



Splunk Release Notes

Version: 3.4.8

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What's New

What's in the Release Notes?

What's in the Release Notes?

Come here to learn about What's New in the latest version of Splunk, what the Known Issues are, and check the Changelogs to see what problems we've resolved lately.

Find what you need

You can use the table of contents to the left of this panel, or simply search for what you want in the search box in the upper right.

If you're interested in more specific scenarios and best practices, you can visit the Splunk Community Wiki to see how other users Splunk IT.

What's new in Splunk 3.4

What's new in Splunk 3.4

New Splunk forwarder and light forwarder applications

As of Splunk 3.4, the Splunk forwarder and light forwarder (formerly referred to as the lightweight forwarder) are now packaged with Splunk as Splunk applications that you can enable via Splunk Web or the CLI.

- The Splunk light forwarder configuration removes all indexing processes, disables the file system change monitor, disables Splunk Web and the Splunk authentication subsystem, and limits some types of data input. Specifically, you can monitor local log files and directories, collect Windows event logs and use scripted inputs, including local WMI and registry data sources on Windows. If you have been waiting for a truly lightweight Splunk forwarder, this is the configuration for you.
- The Splunk forwarder disables Splunk Web. All other functions and modules remain enabled.

Read more about enabling the Splunk forwarder and light forwarder.

New Splunk desktop application

The Splunk desktop application is a lighter weight version of Splunk. This configuration scales back the indexing throughput and disables the file system change monitor. This keeps Splunk from using a lot of memory and processing power on systems you use for other purposes (like laptops).

The Splunk desktop application is enabled by default if you install Splunk for Windows using the

standard GUI installer. You can, of course, disable it after installation, or use the commandline MSI installation to choose a different configuration at install time, as well as install silently for use in large scripted deployments.

Read more about enabling Splunk desktop.

Support for Vista

Starting with version 3.4.2, Splunk is now supported on 32-bit Vista.

Support for 64-bit Windows

Starting with version 3.4.2, Splunk now is supported on 64-bit Windows 2003.

Receiving enabled in Splunk with a Free License

Starting with version 3.4.2, licensing in the free version of Splunk has been expanded to support the receiving feature.

Known Issues

Known Issues for version 3.4.8

Known Issues for version 3.4.8

This page contains known issues and workarounds for this release of Splunk.

If you are upgrading from Splunk version 3.4.7

Splunk 3.4.7 contained an issue related to password encryption affecting all passwords over 8 characters in length, and was removed from distribution. If you installed or upgraded to version 3.4.7, you must ensure that any user password over 8 characters in length is temporarily reset to be 8 characters or fewer before upgrading to 3.4.8. Once you have upgraded to 3.4.8, user passwords can be any length desired.

If you are upgrading from 3.4.6 or earlier, this issue will not affect you.

General issues and considerations

This section contains general considerations, issues and workarounds for this release of Splunk.

- Ldap bind account password won't work if it contains XML-unsafe characters such as '&'. To workaround this, change the bind password so that it does not contain any XML-unsafe characters. (SPL-18170)
- If you have configured timestamp offsets using pre-Splunk 3.2 POSIX instructions, you must reconfigure them using this information. If you do not do this, your timestamp information will be incorrect. If you have not configured timezone offsets, you can ignore this note.
- Live tail is a powerful feature, and as such can tax system resources. For this reason, Splunk defaults to only allowing you to run one Live Tail at a time. However, you can edit `web.conf` to allow for multiple Live Tails. You must enable HTTP pipelining for this to function correctly. Refer to `web.conf` for more details. (SPL-11839)
- Live tail does not work through a proxy at this time. (SPL-13095)
- Live tail does not work in a distributed search environment.
- If you are using Splunk Deployment server, version 3.2 and earlier will only work with other deployed servers of exactly the same version, but 3.3.x will work with 3.2.x and 3.3.x.
- If you are running two different instances of Splunk on one machine, you cannot log into both instances at once, even with different shell sessions. However, you can use the `-auth` option in your search string to provide credentials for a different user on the fly. (SPL-11924)
- Splunk's authentication module does not work with Domino LDAP.
- 2.0.x licenses will NEVER work with 3.x+. If you have a current Plus Support contract you are entitled to upgrade your license to 3.x. If you do not have a current support agreement in place, contact sales@splunk.com.
- The File System Change Monitor does not monitor the directory or directories directly referenced in `inputs.conf`, rather the contents of those directories. If a directly referenced directory is deleted, renamed, or otherwise changed, you will not receive an alert. However, if any file in the directory is changed, you will receive an alert. (SPL-12418)
- If you switch from LDAP authentication to Splunk's built-in authentication, you must restart from the command line before you can log in again. (SPL-11737)

- You cannot specify a relative path when setting `$SPLUNK_DB`. (SPL-11867)
- Export and import of user data may not work properly.
- Log file rotation does not currently work while tailing SMB mounts. Work around this by mounting as CIFS.
- Upgrading using rpm does not create a `etc.bak` file.
- Some SUSE 10.x users might experience incorrectly displayed dialog boxes and searches may return the message "Unable to get a properly formatted response from the server; canceling the current search." This is a problem with the `mime.types` configuration. Instructions on how to correct this problem can be found [here](#).
- Live tail does not currently respect the use of `srchfilter` within a role. To prevent users from accessing restricted information, explicitly disable Live tail in their user role. (SPL-13534)
- When enabling LDAP authentication, saved searches running as the `admin` user no longer function. To work around this, change the user the search runs as to a different user. (SPL-13870)
- Intermediary CAs are not yet supported in SSL certificates. (SPL-14463)
- LDAP authentication does not work when LDAP has no groups. (SPL-14439)
- Server-class CLI commands fail authentication. (SPL-14059)
- Wildcards in file system change monitor stanzas are ignored. (SPL-14487)
- Export to txt is broken from report view (SPL-16581).
- When adding a forwarder via the command line, `splunk add forward-server`, a vestigial setting `isLoadBalanced = False` is added to `outputs.conf`. This setting is ignored and has no effect. (SPL-17878)
- When using Splunk Applications with inputs (such as Splunk for Unix) in combination with a forwarder which does not parse the data, such as a SplunkLightForwarder, the application must be installed on both the node which acquires the data, and the node which parses the data (usually the direct receiver). (SPL-17915).
- Failure to load the Splunk Web interface (infinite checking for versions / login does not fail but returns to login screen) can be caused by multiple Internet Explorer problems. Windows XP prior to service pack 2 will not allow cookies from localhost, 127.0.0.1 may work. IE 6 and 7 typically will not accept cookies from host names containing underscores. Other sources of cookie blocking will cause the same failure.
- In a deployment server and client setup, the following configuration is supported.
 - ◆ Deployment Server 3.2.x with Deployment Client 3.2.x, 3.1.x and 3.0.x.
 - ◆ Deployment Server 3.3.x and 3.4.x with Deployment Client 3.4.x, and 3.3.x.
 - ◆ NOTE: It is not supported to mix 3.4.x and 3.3.x with 3.2.x or older versions.
- Upgrading a splunk install which has the SplunkDesktop or SplunkLightForwarder application enabled may break the application. To fix this issue, manually disable and re-enable the application: `splunk disable app AppName`; `splunk enable app AppName`.
- With 3.4.8 and onward, `server.conf` is created in `/etc/system/local` directory. In case if `server.conf` is rsync'ed, upon login it will cause browser to hang. Workaround is to delete `server.conf` from `/etc/system/local` directory and restart for a new `server.conf` to regenerate.

Search issues, including deprecated commands

- The `readlevel` and `readlimit` modifiers are deprecated as of version 3.2. Splunk now handles the verbosity of events intelligently with no need for specification.
- The `maxresults` and `maxtime` modifiers have been deprecated. If you have saved searches that use `maxresults`, they will no longer function starting with version 3.2.
 - ◆ Use the **Preferences** menu in Splunk Web to configure these values.

