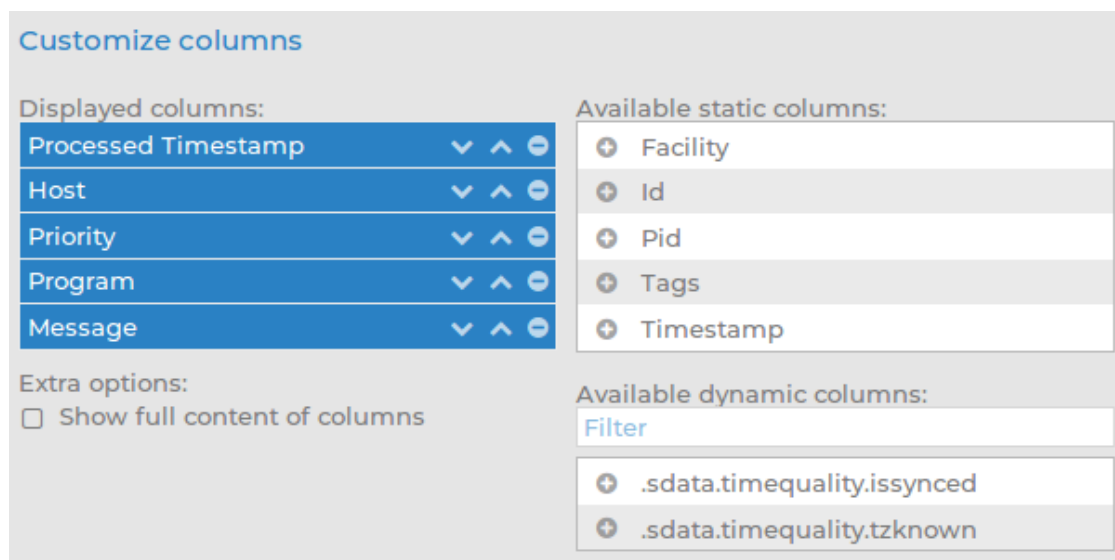



To export the search results into a CSV file, click  on the action bar. Note that the CSV file includes all the static columns and the displayed dynamic columns.

Figure 9: Search > Logspaces > Customize columns — Customizing columns of the log message search interface



2. To add a static column to the **Displayed columns**, click .
3. To add a dynamic column to the **Displayed columns**, choose a name-value pair from **Available dynamic columns** and click .
The selected name generates a new, separate dynamic column with a **<name>** heading (where **<name>** is the name of the key). The relevant values are displayed in the cells of the respective column.
4. To remove parameters from the **Visible columns**, click .
5. To display the full content of each column (including the log messages), enable **Show full content of columns**.

Metadata collected about log messages

The following information is available about the log messages:

- *Processed Timestamp*: The date when SSB received the log message in YEAR-MONTH-DAY HOUR:MINUTE:SECOND format.
- *Timestamp*: The timestamp received in the message — the time when the log message was created in YEAR-MONTH-DAY HOUR:MINUTE:SECOND format.
- *Facility*: The facility that sent the message.
- *Priority*: The priority value of the message.
- *Program*: The application that created the message.
- *Pid*: The program identifier of the application that created the message.
- *Host*: The IP address or hostname of the client that sent the message to SSB.

- *Message*: The text of the log message.
- *Tag*: Tags assigned to the message matching certain pattern database rules.
- *Id*: Unique ID of the message.
- *classifier.rule_id*: ID of the pattern database rule that matched the message.
- *classifier.class*: Description of the pattern database rule that matched the message.
- Dynamic columns, created from additional name-value pairs, might also be available.

Using complex search queries

You can use wildcards and boolean expressions, and search specific parts of the log messages collected on SSB.

NOTE:

When searching log messages, the capabilities of the search engine depend on the delimiters used to index the particular logspace. By default, the indexer uses the following delimiter characters to separate the message into words (tokens): & : ~ ? ! [] = , ; () ' ". For details on how to configure the delimiters used for indexing, see ["Creating logstores" in the Administration Guide](#).

NOTE:

It is not possible to search for the whitespace () character in the MESSAGE part of the log message, since it is a hard-coded delimiter character.

The following sections provide examples for different search queries:

- For examples of exact matches, see [Searching for exact matches and using complex queries](#) on page 20.
- For examples of using boolean operators to combine search keywords, see [Combining search keywords](#) on page 21.
- For examples of wildcard searches, see [Using wildcard searches](#) on page 22.
- For examples of searching for special characters, see [Searching for special characters](#) on page 24.
- For examples of searching in a specific part of the message, see [Searching in a specific part of the message](#) on page 25.
- For examples of searching name-value pairs, see [Searching the name-value pairs of the message](#) on page 25.

Searching for exact matches and using complex queries

By default, SSB searches for keywords as whole words in the MESSAGE part of the log message and returns only exact matches.

Example: Searching for exact matches

Search expression	example
Matches	example Example EXAMPLE
Does not match	examples example.com query-by-example exam

Combining search keywords

You can use boolean operators - AND, OR, and NOT - to combine search keywords. Note that the boolean operators are case sensitive, and must be in all caps. More complex search expressions can also be constructed with parentheses.

Example: Combining keywords in search

Search expression	keyword1 AND keyword2
Matches	(returns log messages that contain both keywords)
Search expression	keyword1 OR keyword2
Matches	(returns log messages that contain at least one of the keywords)
Search expression	keyword1 AND NOT keyword2
Matches	(returns log messages that contain only keyword1)

To search for expressions that can be interpreted as boolean operators (for example: AND), use the following format: message:AND.

Example: Using parentheses in search

Use parentheses to create more complex search expressions:

Search expression	(keyword1 OR keyword2) AND keyword3
Matches	(returns log messages that contain either keyword1 and keyword3, or keyword2 and keyword3)

Using wildcard searches

You can use the ? and * wildcards in your search expressions.

Example: Using wildcard ? in search

The ? (question mark) wildcard means exactly one arbitrary character. Note that it does not work when trying to find non-UTF-8 or multibyte characters. If you want to search for these characters, the expression ?? might work, or you can use the * wildcard instead.

Search expression	example?
Matches	example1 examples
Does not match	example.com example12 query-by-example example?
Search expression	?example?
Matches	1example2
Does not match	example.com example12 query-by-example

Search expression	example??
Matches	example12
Does not match	example.com example1 query-by-example

Example: Using wildcard * in search

The * wildcard means 0 or more arbitrary characters. It finds non-UTF-8 and multibyte characters as well. Wildcard characters also work in any message part, for example, program:postfix*.

