Fixing CVEs on Debian

Almost everything you should know about it

Carlos Henrique Lima Melara
2025-02-02

Slides available at people.debian.org/~charles/

Based on samueloph's presentation at DebConf 24

Agenda

i.e. what we are talking about today

1. Introductions
2. Debian Project
3. CVEs
4. CVEs for Debian
5. Fixing CVEs
6. Q&A

Who Am I?

Charles

- Computer Engineer
  - Ganesh - InfoSec
  - Gelos - Free Software
- Debian Contributor
  - Packaging
  - Localization
  - Debian Developer (DD)
- Software Engineer at Toradex

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  3. Do you know what CVEs are?
  4. Have you seen a CVE?
  5. Do you know how Debian fixes CVEs?

The Debian Project

About Debian :-)

- Free Software
  - Social Contract
  - Debian Free Software Guidelines
    - DFSG
- Collaborative Project
  - Constitution
  - Volunteer Based
- Transparency
  - Infrastructure
  - Mailing Lists and IRC

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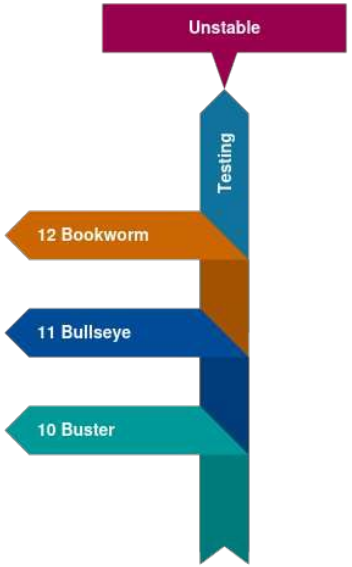

Debian stable

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    - Proposed-updates
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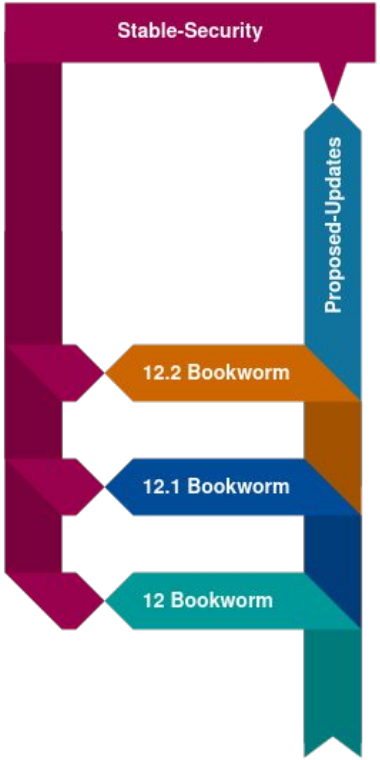

CVE:
Common Vulnerabilities and Exposures

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  - Global identifier for vulnerabilities
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CVE-2024-7264 PUBLISHED View JSON | User Guide

Collapse all

Required CVE Record Information

CNA: Curl –

Published: 2024-07-31 **Updated:** 2024-08-02
Title: ASN.1 Date Parser Overread

Description

libcurl's ASN1 parser code has the `GTime2str()` function, used for parsing an ASN.1 Generalized Time field. If given an syntactically incorrect field, the parser might end up using -1 for the length of the *time fraction*, leading to a `strlen()` getting performed on a pointer to a heap buffer area that is not (purposely) null terminated. This flaw most likely leads to a crash, but can also lead to heap contents getting returned to the application when [CURLINFO_CERTINFO](https://curl.se/libcurl/c/CURLINFO_CERTINFO.html) is used.

How can I get a CVE?