- ◆ From within the CLI, use of `maxresults` has changed from being inside your query (for example, `splunk search "search foo maxresults::100"`) to being outside your query (for example, `splunk search "foo" -maxresults 100`).
- The `remote` command is deprecated.
 - ◆ In Splunk Web, perform `remote` functionality in the Distributed tab of the Admin interface.
 - ◆ Click **Admin** in the upper-right corner of Splunk Web.
 - ◆ Click **Distributed** from the Distributed tab to turn on Distributed searching and then restart the server.
 - ◆ Add the servers you want search requests to be distributed to.
 - ◆ Restart Splunk. Once you restart Splunk, all search requests are sent to the servers you specify in the list.
 - ◆ In the CLI, use the `dispatch` command to execute `remote` functionality. You must have distributed search configured prior to running `dispatch`.
- The `header` argument for the `diff` command has no effect; the header data is always displayed.
- Performing multiple searches at once from the Web UI can occasionally return a "search was canceled" error.
- Field filtering does not work correctly on 'eventtype'-specific fields. To workaround, use '| search field=value' in your search string. (SPL-15700)
- Searches that operate on large events, such as configuration files and tabular data (top/ps output, logs containing multi-line events), can stress the memory available on 32-bit systems. Splunk recommends that you reduce the maximum number of results from the **Preferences** menu in Splunk Web or consider searching asynchronously using the command line interface when you are performing these types of searches. This issue can be compounded in distributed search scenarios, where the pool for results is greater. Additionally, the optimizations Splunk applies when displaying non-distributed search results are not available when performing distributed searches; this will also affect memory consumption.
- The date is not extracted from log file names if the source type is not a single line source type. (SPL-18442)
- The pattern feature of `transactiontypes` and the `transaction` command only implements literal types (A, B, C) in a usable way. The regex-like functionality is not currently useful. (SPL-18442)

Splunk Web issues and considerations

- Due to a change in Firefox 3, enabling SSL for a Splunk deployment may result in an "invalid security exception" being displayed in the browser. Refer to this workaround documentation for more information.
- Splunk 3.2 and later requires Flash 9. (download). Flash is available for Firefox 1.5 and 2.0, and Internet Explorer 6 and 7. See the Adobe Flash system requirements. You can check which version of Flash you are running here.
- Firefox 3.0b1 will not currently display any data with Splunk Web. Use Firefox 2.0.0.10 or earlier.
- If you create an event type that contains a space in the name and also specify tags for the event type at the same time, you cannot search on the tags.
- If you pipe into a saved search, time range specifications are ignored in Splunk Web. (SPL-12017)
- Section headers may sometimes display incorrectly in Splunk Web. (SPL-10138)

- If you are using IE7, you may experience inconsistent results in the timeline display. (SPL-11052)
- Time ranges are not retained in snapshots.
- To specify a label for a report column that includes spaces (with quotes surrounding the label name), do not use `eval`. Use `rename` and specify it as the last search processor in your string. (SPL-12200)
- Values for `starttimeu` or `endtimeu` are not recognized in Splunk Web, but do function correctly in the CLI. (SPL-13141)
- CSV export of searches that make use of `field +` will include all fields not those limited to the search results displayed in Splunk Web. (SPL-16562)
- In Splunk Web, you cannot filter searches on fields extracted by the REX command (SPL-15699), or based on `eventtype::foobar` in `$SPLUNK_HOME/etc/system/local/props.conf`. (SPL-15700)
- Decreasing the number of events shown in Splunk Web (by editing the number of cards and decks) to a low number causes Splunk Web to keep reloading. (SPL-14267)
- If you rename fields in a search pipeline, and generate a graph, the graph clickthrough searches will not account for the field renames, so the clickthrough search will often not work properly. (SPL-17688)
- For event types containing certain character sequences (eg `%--`), the web interface to `typelearner` produces an error when clicking the "Add Type" link. (SPL-18055)
- In the 'Authentication' screen, if you click on 'Save' without actually changing from Splunk authentication to LDAP, you will lose your session state and be routed to the login page. You will then be unable to log-in again without restarting the Splunk service (SPL-18543)
- You cannot give a dashboard a name with a hyphen in it. (SPL-19581)

Windows-specific considerations and known issues

As a result of porting Splunk to the Windows platform, some functionality is not available or works differently due to platform differences or limitations:

- FIFO data inputs are not supported.
- 'Watch and symlink' operation is not supported with file-based data inputs, however, DFS is supported.
- The `exporttool` function does not support exporting to the original source, but does support export to `csv`. (SPL-12313)
- You must use two backslashes `\\` to escape wildcards in stanza names in `inputs.conf`. (SPL-7270)
- The Windows installation package does not include the sample data (referred to in the tutorial portion of the User Guide) that is included on other platforms.
- The Windows release has been tested on English versions of the operating system only. Foreign language versions are unsupported.
- Changing the service login credentials of `splunkd` after installation is not supported via Splunk Web. If you must change the user Splunk runs as after you have installed, you must ensure that the user you create has the permissions described in this Windows installation topic, and also ensure that that user has Full Control permissions to the `$SPLUNK_HOME/var` directory. (SPL-14631)
- Regular expressions do not currently work in the Registry baselining feature. (SPL-14743)
- If you have made manual changes to the `etc/system/local/inputs.conf` file they may not be correctly preserved on upgrade. Make a backup copy of this file before upgrading. If Windows

data input items do not exist, they will be added at the beginning of the file rather than the bottom, incorrectly including some conf items in the wrong stanza. This primarily applies to global "host = foohost" settings at the top of the file.

- There is an issue with stopping and restarting Splunk currently affecting users of remote WMI polling. If one or more of your WMI sources is unavailable at the time that you stop Splunk, Splunk will not come back up unless you wait for the `splunk-wmi.exe` process to exit, or kill it manually. To avoid this issue, do not unnecessarily list non-existent/non-functioning machines in `wmi.conf`. (SPL-16612)
- Issues with date/timestamping of data collected before 2007 may be the result of an OS-level issue on all pre-Vista systems. All Windows systems prior to Vista did not recognize that recognition of Daylight Savings Time (DST) can vary by location. A patch was issued by Microsoft in 2007, which, when applied, can cause the parsing of timestamps in Splunk to fail for data collected before 2007. (SPL-12503)
- During upgrade, Splunk does not inherit the original installation services setting. Therefore, during the upgrade, you must make sure to input the user account used for the original installation, or it will default to the local system user. (SPL-18195).
- Windows may generate a 3013 error in the System event log whenever Splunk locks a file depending on your file system audit level. This should not affect Windows or Splunk. (SPL-18263)
- Enabling SplunkLightForwarder via Splunk Web leaves the SplunkLightForwarders in a broken state. To resolve, run the commands "splunk disable app SplunkLightForwarder" followed by "splunk enable app SplunkLightForwarder".(SPL-21096).
- Upgrading with SplunkLightForwarder or SplunkDesktop enabled leaves those apps in a broken state. To resolve, run the commands "splunk disable app SplunkLightForwarder" followed by "splunk enable app SplunkLightForwarder", or the equivalent with SplunkDesktop.(SPL-21627).
- When using the Windows Event Log input or the WMI input on a SplunkLightForwarder version 3.4.6 or earlier, you can encounter merged or broken events if the receiving Splunk instance is 3.4.8. To resolve this problem, add the following lines to `$SPLUNK_HOME/etc/system/local/props.conf`

```
[source::WinEventLog...]  
LINE_BREAKER =
```

```
[source::WMI...]  
LINE_BREAKER =
```

Note: This enables interoperability with pre-3.4.8 Splunk Windows Light forwarders, but breaks it with versions which are running 3.4.8. A more complete resolution is forthcoming. (SPL-22002)

- File change monitor logs action=add repeatedly when monitoring top level drive letter directories (C:\ or D:\). This issue does not occur when monitoring files in subdirectories. (SPL-18066)
- The splunkd process may crash (but splunkweb remains up) when indexing or parsing data timestamped after 4/22/09. (SPL-22330).
- If you are attempting to enable the SplunkLightForwarder app with Deployment Server via the EnableLightForwarder class, the class does not enable the app on Windows systems. An updated setup.py will be shipped in a future release that will enable the app across all platforms. (SPL-23008)

Distributed search issues and considerations

- If you are adding or changing a license on any server in your distributed cluster, restart all of them to ensure that they display correctly on each others' dashboards. (SPL-12122)
- Autodiscovery of hosts for distributed search is unreliable.
- If you are using Splunk in a distributed search cluster you can mix 3.3.x with 3.2.x, but mixing 3.1.x and 3.2.x nodes in a distributed search cluster is not supported. In the deployment server, the 'default' class is supposed to target all deployment clients; however, configuration files placed in the default directory on the deployment server do not get pushed properly. (SPL-12350)