Search expression	example*
Matches	example examples example.com

Does not match	query-by-example example*
----------------	------------------------------

Search expression	*example
Matches	example query-by-example

Does not match	example.com example12
----------------	--------------------------

Search expression	*example*
Matches	example query-by-example example.com example12

Example: Using combined wildcards in search

Wildcard characters can be combined.

Search expression	<code>ex?mple*</code>
Matches	<code>example1</code> <code>examples</code> <code>example.com</code> <code>exemple.com</code> <code>example12</code>
Does not match	<code>exmples</code> <code>query-by-example</code>

Searching for special characters

To search for the question mark (?), asterisk (*), backslash (\) or whitespace () characters, you must prefix these characters with a backslash (\). Any character after a backslash is handled as a character to be searched for.

NOTE:

Delimiter characters are an exception to the rule. It is not possible to search for delimiter characters, even when they are prefixed.

Example: Searching for special characters

To search for a special character, use a backslash (\).

Search expression	<code>example\?</code>
Matches	<code>example?</code>
Does not match	<code>examples</code> <code>example1</code>

To search for the backslash character, use two backslashes (\\).

Search expression	C:\\Windows
Matches	C:\\Windows
Search expression	nvpair:path=C:\\Program\ Files
Matches	C:\\Program Files

Searching in a specific part of the message

You can search in a specific part of the message using the <type>: prefix. The message: (or msg:) prefix means the message part and can be omitted. For example, use the program: prefix to search for the name of an application, or use the host: prefix to search for a host name, and so on.

Example: Searching specific parts of messages

Search expression	program:syslog-ng
Matches	All log messages from the syslog-ng application.

Searching the name-value pairs of the message

You can search the structured data part of log messages using the nvpair: prefix. Use the = delimiter to separate the name and the value of structured data parameters, and remove the quote marks from the values.

Example: Searching the structured data part of messages

Search expression	nvpair:.sdata.win@18372.4.event_type=Alert
Matches	All log messages where there is a win@18372.4 element with the event_type="Alert" parameter. For example: [win@18372.4 EVENT_TYPE="Alert"]

Example: Using wildcard * to search the structured data

You can use the asterisk (*) wildcard to broaden the search to all structured data elements.

Search expression `nvpair:*event_type=Alert*`

Matches All log messages where the "event_type" name has the "Alert" value.

Example: Searching for parameter names

To search for a specific name, add the "=" character after the name.

Search expression `nvpair:*event_type=*`

Matches All log messages where an "event_type" name exists.

Example: Searching for parameter values

To search for a specific value, add the "=" character before the value.

Search expression `nvpair:*=Alert`

Matches All log messages where a name has the "Alert" value.

NOTE:

SSB only indexes the first 59 characters of every name-value pair (parameter). This has two consequences:

- If the parameter is longer than 59 characters, an exact search might deliver multiple, imprecise results.

Consider the following example. If the parameter is:

```
.sdata.security.uid=2011-12-08T12:32:25.024+01:00-hostname-12345
```

SSB indexes it only as:

```
.sdata.security.uid=2011-12-08T12:32:25.024+01:00-hostname-
```

This corresponds to the first 59 characters. As a result, searching for:

```
nvpair:.sdata.security.uid=2011-12-08T12:32:25.024+01:00-hostname-12345
```

returns all log messages that contain:

```
.sdata.security.uid=2011-12-08T12:32:25.024+01:00-hostname-
```

- Using wildcards might lead to the omission of certain messages from the search results.

Using the same example as above, searching for the value:

```
nvpair:*=2011-12-08T12:32:25.024+01:00-hostname-12345
```

does not return any results (as the 12345 part was not indexed). Instead, you have to search for:

```
nvpair:*=2011-12-08T12:32:25.024+01:00-hostname-*
```

This, as explained above, might find multiple results.

Search performance tips

To decrease the load on SSB when searching and receive your search results faster, note the following points.

- Use as small a time range as possible
- Prefer AND instead of OR
- Avoid unneeded wildcard characters, such as * and ?
- Use wildcard characters at the end of the tokens if possible

Searching encrypted logspaces

By default, you cannot browse encrypted logstores from the SSB web interface, because the required decryption keys are not available on SSB. To make browsing and searching encrypted logstores possible, SSB provides the following options:

- Use persistent decryption key(s) for a single user.
For details, see [Using persistent decryption keys](#) on page 28.
- Use decryption keys for the duration of the user session only.
For details, see [Using session-only decryption keys](#) on page 30.

One Identity recommends using 2048-bit RSA keys (or stronger).

Using persistent decryption keys

You can upload decryption keys and bind them to your account. The decryption keys are stored on SSB, but they are only made available for this user account, and can also be protected (encrypted) with a passphrase.

To use persistent decryption keys



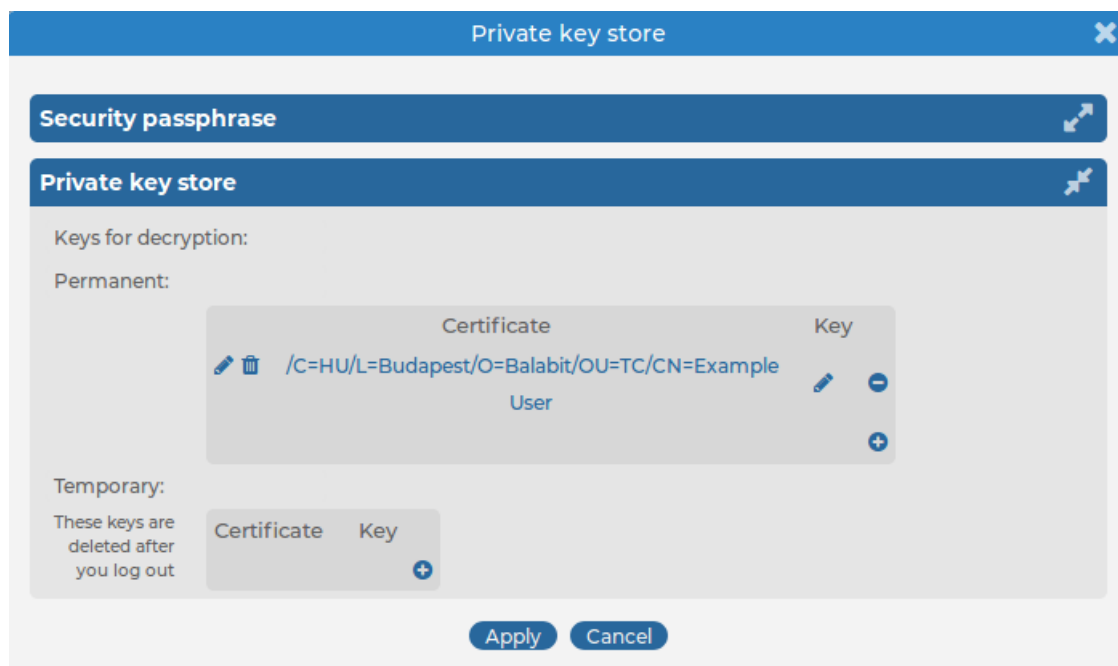
1. Select **User menu** > **Private keystore**. A pop-up window is displayed.
2. Select **Permanent** > , then select **Certificate** > . A pop-up window is displayed.