- Via CNA
  - CVE Numbering Authority
  - Hierarchical system
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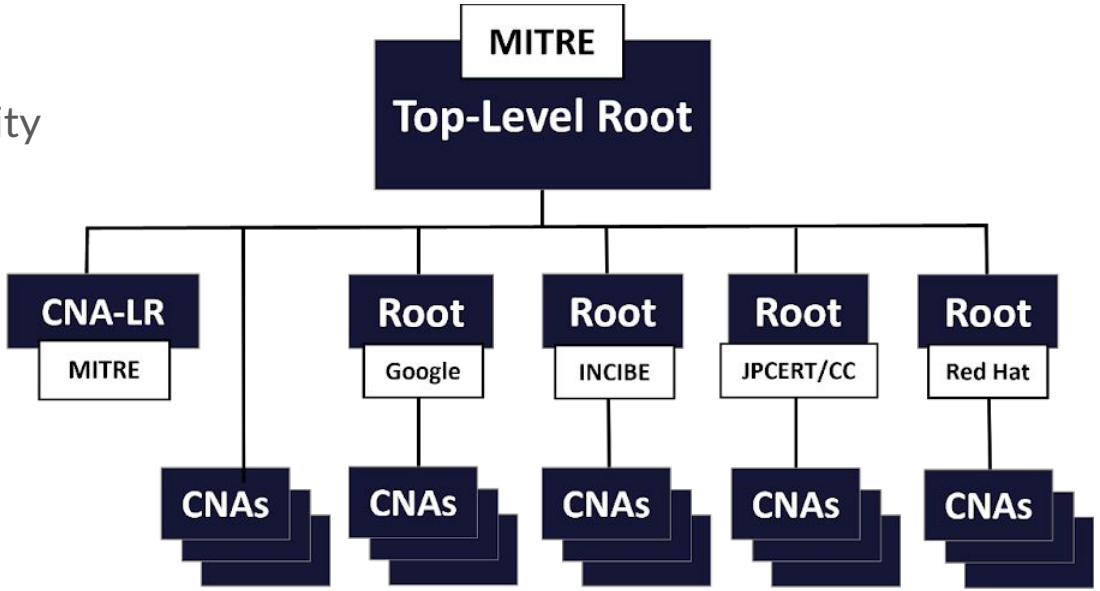

CVEs for Debian

Security Team

- Composed of Debian Developers (10)
  - Members, Assistants and Contributors
- Many tasks
  - Release Debian Security Advisories
  - Manage embargoed vulnerabilities
  - Manage fixes in proposed-updates
  - Handle special packages (Linux/Firefox/Chromium)
  - Front Desk: handle inbox
  - Manage team's private key
  - Manage Debian's CVE ID pool
  - Manage Security Tracker

Notes

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[bookworm] - curl <no-dsa> (Minor issue)
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https://curl.se/docs/CVE-2024-7264.html
Introduced by: https://github.com/curl/curl/c
Fixed by: https://github.com/curl/curl/commit
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Security Tracker

- security-tracker.debian.org
  - Website and git repo
  - Constantly updates CVE list
  - ~80 new CVEs daily (2023)
  - From Mitre, distros@openwall and mail (team@security.d.o)
- Needs evaluation and call to action
- Can be fixed by anyone
- Security Team might issue a DSA
  - Debian Security Advisory

[SECURITY] [DSA 5587-1] curl security update

- *To*: debian-security-announce@lists.debian.org
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Package        : curl
CVE ID         : CVE-2023-46218 CVE-2023-46219

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validated against the public suffix list of domains and in same cases
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For the stable distribution (bookworm), these problems have been fixed in
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Security Team

- 3 options for CVEs
  - Apply fix and release DSA
    - Security feed
    - Embargoed (?)
  - Document and contact Maintainer
    - Proposed updates
    - Public - BTS and Infrastructure
  - Do nothing
    - Document
- Fixed with “backporting” changes