Configuration considerations and issues

- Entries in indexes.conf are case sensitive, including the stanza name itself. (SPL-12063)
- Reusing a field name in fields.conf results in the field being undefined. (SPL-12008)
- Use props.conf to alter Splunk's settings. The `properties.xml` file is still included with the product, but its settings have no effect.
- Configuring the file system change monitor to monitor the same thing in two different application with differing settings can causes conflicts which result in those differences being ignored (SPL-15680)
- Ensure that all instances of Splunk that are indexing data in a round-robin configuration have plenty of disk space. A current limitation of Splunk exists such that if a Splunk indexer runs out of disk space, all forwarders involved in the round-robin configuration will stop forwarding data to all Splunk indexers. (SPL-16602)
- Some splunk configuration files in etc/system/local, such as eventtypes.conf and savedsearches.conf will be rewritten with their entries in alpha-order when changed via the Splunk Web interface. Comment lines are preserved, but positional meaning may be lost in some cases. This will not affect the functionality of your searches or eventtypes, just that any in-line comments on a particular search/eventtype will not be moved. (SPL-18292)

Splunk Toolbar considerations and issues

- The Internet Explorer version of the toolbar does not work on instances of Splunk running over HTTPS (SPL-12821)
- The Splunk Toolbar sometimes incorrectly displays two drop-down arrows in the search box. This is has no effect on functionality.
- When running a free Splunk license, or an unlicensed copy of Splunk, the toolbar may not get past the "Welcome to Splunk" start page.
- Occasionally a search done in the toolbar will not return results. This may cause the browser to hang. The searches will work correctly if run directly in Splunk Web or the command line (CLI).
- In some cases, the toolbar will prevent "Find in this page" functionality from running multiple times on the same page. These reports have been limited to users running multiple browser add-ons (e.g. colorful tabs, dom inspector, user agent switcher).
- Autologin does not work if the Autologin is set to **off** prior to configuring a Splunk server in the toolbar.
 - ◆ To login automatically set Autologin to **on** prior to configuring the server.
- The toolbar does not have a mechanism for alerting if its credentials are invalid.
 - ◆ When a Splunk server is configured to talk to an LDAP server that locks accounts after N failed login attempts, users should verify that their credentials are correct.

- There are some cases where the toolbar may take over the current user session if the toolbar is configured to talk to a Splunk instance that is different than the one a user is currently logged into.
- There may be conflicts if a user is logged into one Splunk instance and runs a toolbar search on a different Splunk instance.

API considerations and issues

- REST calls cannot authenticate as an LDAP user, only the failsafe user. (SPL-16512)

Workaround for SSL configuration for users of Firefox 3

Workaround for SSL configuration for users of Firefox 3

Caution: The workaround described in this topic is not to be used in high-security environments, or any install that uses custom SSL certs. Custom SSL certificates are the only way to solve this issue in a security-conscious manner.

Background

Firefox 3 tightened its security defaults to deny any SSL certificates that are mismatched. By default, Splunk uses a self-signed SSL certificate with the following details:

- Issuer (signing authority): CN=SplunkCommonCA, O=Splunk
- Issued to: CN=SplunkServerDefaultCert, O=SplunkUser

Since SplunkCommonCA is not a trusted CA (like Verisign, Thawte, etc.) and 'SplunkServerDefaultCert' does not equal 'localhost', this is enough to trigger the security exception.

By adding the Splunk certificate to your browser's exception list, you are asserting that you trust this certificate/hostname combination.

Symptoms

This applies to environments that satisfy all of the following prerequisites:

1. Browsing via Firefox 3

2. Accessing Splunk version 3.2+

3. `splunkd` is set in `server.conf` to have `enableSplunkdSSL=true`

4. Hitting the `splunkd` management port directly from the browser, i.e. `https://localhost:8089/services`

- OR -

1. Browsing via Firefox 3

2. Accessing Splunk version 3.0+

3. `splunkweb` is set in `web.conf` to have `enableSplunkWebSSL=true`

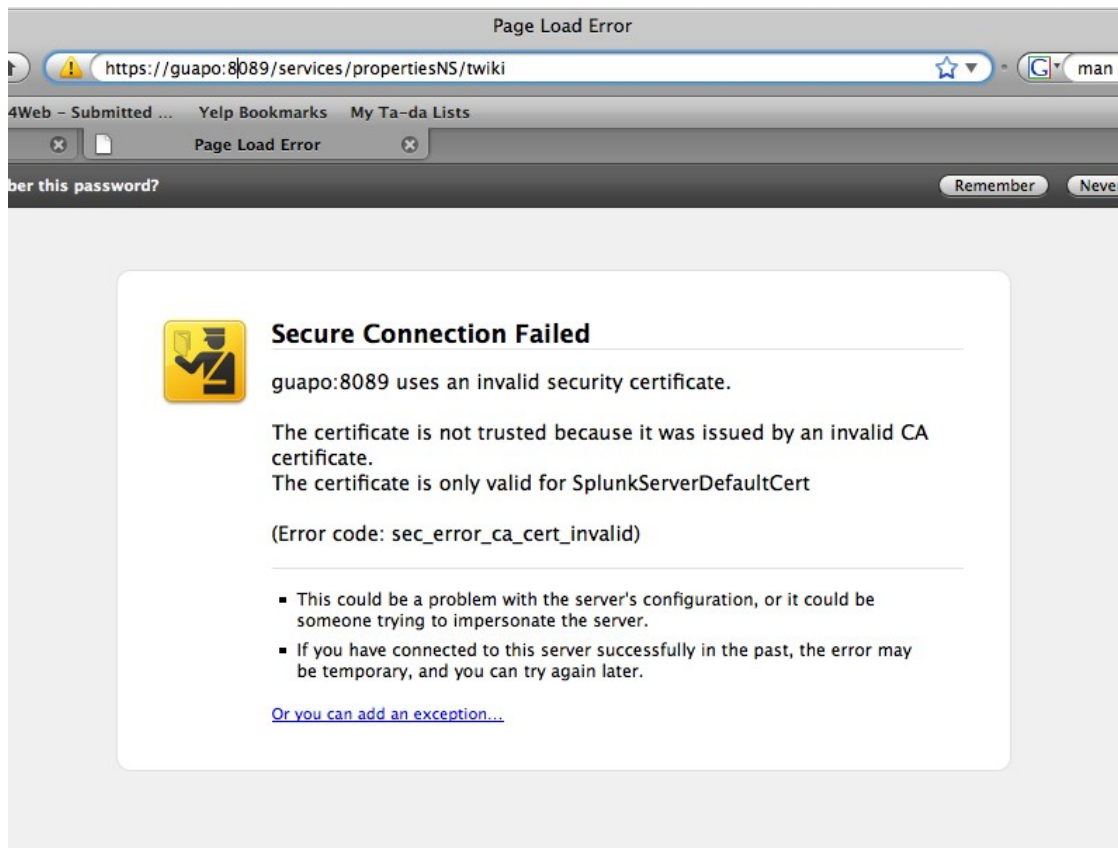
4. Hitting Splunk Web from the browser, for example: `https://localhost:8000`

When accessing the `splunkd` REST endpoints or SSL-enabled Splunk Web via Firefox 3, the browser returns with an 'invalid security exception' message. There are 2 manifestations of this error message:

Message A:



Message B:



Workaround

Caution: This workaround is not to be used in high-security environments, or any install that uses custom SSL certs. Custom SSL certificates are the only way to solve this issue in a security-conscious manner.

If your error message is like Message B, then you can skip to step 2.

1. Open the Certificate Manager

- Click the 'Firefox' menu.
- Select the 'Preferences' menu item.
- Click the 'Advanced' tab.
- Click the 'Encryption' tab.
- Click the 'View Certificates' button.

2. Add your splunkd certificate to the certificate exceptions

- Click the 'servers' tab
- Click the 'Add Exception...' button
- Copy/paste or type in the full URI of your `splunkd` server, for example, `https://localhost:8089`
- Click the 'Get Certificate' button (at this point, the certificate status page should show some info about the certificate).
- Click the 'Confirm Security Exception' button (You should now be back on the servers tab, with a new Splunk certificate listed).