Figure 10: User menu > Private keystore — Adding decryption keys to the private keystore




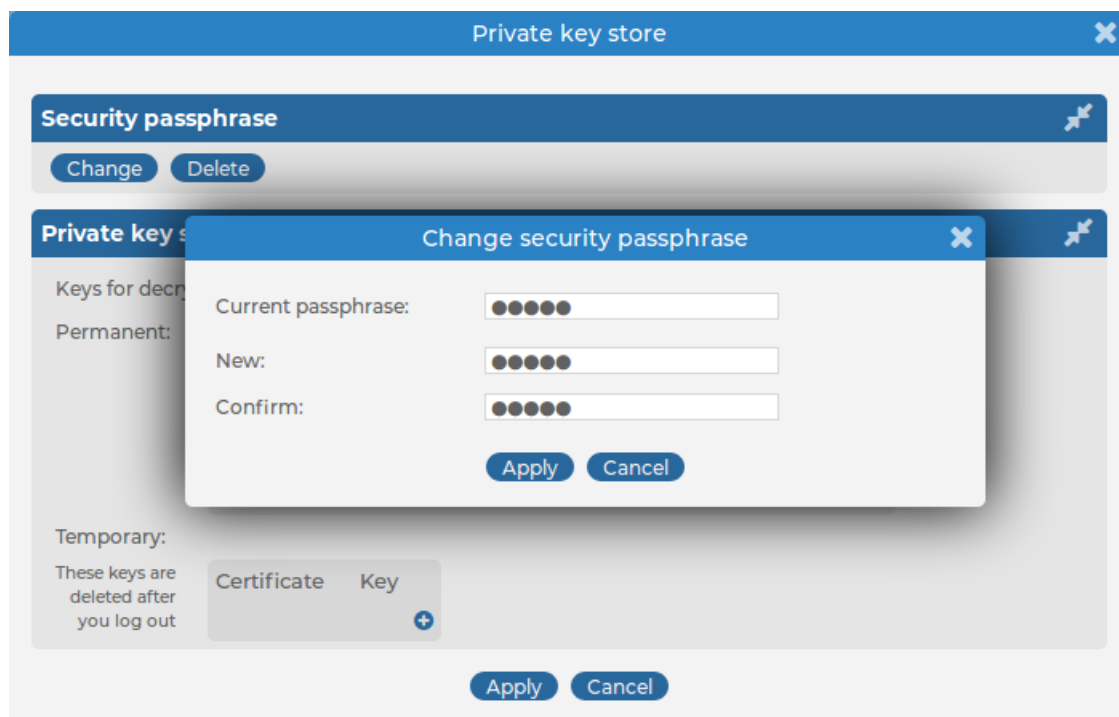
3. Paste or upload the certificate used to encrypt the logstore.
4. Select **Key** > . A pop-up window is displayed.
5. Paste or upload the private key of the certificate used to encrypt the logstore.
6. Repeat Steps 2-5 to upload additional keys if needed.
7. Select **Security passphrase** > **Change**, and enter a passphrase to protect the private keys.

Figure 11: User menu > Private keystore — Securing the private keystore with a passphrase



8. Click **Apply**.

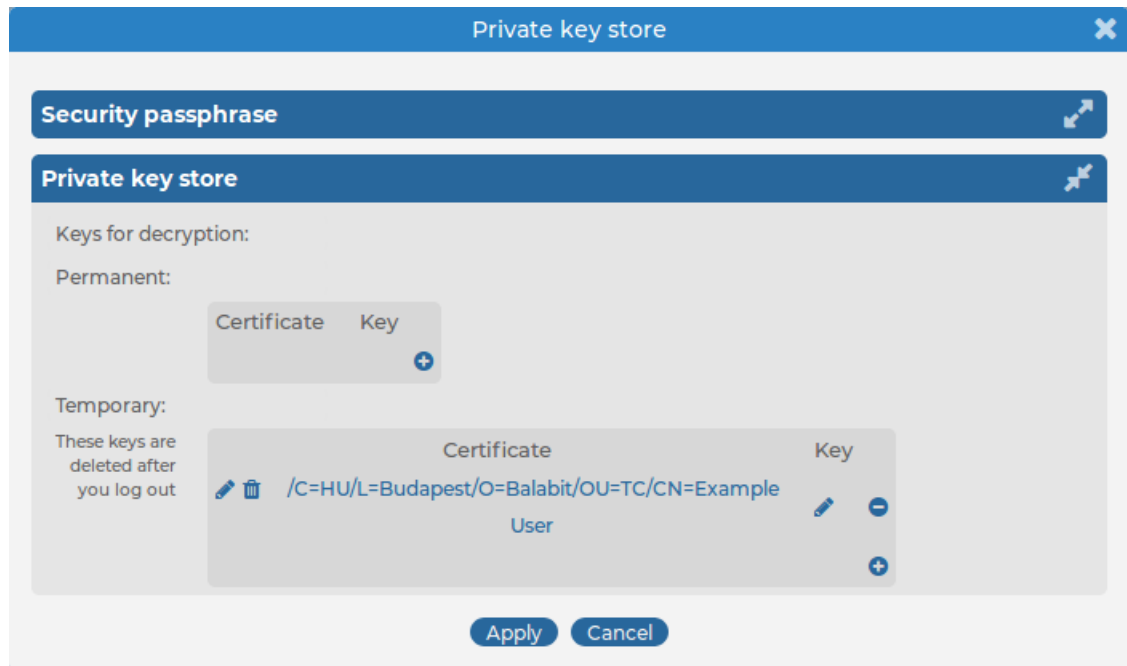
Using session-only decryption keys


You can upload decryption keys to browse encrypted logspaces for the duration of the session only. These keys are automatically deleted when you log out from SSB.