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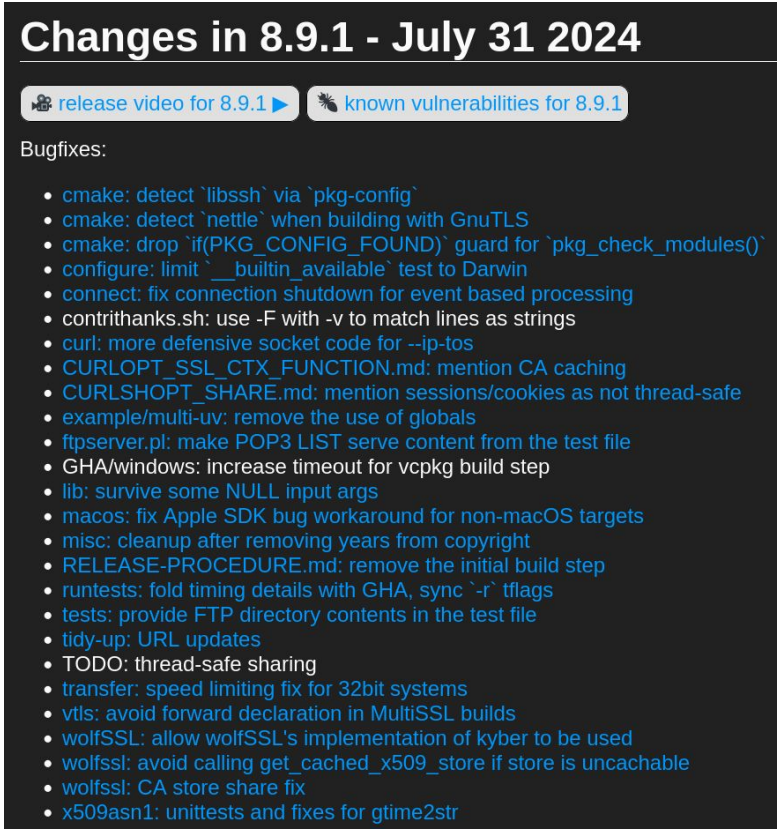
Fixing CVEs

Different Views

- Upstream
  - Fix the issues
    - New major release
    - Minor/Patch release
    - Complete documentation
- Debian
  - Older version
  - Frozen in time
  - Backport the patches
    - New **Debian** release (+deb12u1)



Changes in 8.9.1 - July 31 2024

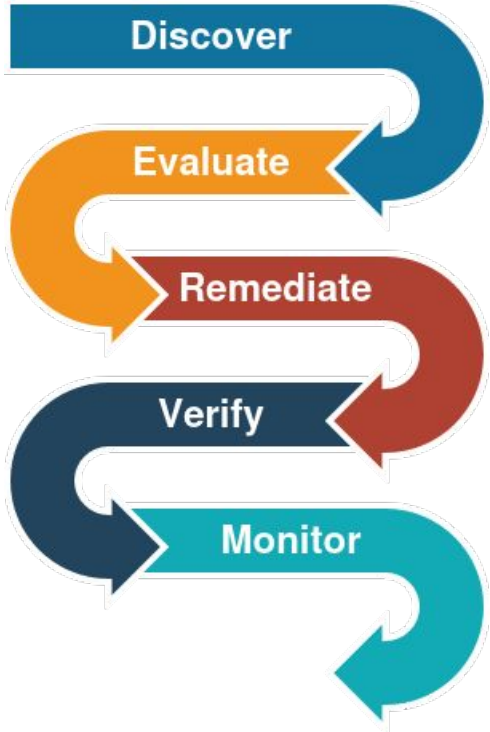
release video for 8.9.1 ▶ | known vulnerabilities for 8.9.1

Bugfixes:

- cmake: detect `libssh` via `pkg-config`
- cmake: detect `nettle` when building with GnuTLS
- cmake: drop `if(PKG_CONFIG_FOUND)` guard for `pkg_check_modules()`
- configure: limit `__builtin_available` test to Darwin
- connect: fix connection shutdown for event based processing
- contrithanks.sh: use -F with -v to match lines as strings
- curl: more defensive socket code for --ip-tos
- CURLOPT_SSL_CTX_FUNCTION.md: mention CA caching
- CURLSHOPT_SHARE.md: mention sessions/cookies as not thread-safe
- example/multi-uv: remove the use of globals
- ftpserver.pl: make POP3 LIST serve content from the test file
- GHA/windows: increase timeout for vcpkg build step
- lib: survive some NULL input args
- macos: fix Apple SDK bug workaround for non-macOS targets
- misc: cleanup after removing years from copyright
- RELEASE-PROCEDURE.md: remove the initial build step
- runtests: fold timing details with GHA, sync `-r` tflags
- tests: provide FTP directory contents in the test file
- tidy-up: URL updates
- TODO: thread-safe sharing
- transfer: speed limiting fix for 32bit systems
- vtls: avoid forward declaration in MultiSSL builds
- wolfSSL: allow wolfSSL's implementation of kyber to be used
- wolfssl: avoid calling get_cached_x509_store if store is uncachable
- wolfssl: CA store share fix
- x509asn1: unittests and fixes for gtime2str