Changelogs by Version

3.4

3.4

The following issues have been resolved in Splunk 3.4:

- An issue with indexing stopping when throttling does not release properly has been resolved. (SPL-17316)
- A minor issue with a Windows error displaying incorrect text has been resolved. (SPL-17281)
- Splunk will no longer crash if the WMI temporary cache is exceeded. (SPL-17233)
- DefaultQueueSize is now correctly set to 1000 events. (SPL-17167)
- A message is now logged in `metrics.log` when the `tcpout` queue is full. (SPL-17166)
- An issue with the instantiation of `splunk-wmi.exe` and `splunk-regmon.exe` has been resolved in the new light forwarder. (SPL-17079)
- A file descriptor leak has been resolved. (SPL-16976)
- An issue with mismatched checksums when using the deployment server has been resolved. (SPL-16899)
- The CLI `delete` command has been reinstated. (SPL-16896)
- Windows event log events from different hosts are now identified correctly. (SPL-16565)
- The `sendEventMaxSize` value is now correctly honored for file system change monitor. (SPL-16352)

3.4.1

3.4.1

The following issues have been resolved in this release of Splunk:

- An issue with incorrect timestamp extraction for MST timezone has been resolved. (SPL-17664)
- An issue with timezone offsets has been resolved. (SPL-16691)
- Various crashes related to shutdown of Splunk on Windows have been resolved. (SPL-17235, SPL-16960)
- An issue related to Windows logfiles being pre-populated with null characters (and the resultant data showing up in Splunk search results) has been resolved. (SPL-14682)
- Forwarders will now continue to try to connect to the Splunk receiver until network instability issues are resolved, instead of giving up when unable to resolve via DNS. (SPL-16707)
- An issue with the field extractor on Windows 2k3 has been resolved. (SPL-16346, SPL-16785)

3.4.2

3.4.2

The following issues have been addressed in this version of Splunk:

- An issue causing crashes after disabling SSL communication with `splunkd` has been resolved. (SPL-17704)

Windows-specific issues

- When a server class is updated and the deployment server is reloaded, clients will now restart correctly. (SPL-17795)
- Tag definition now functions (backslashes are now escaped correctly). (SPL-17659, SPL-17546)
- An issue with Windows hosts being counted twice (as hostname and machine name) has been resolved. (SPL-16133)
- Changing inputs while upgrading on Windows no longer places the changed inputs at the top of `inputs.conf`, and global settings will no longer be affected. (SPL-16387)

3.4.3

3.4.3

The following issues have been resolved in this release:

- An issue with the "drops by/raises by" feature of Splunk alerts has been resolved. (SPL-16531)
- An issue with missing license file has been resolved. (SPL-18022)
- An issue with Windows-specific configuration files conflicting with deployment server has been resolved. (SPL-17897)
- The `$SPLUNK_HOME/etc/bundles/` directory is now created correctly in Splunk for Windows installations. (SPL-17877)
- An issue with user account lockouts when using LDAP combined with distributed search has been resolved. (SPL-17865)
- A crash related to distributed search has been resolved. (SPL-17851)
- UDP inputs are no longer disabled in the Splunk desktop application/configuration. (SPL-17728)

3.4.4

3.4.4

3.4.5

3.4.5

The following issues have been resolved in this release:

- An issue with checksums failing for deployment clients on Windows has been resolved, and deployment server now functions correctly on Windows. (SPL-16899)
- Using the '| dispatch []' command in saved searches or the CLI works correctly in distributed searching. (SPL-18134)
- Distributed search now returns the correct total event count. (SPL-18166)
- The Solaris packages now have the correct permissions set on \$SPLUNK_HOME/etc/openssl and Splunk can be started as a non-root user without changing the permissions to u+w (755). (SPL-17830)
- On Windows, an issue with the global host attribute when Splunk is not installed on C:\ drive has been resolved. (SPL-17850)

3.4.6

3.4.6

The following issues are resolved in this release:

- File system change monitor (fschange) whitelist now works correctly as documented. (SPL-18079)
- File system change monitor input now accepts a custom host attribute. (SPL-16020)
- Failed bind to LDAP no longer causes saved searches to be disabled. (SPL-17732)
- An issue with upgrade during the "Perform migration and upgrade without previewing configuration changes? [y/n]" step has been resolved. (SPL-18193)
- UDP inputs now open correctly when SplunkDesktop and LightForwarder are disabled in Splunk Web.(SPL-17728)
- An issue with indexing lagging behind when using many forwarders has been resolved. (SPL-18858)
- The 'splunk clean eventdata' command now properly deletes cached items in Splunk Web and now properly cleans file system monitor data. (SPL-18504, SPL-18401)
- Non-Splunk directories under /defaultdb no longer cause instability. (SPL-18535)
- Splunk now reports disk usage correctly in Splunk Web. (SPL-17302)
- Show source now works correctly on Windows for events from remote sources. (SPL-18505)
- Extra spaces in `fieldactions.conf` no longer cause display issues in Splunk Web. (SPL-16132)
- An issue on Windows with regex backslashes in `props.conf` has been resolved. (SPL-18262)
- An issue with the `splunkmon` process has been resolved. (SPL-18272)
- Linebreaking is now handled correctly for XML files. (SPL-18034)
- LDAP group names containing ampersand (&) no longer result in a traceback. (SPL-16867) A follow-on issue with display of information in Splunk Web is still being worked.
- Exporting to CSV format now obeys the 'fields' command correctly. (SPL-16562)
- Admin users can now edit or delete saved searches owned by any other user. (SPL-18009)
- An issue with monitoring the 64-bit Windows ForwardedEvents event log has been resolved. (SPL-18766)

- An issue with the stability of `splunk-optimize` has been resolved. (SPL-18712)
- CLI searches now correctly process non-ASCII characters in search results. (SPL-18579)

3.4.8

3.4.8

Splunk 3.4.7 contained an issue related to password encryption affecting all passwords over 8 characters in length, and was removed from distribution. If you installed or upgraded to version 3.4.7, you must ensure that any user password over 8 characters in length is temporarily reset to be 8 characters or fewer before upgrading to 3.4.8. Once you have upgraded to 3.4.8, user passwords can be any length desired. If you are upgrading from 3.4.6 or earlier, this issue will not affect you.

The following issues have been resolved in this release:

- An issue relating to editing user role mappings when using LDAP auth has been resolved. (SPL-20189)
- The Admin user can now specify whether other users can change their own passwords using the `Change_own_password` capability. (SPL-19922)
- A file descriptor leak related to failed LDAP binds has been resolved. (SPL-19377)
- Splunk forwarder will now correctly monitor files when monitored directory is moved/deleted and then recreated. (SPL-19196)
- A memory leak on Splunk for Windows related to searching over DST has been resolved. (SPL-20014)
- A command line upgrade on Windows in quiet mode no longer prompts for user input on "Perform migration and upgrade without previewing configuration changes? [y/n]" if the appropriate flag (`--answer=yes` or `--answer=no`) has been passed. (SPL-17789)
- Splunk will now clear any index lock files present at startup (SPL-19387)
- EventTypes now properly support negated equality clauses such as `NOT=` or `!=`. (SPL-18302)
- An issue with timestamp parsing of Windows Event Log events for ASP.Net errors in IIS deployments (and similarly structured events) has been resolved. (SPL-18697)
- The correct response code is now returned (200) when making an API call that returns no results. (SPL-19217)

3.4.11

3.4.11

The following issues have been resolved in this release of Splunk:

- Deployment clients will not crash when contacting a 4.x instance. (SPL-25381)
- Enabling the standard (not light) forwarder no longer disables Splunk Web. (SPL-24722)
- An issue with high CPU utilization on Windows when monitoring the registry has been resolved. (SPL-24689)
- When cloning events to multiple indexers, if an indexer becomes unavailable, the events will still be sent to the remaining indexers. (SPL-23544)
- Japanese characters are now parsed correctly in security events on Windows. (SPL-24898)
- A crash related to indexing invalid archive files has been resolved. (SPL-23088)

- The Windows version of the light forwarder is now enabled correctly when deployed using the deployment server. (SPL-23008)
- WMI events forwarded by the light forwarder now break correctly at `---splunk-wmi-end-of-event---`. (SPL-22649)
- Splunk can now index uncompressed Windows evt/evtx files. Splunk on Vista, Windows 2008, Windows XP, and Windows 2003 supports uncompressed .evt files. Splunk on Vista or Windows 2008 supports uncompressed .evtx files as well. (SPL-22539)
- Functionality has been added to support indexing across very large numbers of files within a single directory when a large fraction of the files in the directory are not Splunk inputs. Use the `tailing_proc_speed` setting in `limits.conf` to tell Splunk how fast to move across non-input directory entries. Increasing this setting increases CPU usage. (SPL-18776)
- WMI instability issues have been addressed. (SPL-18394, SPL-18184, SPL-17703, SPL-17215, SPL-16714, SPL-16699, SPL-16688, SPL-16681, SPL-24851, SPL-24667, SPL-22641, SPL-20169, SPL-18393)
- LDAP bind passwords with an ampersand (&) in the string are now supported. (SPL-18170)

Credits

Credits

Credits

Splunk contains some libraries that were written by others, and are being redistributed as part of Splunk under their respective open source licenses. We wish to thank the contributors to these projects.