To use session-only decryption keys

1. Select **User menu > Private keystore**. A pop-up window is displayed.
2. Select **Temporary > +**, then select **Certificate > [edit icon]**. A pop-up window is displayed.

Figure 12: User menu > Private keystore — Adding decryption keys to the private keystore



3. Paste or upload the certificate used to encrypt the logstore.
4. Select **Key** > . A pop-up window is displayed.
5. Paste or upload the private key of the certificate used to encrypt the logstore.
6. Repeat Steps 2-5 to upload additional keys if needed.
7. Click **Apply**.

Creating reports from log data

SSB can periodically create reports from the statistics of processed logs. To configure reporting, first you have to create statistics from log data, and save it as a reporting subchapter. You can then configure a report using the saved subchapter. You can include multiple subchapters in a report. The necessary procedures are described in the following chapters:

- For more information on creating statistics from available log data, see [Creating custom statistics from log data](#) on page 32.
- For more information on creating reports, see [Configuring custom reports](#) on page 36.
- For instructions on browsing the generated reports, see [Browsing reports](#) on page 38.

Creating custom statistics from log data


SSB can create statistics from the Facility, Priority, Program, Pid, Host, Tags, and .classifier.class columns. Use **Customize columns** to add the required column, if necessary.

i NOTE:

The .classifier.class data is the class assigned to the message when pattern database is used. For details, see "[Classifying messages with pattern databases](#)" in [the Administration Guide](#). The pattern databases provided by One Identity currently use the following message classes by default: system, security, violation, or unknown.

You can display statistics on the web interface, export the related data as CSV, and also save the statistics to include in a report.

Displaying log statistics

To display statistics about the log messages, click the  icon in the appropriate header of the table.

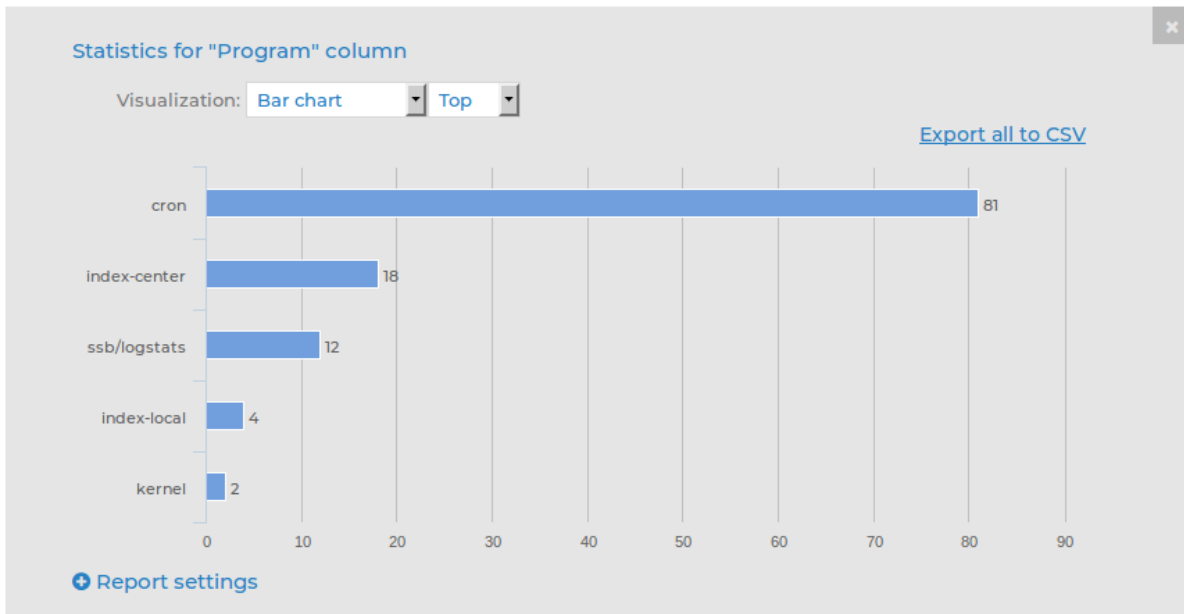
You can choose from **Bar chart** or **Pie chart & List**.



NOTE:

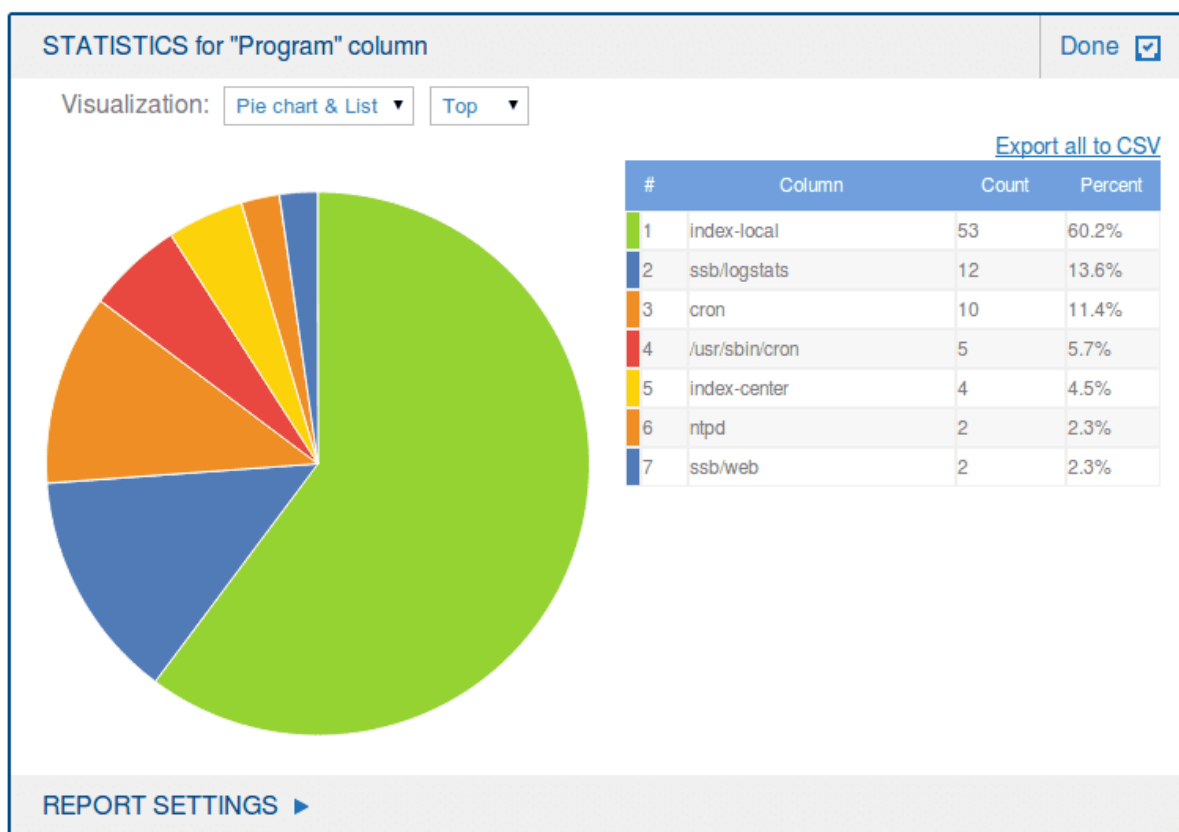
For performance reasons, when creating statistics for a **Multiple Logspace** (see "Creating multiple logspaces" in the Administration Guide), SSB does not create statistics if the data upon which the statistics is based (for example, the hostname) has over 1000 entries in any of the member logspaces. In this case, SSB displays the Number of member statistics has too many entries error message.