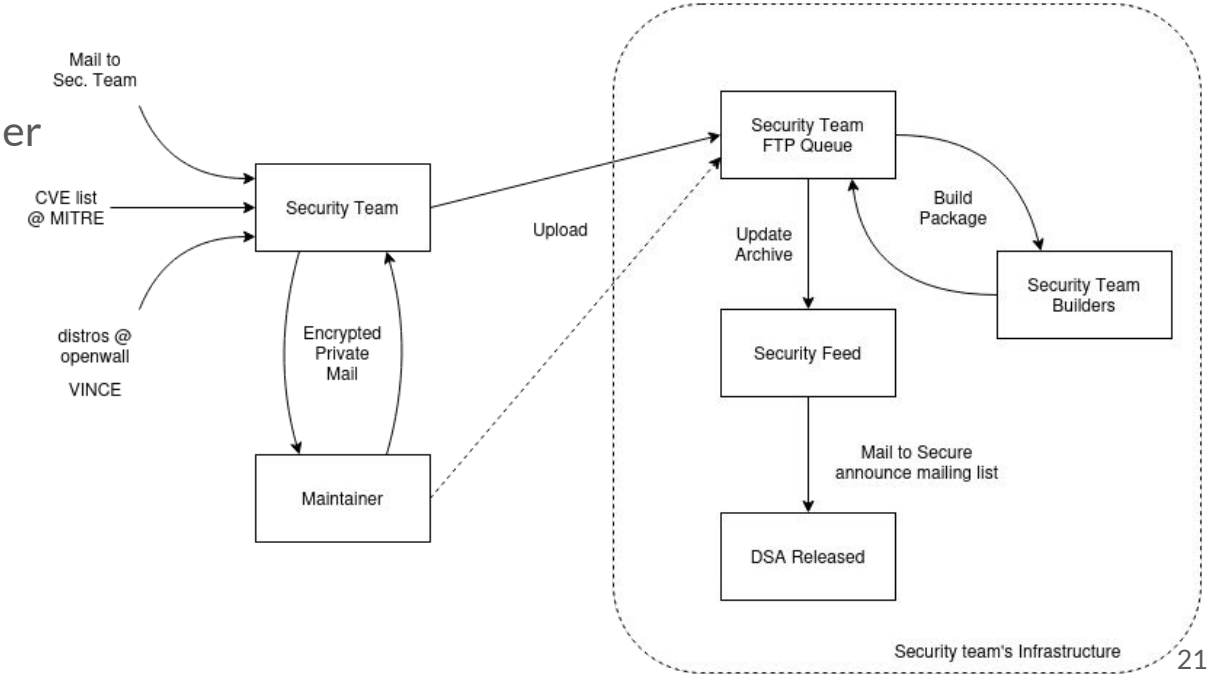
The Process

- Find a CVE to fix
- Confirm impact
- Identify the fix
  - Apply the patches
  - Modify the patch
  - Document changes
- Review backporting changes
- Test the changes
- Submit the fixed package
- Watch for regressions



Severe Vulnerabilities

- Sec. Team informed
  - Contact maintainer
- Evaluate CVE
- Identify the fix
- Backport fix
- Prepare the upload
- Prepare DSA
- Watch for regressions