Licenses can be viewed by selecting a library name on the left.

APSW

APSW

- Another Python SQLite Wrapper

apsw-3.2.2-r1 7th July 2005

APSW provides an SQLite 3 wrapper that provides the thinnest layer over SQLite 3 possible. Everything you can do from the C API to SQLite 3, you can do from Python. Although APSW looks vaguely similar to the DBAPI, it is not compliant with that API and instead works the way SQLite 3 does. (pysqlite is DBAPI compliant - differences between apsw and pysqlite 2).

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Download

You can download APSW from SourceForge. Debian users can grab the package python-apsw

Example

This is an example of how to use apsw, and also demonstrates all the features.

```
import apsw

###

### Opening/creating database

###

connection=apsw.Connection("dbfile")

cursor=connection.cursor()
```

```
###
```

```
### simple statement
```

```
###
```

```
cursor.execute("create table foo(x,y,z)")
```

```
###
```

```
### multiple statements
```

```
###
```

```
cursor.execute("insert into foo values(1,2,3); create table bar(a,b,c) ; insert into foo val
```

```
###
```

```
### iterator
```

```
###
```

```
for x,y,z in cursor.execute("select x,y,z from foo"):
```

```
    print cursor.getdescription() # shows column names and declared types
```

```

print x,y,z

###

### iterator - multiple statements

###

for m,n,o in cursor.execute("select x,y,z from foo ; select a,b,c from bar"):

    print m,n,o

###

### bindings - sequence

###

cursor.execute("insert into foo values(?,?,?)", (7, 'eight', False))

cursor.execute("insert into foo values(?,?,?1)", ('one', 'two')) # nb sqlite does the number

###

### bindings - dictionary

```

```
###
```

```
cursor.execute("insert into foo values(:alpha, :beta, :gamma)", {'alpha': 1, 'beta': 2, 'gamma': 3})
```

```
###
```

```
### tracing execution
```

```
###
```

```
def mytrace(statement, bindings):
```

```
    "Called just before executing each statement"
```

```
    print "SQL:", statement
```

```
    if bindings:
```

```
        print "Bindings:", bindings
```

```
    return True # if you return False then execution is aborted
```

```
cursor.setexectrace(mytrace)
```

```
cursor.execute("create table bar(x,y,z); select * from foo where x=?", (3,))
```

```
SQL: create table bar(x,y,z);
```

```
SQL: select * from foo where x=?
```

```
Bindings: (3,)
```

```
###
```

```
### tracing results
```

```
###
```

```
def rowtrace(*results):
```

```
    """Called with each row of results before they are handed off.  You can return None to
```

```
    cause the row to be skipped or a different set of values to return"""
```

```
    print "Row:", results
```

```
    return results
```

```
cursor.setrowtrace(rowtrace)
```

```
for row in cursor.execute("select x,y from foo where x>3"):
```

```
pass
```

```
Row: (4, 'five')
```

```
Row: (7, 'eight')
```

```
###
```

```
### executemany
```

```
###
```

```
# (This will work correctly with multiple statements, as well as statements that
```

```
# return data. The second argument can be anything that is iterable.)
```

```
cursor.executemany("insert into foo (x) values(?)", ( [1], [2], [3] ) )
```

```
# You can also use it for statements that return data
```

```
for row in cursor.executemany("select * from foo where x=?", ( [1], [2], [3] ) ):
```

```
    print row
```

```
###
```

```
### defining your own functions

###

def ilove7(*args):

    "a scalar function"

    print "ilove7 got",args,"but I love 7"

    return 7

connection.createscalarfunction("seven", ilove7)

for row in cursor.execute("select seven(x,y) from foo"):

    print row

###

### aggregate functions are more complex

###

# here we return the longest item when represented as a string
```

```

def longeststep(context, *args):

    "are any of the arguments longer than our current candidate"

    for arg in args:

        if len( str(arg) ) > len( context['longest'] ):

            context['longest']=str(arg)

def longestfinal(context):

    "return the winner"

    return context['longest']

def longestfactory():

    """called for a new query. The first item returned can be

    anything and is passed as the context to the step

    and final methods. We use a dict."""

    return ( { 'longest': }, longeststep, longestfinal)

```

```

connection.createaggregatefunction("longest", longestfactory)

for row in cursor.execute("select longest(x) from foo"):

    print row

###

### Defining collations.

###

# The default sorting mechanisms don't understand numbers at the end of strings

# so here we define a collation that does

cursor.execute("create table s(str)")

cursor.executemany("insert into s values(?)",

                    ( ["file1"], ["file7"], ["file17"], ["file20"], ["file3"] ) )

for row in cursor.execute("select * from s order by str"):

    print row

```

```
('file1',)
```

```
('file17',)
```

```
('file20',)
```

```
('file3',)
```

```
('file7',)
```

```
def strnumcollate(s1, s2):
```

```
    # return -1 if s1<s2, +1 if s1>s2 else 0
```

```
    # split values into two parts - the head and the numeric tail
```

```
    values=[s1, s2]
```

```
    for vn,v in enumerate(values):
```

```
        for i in range(len(v), 0, -1):
```

```
            if v[i-1] not in "01234567890":
```

```
                break
```

```

try:

    v=( v[:i], int(v[i:]) )

except ValueError:

    v=( v[:i], None )

values[vn]=v

# compare

if values[0]<values[1]:

    return -1

if values[0]>values[1]:

    return 1

return 0

connection.createcollation("strnum", strnumcollate)

for row in cursor.execute("select * from s order by str collate strnum"):

```

```

print row

('file1',)

('file3',)

('file7',)

('file17',)

('file20',)

###

### Authorizer (eg if you want to control what user supplied SQL can do)

###

def authorizer(operation, paramone, paramtwo, databasename, triggerorview):

    """Called when each operation is prepared. We can return SQLITE_OK, SQLITE_DENY or

    SQLITE_IGNORE"""

    # find the operation name

```

```

ign=["SQLITE_OK", "SQLITE_DENY", "SQLITE_IGNORE"] # not operation names but have same v

print "AUTHORIZER:",

for i in dir(apsw):

    if getattr(apsw,i)==operation:

        print i,

        break

print paramone, paramtwo, databasename, triggerorview

if operation==apsw.SQLITE_CREATE_TABLE and paramone.startswith("private"):

    return apsw.SQLITE_DENY # not allowed to create tables whose names start with priva

return apsw.SQLITE_OK # always allow

connection.setauthorizer(authorizer)

###

### progress handler (SQLite 3 experimental feature)

```

```
###

# something to give us large numbers of random numbers

import random

def randomintegers(howmany):

    for i in xrange(howmany):

        yield (random.randint(0,9999999999),)

# create a table with 10,000 random numbers

cursor.execute("begin ; create table bigone(x)")

cursor.executemany("insert into bigone values(?)", randomintegers(10000))

cursor.execute("commit")

# display an ascii spinner

_phcount=0

_phspinner="|/-\\"
```

```

def progresshandler():

    global _phcount

    sys.stdout.write(_phspinner[_phcount%len(_phspinner)]+chr(8)) # chr(8) is backspace

    sys.stdout.flush()

    _phcount+=1

    time.sleep(0.1) # deliberate delay so we can see the spinner (SQLite is too fast otherwise)

    return 0 # returning non-zero aborts

# register progresshandler every 20 instructions

connection.setprogresshandler(progresshandler, 20)

# see it in action

print "spiny thing -> ",

for i in cursor.execute("select max(x) from bigone"):

    print # newline