Figure 13: Search > Logspaces — Displaying log statistics as Bar chart



In **Pie chart & List** view, percentages add up to 100%. The only exception to this is when statistics are based on **Tags**. Since statistics are provided for tags rather than messages, when messages have multiple tags, the percentages may add up to more than 100%.

Figure 14: Search > Logspaces — Displaying log statistics as Pie chart & List



Statistics will show the item with the largest number of entries first. To display the item with the least number of entries first, select **Least**.

NOTE:

When navigating to the "future" in the search bar, it is possible that the number of logs displayed in the **Search results** differs from the number of logs displayed in the **Count** part of the **Host** pie chart.

To avoid this, do not navigate to the "future".

If this has already happened, save the search expression that you have used somewhere, and then refresh the page by clicking **Log > Search** again. Note that it will display the original state of the Search page, meaning that for example it will remove all search expressions that you have entered before.

You can export these statistics in CSV format using the **Export all to CSV** option, or you can include them in reports as a subchapter.

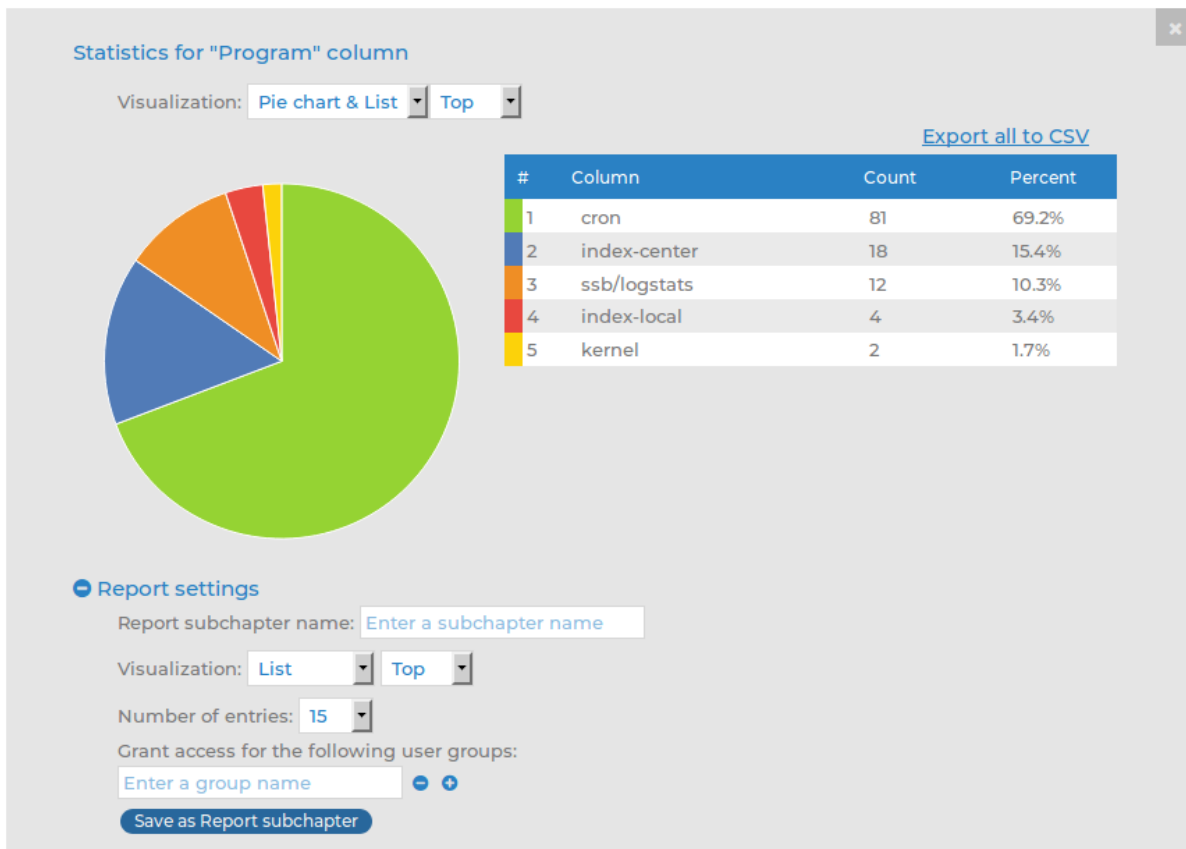
CAUTION:

Do not use Export all to CSV to export large amounts of data, as exporting data can be very slow, especially if the system is under heavy load. If you regularly need a large portion of your data in plain text format, consider using the SSB RPC API (for details, see ["The SSB RPC API" in the Administration Guide](#)), or sharing the log files on the network and processing them with external tools (for details, see ["Accessing log files across the network" in the Administration Guide](#)).