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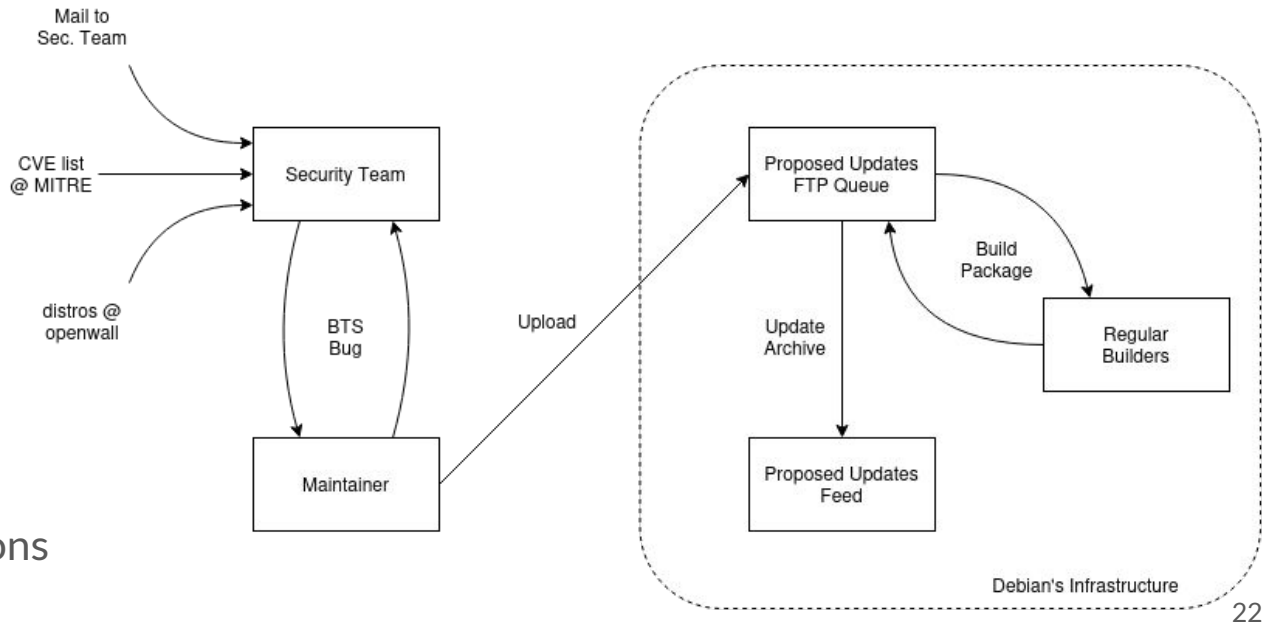

Contact

- **charles** [at] debian [dot] org
- Matrix: charles:matrix.debian.social
- IRC: charles (oftc/libera)
- Questions or Comments?
- License: CC BY-SA 4.0

From here downwards: slides for presenting

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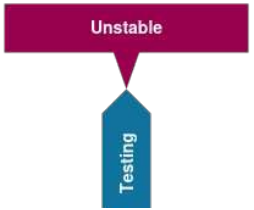

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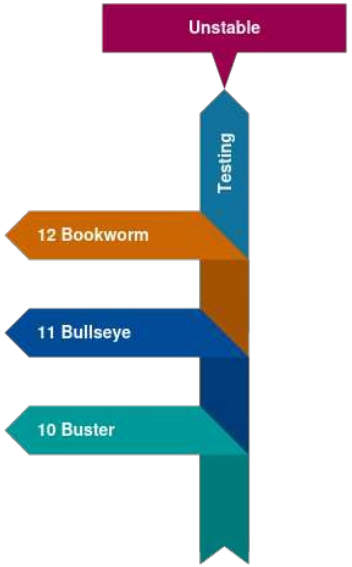

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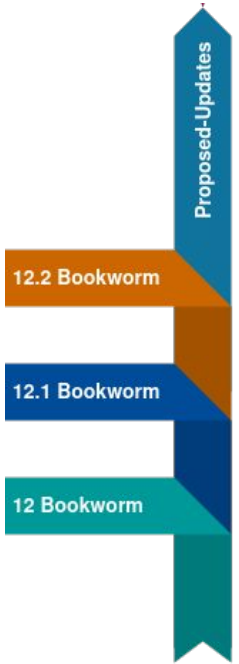