```

```
print i # and the maximum number

###

### commit hook (SQLite3 experimental feature)

###

def mycommithook():

    print "in commit hook"

    hour=time.localtime()[3]

    if hour<8 or hour>17:

        print "no commits our of hours"

        return 1 # abort commits outside of 8am through 6pm

    print "commits okay at this time"

    return 0 # let commit go ahead

connection.setcommithook(mycommithook)
```

```
cursor.execute("begin; create table example(x,y,z); insert into example values (3,4,5) ; com
```

Building

The simple way is:

```
python setup.py install
```

On Windows the above command uses Visual C++. You can use MinGW with the command below. (If MinGW complains about missing Python functions starting with `_imp__Py_` then run `mingwsetup.bat` which will ensure your Python distribution is initialized for MinGW compilation).

```
python setup.py build --compile=mingw32 install
```

By default whatever SQLite 3 you already have on your system is used. If you place a copy of the headers and library in a `sqlite3` subdirectory then that will be used instead. Here is a quick and easy way of doing everything on Linux/Mac or Windows with MinGW, including the SQLite library statically into the extension (ie no external DLLs/shared libraries will needed at runtime).

Download the SQLite 3 code. Use the version that has already been preprocessed. (It will com

```
$ mkdir sqlite3
```

```
$ cd sqlite3
```

```
$ unzip sqlite-source-3.2.2.zip
```

```
$ rm tclsqlite.c # Linux/Mac
```

```
$ del tclsqlite.c # Windows
```

```
$ gcc -DTHREADSAFE -O3 -c *.c # Adding -DNDEBUG will turn off assertions
# improve performance (about 25%) at the expense of some code size

$ ar r libsqlite3.a *.o

$ ranlib libsqlite3.a

$ cd ..

$ python setup.py install # Linux/Mac

$ python setup.py build --compile=mingw32 install # Windows
```

The extension just turns into a single file `apsw.so` (Linux/Mac) or `apsw.pyd` (Windows). You don't need to install it and can drop it into any directory that is more convenient for you and that your code can reach. To just do the build and not install, leave out `install` from the lines above and add `build` if it isn't already there.

API Reference

Everything you can do from the SQLite 3 C API you can do from Python. The documentation below notes which C API functions are called where you can get further details on what happens. The only C function not implemented is `sqlite3_collation_needed`. (You can still add collations, you just can't use this function to find out about them on-demand.) Additionally `sqlite3_trace` is not wrapped but instead tracers are provided that have more functionality.

Some functions are marked experimental in the SQLite API. These have also been made available, but as the SQLite documentation notes these functions may change form or disappear in future

versions of SQLite. You can exclude these functions by commenting out the relevant line in the setup.py when building aspw.

Various methods create functions, collations and set various hooks and handlers. To remove the relevant function/collation/hook/handler, pass in None as the callable method.

Module methods

sqlitelibversion()

Returns the version of the SQLite library as a string. This function calls `sqlite3_libversion`

Connection class

The connection class wraps a `sqlite3` pointer.

Connection(filename)

Opens an SQLite database named `filename`. (This calls `sqlite3_open` behind the scenes and `sqlite3`

cursor()

Creates a new cursor object on this database.

changes()

This function returns the number of database rows that were changed (or inserted or deleted)

totalchanges()

This function returns the total number of database rows that have be modified, inserted, or

`last_insert_rowid()`

Returns the integer key of the most recent insert in the database. (This calls `sqlite3_last_insert_rowid`.)

`complete(statement)`

Calls `sqlite3_complete` which tells you if the input string comprises one or more complete SQL statements.

`setbusytimetype(milliseconds)`

Sets the busy timeout. (This calls `sqlite3_busy_timeout`.)

`setbusyhandler(callable)`

Sets the busy handler to callable. callable will be called with one integer argument which is the number of times the database is busy.

`interrupt()`

Causes any pending operations on the database to abort at the earliest opportunity. (This calls `sqlite3_interrupt`.)

`createscalarfunction(name, callable, numargs=-1)`

Registers a scalar function. The callable will be called. You can specify how many arguments the function takes.

`createaggregatefunction(name, factorycallback, numargs=-1)`

Registers an aggregate function. (This calls `sqlite3_create_function`.) You can specify how many arguments the function takes.

*

a context object (of any type)

*

a step function which is called for each row. The context object will be the first parameter

*

a final function which is called at the end. The only parameter will be the context object

createcollation(name, callable)

Creates a collation with the specified name and callable. The callable will be passed two strings

setauthorizer(callable)

The callable is invoked while SQL statements are being prepared. The intent is to allow applications

*

an integer representing the operation (the constants are available on the apsw module)

*

A string (or None) dependent on the operation

*

Another string (or None) dependent on the operation

*

The string name of the database (or None)

*

Name of the innermost trigger or view doing the access (or None)

You should return `apsw.SQLITE_OK` to allow the operation or `apsw.SQLITE_DENY` or `apsw.SQLITE_I`

This calls `sqlite3_set_authorizer` which contains more detailed documentation.

setcommithook(callable) (SQLite 3 experimental feature)

Sets a callable which is invoked just before a commit. It should return zero for the commit

setprogresshandler(callable, nsteps=20) (SQLite 3 experimental feature)

Sets a callable which is invoked every `nsteps` SQLite instructions. The callable should ret

Cursor class

The Cursor class creates and executes SQLite prepared statements.

Cursor()

You cannot create cursors directly. They are created by calling `Connection.cursor()`.

getconnection()

Returns the `Connection` object to which this cursor belongs.

execute(statements, bindings=())

Executes the statements using the supplied bindings. The bindings can be supplied as a tuple.

executemany(statements, sequenceofbindings=())

Repeatedly executes statements using each element of `sequenceofbindings` for the bindings each time.

next()

The `Cursor` object is an iterator, and so you can use it in a `for` loop or similar situations.

getdescription()

Returns a list describing each column in the current result set. Each item is a tuple of (column name, data type, etc.).

setexectrace(callable)

setrowtrace(callable)

getexectrace()

getrowtrace()

Sets or gets the tracers.

Exceptions

All exception types have `apsw.Error` as a parent. The following exceptions can happen:

ThreadingViolationError

You have used an object allocated in one thread in a different thread. All objects (Connecti

IncompleteExecutionError

You have tried to start a new SQL execute call before executing all the previous ones. See t

BindingsError

There is an incorrect number of bindings when using tuples. Or you supplied a dictionary of

ExecutionCompleteError

A statement is complete but you try to run it more anyway!

ExecTraceAbort

The execution tracer returned `False` so execution was aborted.

The following Exception classes correspond to SQLite error codes.

General Errors

SQLITE_ERROR SQLError

SQLITE_MISMATCH MismatchError

Internal Errors

SQLITE_INTERNAL InternalError

SQLITE_PROTOCOL ProtocolError

SQLITE_MISUSE MisuseError

SQLITE_RANGE RangeError

Permissions etc

SQLITE_PERM PermissionsError

SQLITE_READONLY ReadOnlyError

SQLITE_CANTOPEN CantOpenError

SQLITE_AUTH AuthError

Abort/Busy/etc

SQLITE_ABORT AbortError

SQLITE_BUSY BusyError

SQLITE_LOCKED LockedError

SQLITE_INTERRUPT InterruptError

SQLITE_SCHEMA SchemaChangeError

SQLITE_CONSTRAINT ConstraintError

Memory/Disk/etc

SQLITE_NOMEM NoMemError

SQLITE_IOERR IOError

SQLITE_CORRUPT CorruptError

SQLITE_FULL FullError

SQLITE_TOOBIG TooBigError

SQLITE_NOLFS NoLFSError

SQLITE_EMPTY EmptyError

SQLITE_FORMAT FormatError

SQLITE_NOTADB NotADBError

Types

Read about SQLite 3 types. ASPW always maintains the correct type for values, and never converts them to something else. Note however that SQLite may convert types based on column affinity as described in that link. ASPW requires that all values supplied are one of the corresponding Python/SQLite types (or a subclass).