Creating reports from custom statistics

You can save log statistics to include them in reports as a subchapter.

Figure 15: Search > Logspaces — Creating reports from custom log statistics



1. In the **Statistics** view, click **Report settings**.
2. Add a name for the statistics in the **Report subchapter name** field.
3. Select the **Visualization** for the report: List, Pie chart, or Bar chart.
4. Choose how the entries are sorted: descending (**Top**) or ascending (**Least**).

5. Choose the **Number of entries** to include.

NOTE:

Selecting **All** includes only the first 1000 results. The remaining results are aggregated as 'others'.

NOTE:

For performance reasons, when creating statistics for a **Multiple Logspace** (see "[Creating multiple logspaces](#)" in the [Administration Guide](#)), SSB does not create statistics if the data upon which the statistics is based (for example, the hostname) has over 1000 entries in any of the member logspaces. In this case, SSB displays the Number of member statistics has too many entries error message.

6. Select the user group that can access the subchapter in the **Grant access for the following user groups** field.
7. Click **Save as Report subchapter**.
8. To add the saved subchapter to a report, follow the instructions provided in [Configuring custom reports](#).

Configuring custom reports

The following describes how to configure SSB to create custom reports. Make sure that the user account has read & write/perform access to the **use static subchapters** privilege.

To configure SSB to create custom reports

1. Log in to the SSB web interface, and navigate to **Reports > Configuration**.

Figure 16: Reports > Configuration — Configuring custom reports

The screenshot displays the SSB web interface for configuring a custom report. On the left, there is a navigation menu with sections: Basic Settings, AAA, Policies, Log, Search, Reports (with sub-items Configuration and Generated reports), and a User menu (Private keystore, Change password, Preferences, Logout). Below the menu is a System monitor section showing system time (2017-11-28 09:15), remaining time (06:38), and various performance metrics like CPU, Mem, Disk, and Swap usage. The main content area is titled 'myreport' and includes buttons for 'Generate partial daily report', 'Generate partial weekly report', and 'Generate partial monthly report'. A 'Table of contents' section lists subchapters: 'Configuration changes - Special events', 'Peer configuration - Current peers', 'Alerts - Alerts by hosts in time', and 'Alerts - Alerts by programs'. Below this are buttons for 'Add Chapter', 'Rename Chapter', 'Add Subchapter', and 'Remove'. The 'Generate this report every' section has radio buttons for 'Day' (checked), 'Week', and 'Month'. The 'Reports are accessible by the following groups' section has a dropdown menu showing 'report'. The 'Send reports in e-mail' section has a checked checkbox. The 'Recipient' section has radio buttons for 'Default (in Mail Settings)' and 'Custom address'. A 'Commit' button is visible in the top right and bottom right corners.

2. Click and enter a name for the custom report.
3. Reports are organized into chapters and subchapters. To add a new chapter, go to **Table of contents**, click **Add Chapter**, enter a name for the chapter, then click **OK**. Repeat this step to create further chapters if needed.
4. Click **Add Subchapter** to add various reports and statistics to the chapter. The available reports will be displayed in a pop-up window. The reports created from custom statistics are listed at the end.
5. Use the arrows to change the order of the subchapters if needed.
6. To specify how often SSB should create the report, select the relevant **Generate this report every (Day, Week, Month)** option. Weekly reports are created on Mondays, while monthly reports on the first day of the month. You can select multiple options simultaneously.
If you want to generate the report only manually, leave this field empty.
7. By default, members of the search group can access the custom reports via the SSB web interface. To change this, enter the name of a different group into the **Reports are accessible by the following groups** field, or click to grant access to other groups.

NOTE:

Members of the listed groups will be able to access only these custom reports even if their groups do not have read access to the **Reporting > Reports** page. However, only those reports will be listed, to which their group has access.

- By default, SSB sends out the reports in email to the address set in the **Basic Settings > Management > Mail settings > Send reports to** field.

NOTE:

If this address is not set, the report is sent to the SSB administrator's email address.

- To disable email sending, unselect the **Send reports in e-mail** option.
- To email the reports to a different address, select **Recipient > Custom address**, and enter the email address where the reports should be sent. Click **+** to list multiple email addresses if needed.

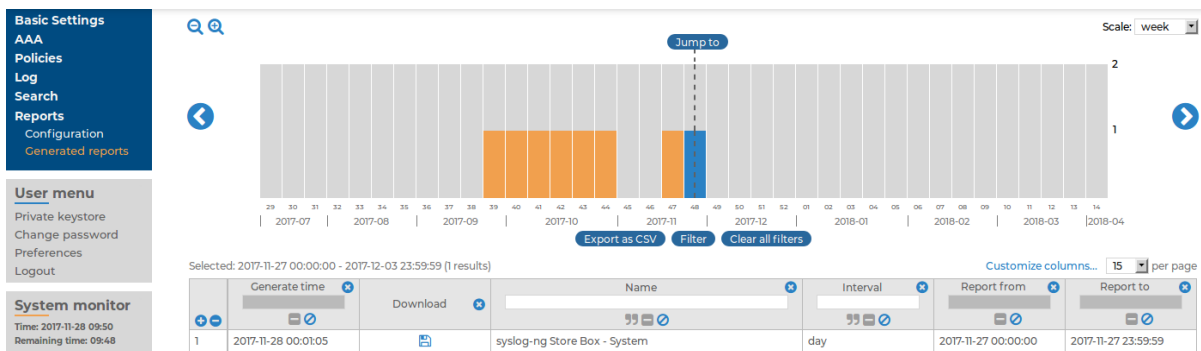
- Click **Commit**.

Browsing reports

The generated reports are available in Portable Document (PDF) format by selecting **Reports > Generated reports** from the Main Menu.

Use the time bar to find reports that apply to a particular period. If you select a period (for example, click a bar), only those reports will be displayed that contain information about the selected period.

Figure 17: Browsing reports



The following information is available about the reports:

- Download:** A link to download the report.
- Name:** The name of the report.
- Interval:** The length of the reported period, for example, week, month, and so on.

- **Report from:** The start of the reported interval.
- **Report to:** The end of the reported interval.
- **Generate time:** The date when the report was created.

TIP:

To create a report for the current day, select **Generate reports for today**. The report will contain data for the 00:00 - current time interval. If artificial ignorance (for details, see "[Classifying messages with pattern databases](#)" in the [Administration Guide](#)) is enabled, an artificial ignorance report is created as well.