*

None in Python is NULL in SQLite

*

Python int or long is INTEGER in SQLite. The value represented must fit within a 64 bit si

*

Python's float type is used for REAL in SQLite. (At the C level they are both 8 byte quantities)

*

Python's string or unicode is used for TEXT in SQLite. (ASPW automatically uses Python's string type)

*

Python's buffer class is used for BLOB in SQLite.

Unicode

All SQLite strings are Unicode. The actual binary representations can be UTF8, or UTF16 in either byte order. ASPW uses the UTF8 interface to SQLite which results in the binary string representation in your database defaulting to UTF8 as well. All this is totally transparent to your Python code.

Everywhere strings are used (eg as database values, SQL statements, bindings names, user defined functions) you can use Unicode strings. You can also use the bare Python string class, and ASPW will automatically call the unicode converter if any non-ascii characters are present.

When reading values from SQLite, ASPW uses the Python string class for any pure ASCII text, else it uses the Python unicode class.

Multi-threading and re-entrancy

ASPW lets you use SQLite in multi-threaded programs and will let other threads execute while SQLite is working. (Technically the GIL is released when `sqlite3_step` or `sqlite3_open` are running. The GIL is re-acquired while user defined functions, collations and the various hooks/handlers run.)

Note that you cannot use the same Connection object in multiple threads. You must allocate a new Connection object per thread. (This is a requirement of SQLite). A cursor object can only be used in

the same thread as it was allocated. (Also an SQLite requirement). Fortunately ASPW will check this for you and throw a `ThreadingViolationError` if you try to use objects in the wrong thread. Note that your destructors also need to run in the creation thread.

If you have multiple threads and/or multiple programs accessing the same database then there may be contention for the file. SQLite will return `SQLITE_BUSY` which will be raised as `BusyError`. You can call the `Cursor.next()` method to resume execution. Alternately you can call `Connection.setbusytimeout` to set how long SQLite will retry for or `Connection.setbusyhandler` to install your own busy handler. SQLite's locking and concurrency is described here

A cursor object can only be executing one query at a time. You cannot issue a new query from inside a trace function or from a user defined function or collation since these are called while executing a query. You can however make new cursors and use those without issue. You may want to remember the `Connection` object when you set your trace or user defined functions.

Tracing

You can install tracers on a cursor as an easy way of seeing exactly what gets executed and what is returned. The tracers can also abort execution and cause different values to be returned. This is very useful for diagnostics and testing without having to modify your main code.

Note: You cannot issue new execute statements against the cursor your tracer was called from. If you would like to make more queries in the tracer then do them from a new cursor object.

Execution Tracer

The execution tracer is called after an SQL statement has been prepared. (ie syntax errors will have caused an exception during preparation so you won't see them with a tracer). It is called with two arguments. The first is a string which is the SQL statement about to be executed, and the second is the bindings used for that statement (and can be `None`). If the return value evaluates to `False/None` then execution is aborted with an `ExecTraceAbort` exception. See the example above.

Row Tracer

The row tracer is called before each row is returned. The arguments are the items about to be returned. Whatever you return from the tracer is what is actually returned. If you return `None` then the whole row is skipped. See the example above.

Execution model

This section only matters if you give multiple SQL statements in one go to `cursor.execute()`. (Statements are separated by semi-colons.)

SQLite does execution in two steps. First a statement is prepared, which verifies the syntax, tables and fields and converts the statement into an internal representation. The prepared statement is then run. Execution stops when a row is available, there is an error or the statement is complete.

The `cursor.execute()` method automatically does the preparing and starts execution. If none of the statements return rows then execution will go to the end. If a row is returned then you need to call `cursor.next()` to get the row values. Execution will resume as necessary to satisfy `next()` calls.

However this means that if you don't read the rows returned then the rest of your statements won't be executed. APSW will detect unexecuted previous statements and generate an exception. For example:

```
>>> cursor.execute("select * from foo ; create table bar(x,y,z)")
```

```
>>> cursor.execute("create table bam(x,y,z)")
```

```
Traceback (most recent call last):
```

```
File "<stdin>", line 1, in ?
```

```
apsw.IncompleteExecutionError: Error: there are still remaining sql statements to execute
```

Because I didn't read the results of `select * from foo` then the following `create table` command didn't have a chance to get executed. On the next `execute` that condition is detected and an exception raised.

DBAPI notes

DBAPI is defined in PEP 249. This section describes how APSW complies or differs from it.

Module Interface

There is no connect method. Use the Connection constructor instead, which only takes one parameter - the name of the database.

The Connection object and any cursors must all be used in the same thread they were allocated from. You cannot use them in different threads even if you protect them with mutexes.

Three different paramstyles are supported. You can use qmark ('... WHERE name=?'), numeric ('... WHERE name=?4') and named ('... WHERE name=:name'). Note that SQLite numbers parameters from one not zero.

The DBAPI exceptions are not used.

Connection Objects

There is no close method

There are no commit or rollback methods. You should use cursor.execute("COMMIT") etc. The SQLite documentation has more details.

Several methods that are defined in DBAPI to be on the cursor are instead on the Connection object, since this is where SQLite actually stores the information. Doing operations in any other cursor attached to the same Connection object does update their values, and this makes you aware of that.

Cursor Objects

Use getdescription() instead of description. This information is only obtained on request.

There is no rowcount.

callproc is not implemented as SQLite doesn't support stored procedures.

There is no close method.

`execute` returns the `Cursor` object and you can use it as an iterator to get the results (if any).

`executemany` returns the `Cursor` object and you can use it as an iterator to get the results (if any).

`fetchone` is not available. Use the cursor as an iterator, or call `next()` which raises `StopIteration` when there are no more results.

`fetchmany` is not available. Call `next()` for however many results you want.

`fetchall` is not available. Call `next()` or use a list comprehension such as `[row for row in cursor.execute("....")]`.

`nextset` is not applicable or implemented.

`arraysize` is not available as `fetchmany` isn't.

Neither `setinputsizes` or `setoutputsize` are applicable or implemented.

Type objects

None of the date or time methods are available since SQLite 3 does not have a native date or time type.

Use the standard Python buffer class for BLOBs.

Optional DB API Extensions

`rownumber` is not available.

Exception classes are not available as attributes of `Connection`.

Use `Cursor.getconnection()` to get the associated `Connection` object.

scroll and messages are not available.

The Cursor object supports the iterator protocol and this is the only way of getting information back.

To get the last inserted row id, call `Connection.last_insert_rowid()`. That stores the id from the last insert on any Cursor associated with the the Connection. You can also add `select last_insert_rowid()` to the end of your execute statements.

There is no errorhandler attribute.

pysqlite differences

pysqlite already provides a DBAPI compliant wrapper over SQLite 2 and 3. APSW only wraps SQLite 3 has the following enhancements/differences over pysqlite 3:

*

- ♦ Nothing* happens behind your back (such as pysqlite trying to manage transactions for you)

*

Blobs are supported - the standard Python buffer class is used. (pysqlite 2 appears to sup

*

SQLite's Manifest typing is used, which limits values to being supplied as integer (32/64

*

Strings are handled correctly (pysqlite has some issues with Unicode strings).

*

apsw ensures that precision is maintained for integers. This means that 64 bit integers do

*

A threading safety check is used - an exception happens if an sqlite object is used in a t

*

While SQLite is executing the Python Global Interpreter Lock is released so other threads

*

SQLITE_BUSY is handled well. Although it is returned as an exception, you can call cursor.

*

You can use semi-colons at the end of commands and you can have multiple commands in the e

*

The cursor object is an iterator and returns itself from execute.

*

No information is fetched that wasn't requested (eg there is no 'description' field that i

*

You can have bindings supplied as a sequence type (tuple/list etc) for replacing ? in sql

*

You can have bindings supplied as a dictionary type.

*

cursor.executemany() also works with statements that return data such as selects, and you

*

You can set the busy timeout by calling Connection.setbusyttimeout with the amount of time

*

You can define your own SQL functions in Python.

*

You can define your own collations in Python.

*

You can implement tracers, authorizers and various hooks in Python.

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Version History

1. 2.2-r1

You can use this release against any release of SQLite 3.

SQLite 3.2.2 API removed `sqlite3_global_recover`. That function was not wrapped in APSW. Note that SQLite 3.2.2 contains a bug fix that applies when you use 64 bit integer primary keys (32 bit ints are fine).

1. 2.1-r1

You can use this release against any release of SQLite 3.

- ♦ There are no changes in APSW except to correct an error in the example code (collations are registered against the connection not the cursor)

SQLite 3.2.1 had one addition in the stable C API, which was a new function named `sqlite3_global_recover`. That function is not applicable for wrapping in APSW.

1. 1.3-r1

You can use this release against any release of SQLite 3.

- ♦ The text string returned by `apsw.Error` used to say "apsw.APSWException" and has been changed to "apsw.Error". This is purely cosmetic and helps make clear what the class is. (The old string was what the original class name was in an earlier version of the code.)
 - ♦ Added `SQLITE_ALTER_TABLE` and `SQLITE_REINDEX` constants for the authorizer function. (These constants were introduced in SQLite 3.1.3).
 - ♦ Changed various C++-isms into standard C (eg `//` comments and the placing of some `CHECK_THREAD` macro calls)
 - ♦ Added module level function `apswversion` which returns the version of APSW.

SQLite 3.1.3 had no changes in the stable C API other than what is mentioned above. There were some new experimental functions added which are not currently documented on the SQLite website, which are not wrapped by APSW. Please contact me if you believe they will remain in SQLite and you would like them wrapped:

- ♦ `sqlite3_sleep` An alternative function which sleeps for a specified number of milliseconds can be provided. By default SQLite just uses the standard operating system call.
- ♦ `sqlite3_expired` This function is internal to statement execution. It would apply to the implementation of `Cursor.executemany` and could in theory provide a marginal improvement in performance.
- ♦ A global variable `sqlite3_temp_directory` can be used before any databases are opened to set where temporary files are created. By default SQLite just uses the standard operating system mechanisms.

1. 0.8-r3

There are no functional changes. The only changes were to correct some variable names in the example code (they were cut and pasted from the test code which used different names) and to make the source zip file extract its contents into a sub-directory which is the more typical way of packaging that sort of thing.

1. 0.8-r2

All remaining functionality in the C API for SQLite 3.0.8 is now available.

Finished this documentation.

1. 0.8-r1

Initial release

Last modified: Thu Jul 07 21:47:50 Pacific Standard Time 2005

boost

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gadfly

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HttpLib2

HttpLib2

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`libarchive`

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lxml

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log4py

log4py

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pcre

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pyopenssl

pyopenssl

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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

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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.

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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

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changes were used in the work (which must be distributed under

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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

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d) If distribution of the work is made by offering access to copy

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pysqlite

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python

python

A. HISTORY OF THE SOFTWARE

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Python was created in the early 1990s by Guido van Rossum at Stichting

Mathematisch Centrum (CWI, see <http://www.cwi.nl>) in the Netherlands

as a successor of a language called ABC. Guido remains Python's

principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for

National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>)

in Reston, Virginia where he released several versions of the

software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see <http://www.zope.com>). In 2001, the Python Software Foundation (PSF, see <http://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

All Python releases are Open Source (see <http://www.opensource.org> for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived	Year	Owner	GPL-
	from			compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes

1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes

2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes
2.4	2.3	2004	PSF	yes
2.4.1	2.4.1	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes

Footnotes:

(1) GPL-compatible doesn't mean that we're distributing Python under

the GPL. All Python licenses, unlike the GPL, let you distribute

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GPL-compatible licenses make it possible to combine Python with

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(2) According to Richard Stallman, 1.6.1 is not GPL-compatible,

because its license has a choice of law clause. According to

CNRI, however, Stallman's lawyer has told CNRI's lawyer that 1.6.1

is "not incompatible" with the GPL.

Thanks to the many outside volunteers who have worked under Guido's

direction to make these releases possible.

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schema/trex.py

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test/domapi/ (and test/test_pyxmldom.py)

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zope

zope

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zlib

zlib

ZLIB DATA COMPRESSION LIBRARY

zlib 1.2.3 is a general purpose data compression library. All the code is thread safe. The data format used by the zlib library is described by RFCs (Request for Comments) 1950 to 1952 in the files <http://www.ietf.org/rfc/rfc1950.txt> (zlib format), [rfc1951.txt](http://www.ietf.org/rfc/rfc1951.txt) (deflate format) and [rfc1952.txt](http://www.ietf.org/rfc/rfc1952.txt) (gzip format). These documents are also available in other formats from <ftp://ftp.uu.net/graphics/png/documents/zlib/zdoc-index.html>

All functions of the compression library are documented in the file `zlib.h` (volunteer to write man pages welcome, contact zlib@gzip.org). A usage example of the library is given in the file `example.c` which also tests that the library is working correctly. Another example is given in the file `minigzip.c`. The compression library itself is composed of all source files except `example.c` and `minigzip.c`.

To compile all files and run the test program, follow the instructions given at the top of `Makefile`. In short "make test; make install" should work for most machines. For Unix: `./configure; make test; make install`. For MSDOS, use one of the special makefiles such as `Makefile.msc`. For VMS, use `make_vms.com`.

Questions about zlib should be sent to zlib@gzip.org, or to Gilles Vollant info@winimage.com for the Windows DLL version. The zlib home page is <http://www.zlib.org> or <http://www.gzip.org/zlib/>. Before reporting a problem, please check this site to verify that you have the latest version of zlib; otherwise get the latest version and check whether the problem still exists or not.

PLEASE read the zlib FAQ http://www.gzip.org/zlib/zlib_faq.html before asking for help.

Mark Nelson markn@ieee.org wrote an article about zlib for the Jan. 1997 issue of Dr. Dobb's Journal; a copy of the article is available in

<http://dogma.net/markn/articles/zlibtool/zlibtool.htm>

The changes made in version 1.2.3 are documented in the file `ChangeLog`.

Unsupported third party contributions are provided in directory "contrib".

A Java implementation of zlib is available in the Java Development Kit

<http://java.sun.com/j2se/1.4.2/docs/api/java/util/zip/package-summary.html>

See the zlib home page <http://www.zlib.org> for details.

A Perl interface to zlib written by Paul Marquess <pmqs@cpan.org> is in the CPAN (Comprehensive Perl Archive Network) sites

<http://www.cpan.org/modules/by-module/Compress/>

A Python interface to zlib written by A.M. Kuchling <amk@amk.ca> is available in Python 1.5 and later versions, see

<http://www.python.org/doc/lib/module-zlib.html>

A zlib binding for TCL written by Andreas Kupries <a.kupries@westend.com> is available at http://www.oche.de/~akupries/soft/trf/trf_zip.html

An experimental package to read and write files in .zip format, written on top of zlib by Gilles Vollant <info@winimage.com>, is available in the contrib/minizip directory of zlib.

Notes for some targets:

- For Windows DLL versions, please see [win32/DLL_FAQ.txt](#)
- For 64-bit Irix, deflate.c must be compiled without any optimization. With -O, one libpng test fails. The test works in 32 bit mode (with the -n32 compiler flag). The compiler bug has been reported to SGI.
- zlib doesn't work with gcc 2.6.3 on a DEC 3000/300LX under OSF/1 2.1 it works when compiled with cc.
- On Digital Unix 4.0D (formely OSF/1) on AlphaServer, the cc option -std1 is necessary to get gzprintf working correctly. This is done by configure.
- zlib doesn't work on HP-UX 9.05 with some versions of /bin/cc. It works with other compilers. Use "make test" to check your compiler.
- gzdopen is not supported on RISCOS, BEOS and by some Mac compilers.
- For PalmOs, see <http://palmzlib.sourceforge.net/>
- When building a shared, i.e. dynamic library on Mac OS X, the library must be installed before testing (do "make install" before "make test"), since the library location is specified in the library.

Acknowledgments:

The deflate format used by zlib was defined by Phil Katz. The deflate and zlib specifications were written by L. Peter Deutsch. Thanks to all the people who reported problems and suggested various

improvements in zlib; they are too numerous to cite here.

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If you use the zlib library in a product, we would appreciate *not* receiving lengthy legal documents to sign. The sources are provided for free but without warranty of any kind. The library has been entirely written by Jean-loup Gailly and Mark Adler; it does not include third-party code.

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