Creating content-based alerts

SSB can create content-based alerts about log messages based on specific search expressions. Search queries are run every few seconds and an alert is triggered whenever a match between the contents of a log message and a search expression is found. Alerts are collected and sent to a pre-defined email address (or email addresses).

Some log messages might have particular significance and therefore getting notifications about those can often be more efficient than searching for them manually.

You can set up or modify alerts for local logspaces or those logspaces to which you have the relevant privileges, meaning that:

- Either the relevant user group has been assigned read and write/perform access to the **Search > Logs** object on the **AAA > Access Control** page.
- Or the user group has been added under the **Access control** option of the relevant logspace on the **Log > Logspaces** page.

There are two ways to create alerts, using the search interface or the **Search > Content-Based Alerts** page:

- For details on how to set up alerts on the search interface, see [Setting up alerts on the search interface](#).
- For details on how to set up alerts on the **Search > Content-Based Alerts** page, see [Setting up alerts on the Search > Content-Based Alerts page](#).

NOTE:

Content-based alerting is currently not available for filtered, multiple, and remote logspaces.

NOTE:

In the case of encrypted logspaces, no decryption key is required for content-based alerting to work. SSB has access to the log messages while processing them, and the indexer and content-based alerting services run before encryption happens.

Setting up alerts on the search interface

The following describes how to set up alerts using the search interface.

To set up alerts using the search interface

1. Configure a *target* where you wish to send your content-based alerts.

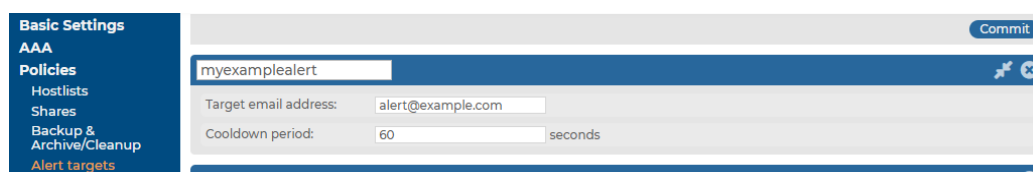
Alert targets are set up and modified by superusers or user groups that have been assigned read and write/perform access to the Policies object on the **AAA > Access Control** page.

To specify an alert target:

- a. Go to **Policies > Alert targets**.
- b. Click .

The new tab that opens allows you to record an alert target.

Figure 18: Policies > Alert targets — Alert targets page



- c. Enter a name for your alert target.

 **NOTE:**

Alert target names must be unique.

- d. In the **Target email address** field, enter the email address where you wish to send alerts.

 **NOTE:**

You can specify only one email address per target. However, you can add multiple targets per alert, which allows you to send a specific alert to more than one email addresses (if required).

- e. In the **Cooldown period** field, enter the minimum amount of time (in seconds) that should pass between the sending of two alert messages to this target.

The minimum value is 60 seconds, and the maximum value is 999999 seconds.

NOTE:

An alert message is sent only when a match is found between the contents of log messages and a search expression. This means that if no match is found, more time may pass between two alert messages than the interval specified as the cooldown period.

- f. Click **Commit** to save your details.

Expected result:

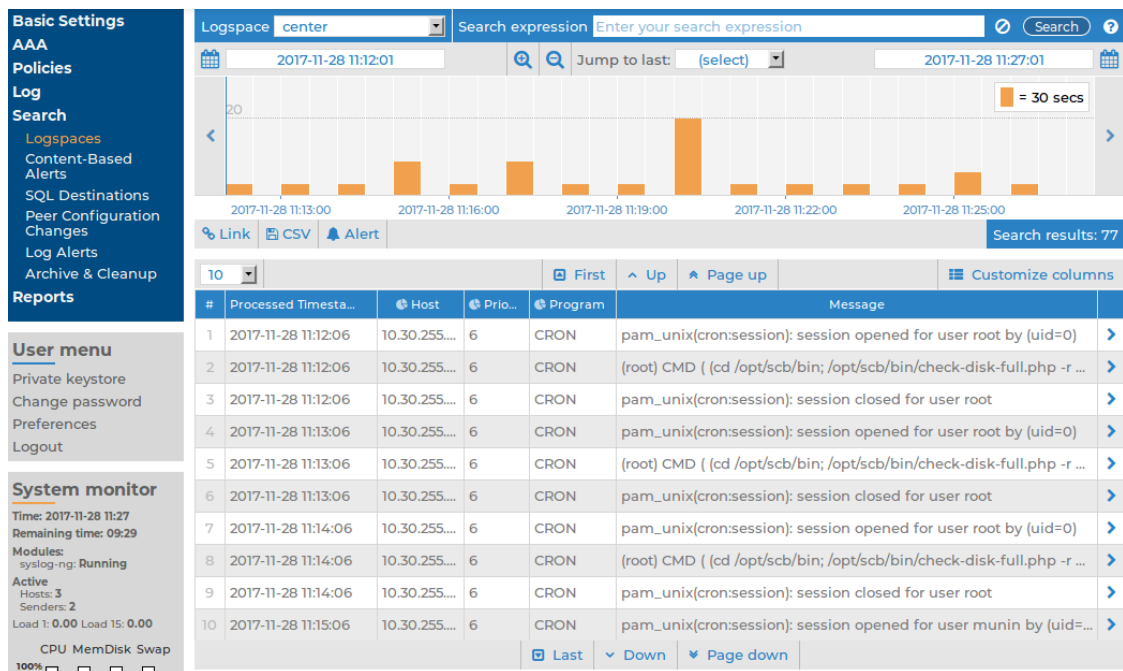
You have successfully configured a target for your alert where alert messages will be sent.

- 2. *Optional step:* You can also specify the email address from which the alerts are sent to your targets. Configuring an email address from where you wish to receive emails can be useful for filtering purposes. If you do not specify such an email address, a default one will be used.

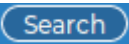
For detailed instructions, see the steps describing how to specify a **Send e-mails as** email address in "[Configuring e-mail alerts](#)" in the [Administration Guide](#).

- 3. Once you have set up a target or targets, navigate to the search interface by going to **Search > Logspaces**.

Figure 19: Search > Logspaces – Setting up alerts on the search interface



- 4. In the **Logspace name** menu, select the relevant logspace.
- 5. In the **Search expression** field, enter the search expression that you wish to

receive alerts about and click .


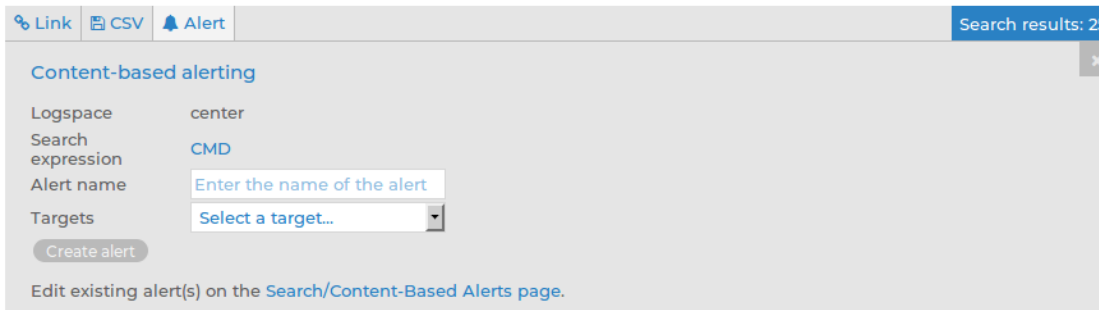
6. To configure additional details for the alert, click . The **Content-based alerting** panel is displayed.

Figure 20: Search > Logspaces — Content-based alerting panel



The screenshot shows the 'Content-based alerting' panel. At the top, there are tabs for 'Link', 'CSV', and 'Alert', with 'Alert' selected. A 'Search results: 25' indicator is in the top right. The panel contains the following fields: 'Logspace' with the value 'center', 'Search expression' with the value 'CMD', 'Alert name' with a text input containing 'Enter the name of the alert', and 'Targets' with a dropdown menu showing 'Select a target...'. Below these fields is a 'Create alert' button and a link: 'Edit existing alert(s) on the [Search/Content-Based Alerts page](#)'.


The **Logspace** field displays the name of the logspace that you have selected from the **Logspace name** menu. The **Search expression** field displays the search expression that you entered in the **Search expression** field.

7. Enter a name for your alert in the **Alert name** field.

NOTE:

Alert names must be globally unique. Using a prefix before alert names can help avoid specifying a name that is already in use.

8. Select a target from **Targets**. You can select multiple targets if you wish to distribute the alert to multiple email addresses.

You can remove targets you have already added by clicking  in front of the target's name.

9. To save your details, click .

NOTE:

If you wish to modify your alert later on, you can make changes via **Search > Content-Based Alerts**. For details, see [Setting up alerts on the Search > Content-Based Alerts page](#).


Setting up alerts on the Search > Content-Based Alerts page

The following describes how to set up alerts on the **Search > Content-Based Alerts** page.

To set up alerts on the Search > Content-Based Alerts page

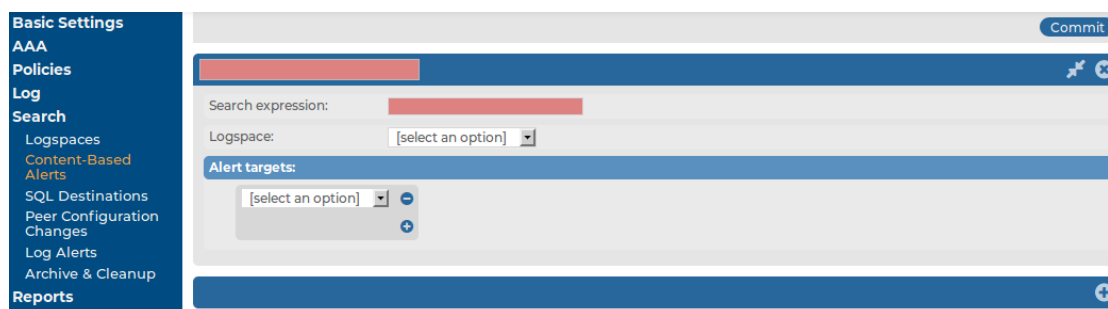
1. Configure a *target* where you wish to send content-based alerts. For details on how to do this, see Step 1 in [Setting up alerts on the search interface](#).
2. *Optional step:* You can also specify the email address from which alerts are sent. Configuring an email address from where you wish to receive emails can be useful for filtering purposes. If you do not specify such an email address, a default one will be used.

For detailed instructions, see the steps describing how to specify a **Send e-mails as** email address in ["Configuring e-mail alerts" in the Administration Guide](#).

3. Once you have set up a target or targets, navigate to **Search > Content-Based Alerts**.
4. Click .

The new tab that opens allows you to specify a content-based alert.

Figure 21: Search > Content-Based Alerts — Setting up content-based alerts on the Search



5. Enter a name for your alert.

 **NOTE:**

Alert names must be globally unique. Using a prefix before alert names can help avoid specifying a name that is already in use.

6. In the **Search expression** field, enter the search expression that you wish to receive alerts about.
7. Select the appropriate logspace from the **Logspace** menu.
8. Select a target or targets from the **Alert targets** menu. You can select multiple targets if you wish to distribute the alert to multiple email addresses.

You can remove targets you have already added by clicking .

9. To save your details, click .

 **NOTE:**

If you wish to modify your alert later on, you can make changes by revisiting the relevant steps on the **Search > Content-Based Alerts** page.

Format of alert messages

Once content-based alerts have been created, SSB will send alert messages to the configured targets.

The alert email's subject line will follow this format:

```
Alert: [myalert][mylogspace]
```

Alert messages will be presented in the following format:

```
Alert: There were at least 10000 matches between Mon 18 Apr 2016 10:45:38 CEST and
Mon 18 Apr 2016 10:45:43 CEST on
* logspace: "<mylogspace>"
* alert: "<myalert>"
* search expression: "<mysearchexpression>"
```

To review these matches on your SSB appliance, see:
https://<IP_address_of_SSB>:<port_number>/index.php?_backend=SearchLogspace#logspace_name=mylogspace&from=1460976338&to=1460976343&search_expression=mysearchexpression

Note: You will not receive a new alert message for a cooldown period of 1 minute for this alert.

Note that the contents of the log messages are not shared in the alert message. A URL is provided to direct users to their SSB appliance.

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 or other inquiries, visit <https://www.oneidentity.com/company/contact-us.aspx> or call +1-800-306-9329.

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