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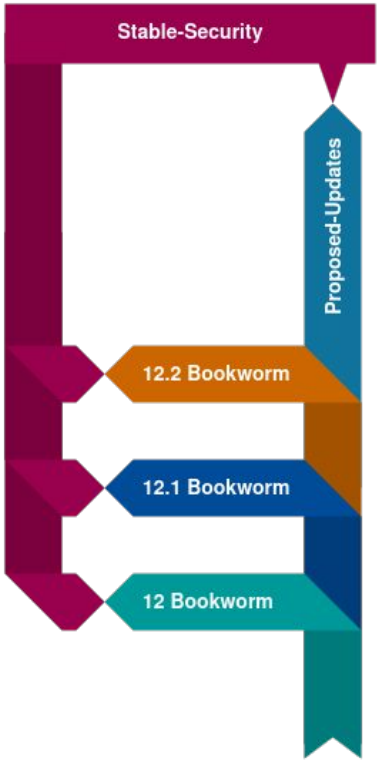

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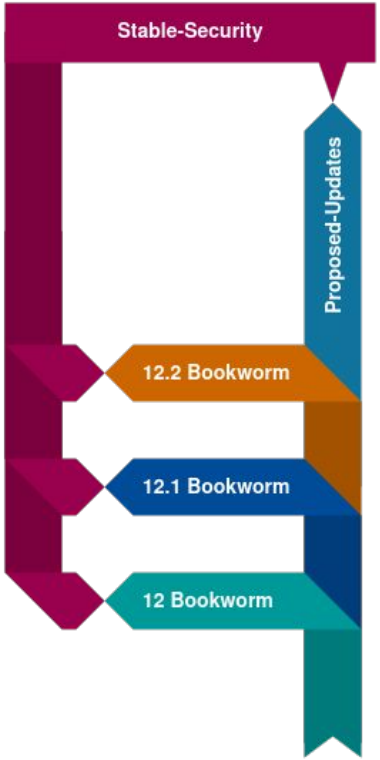

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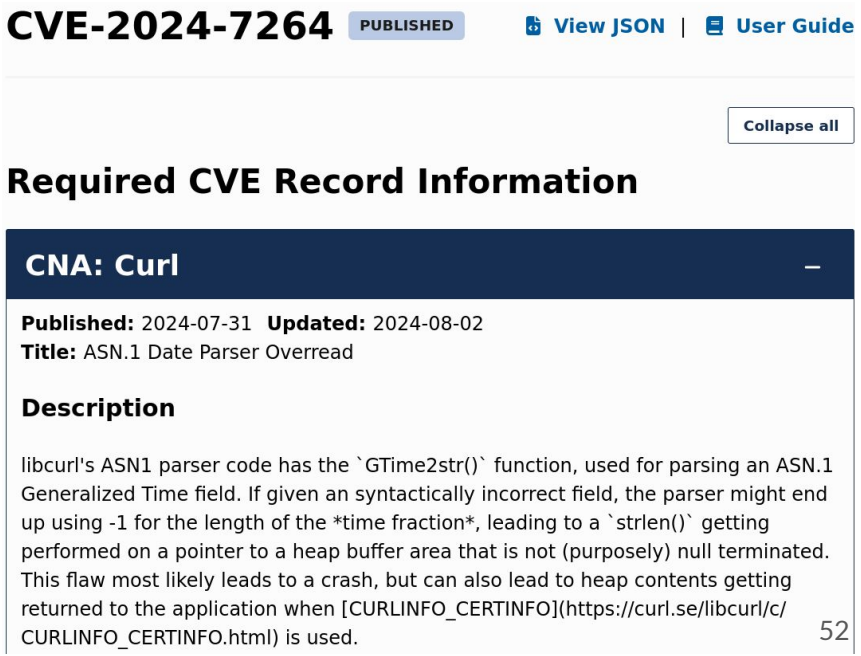

CVE-2024-7264 PUBLISHED View JSON | User Guide

Collapse all

Required CVE Record Information

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Title: ASN.1 Date Parser Overread

Description

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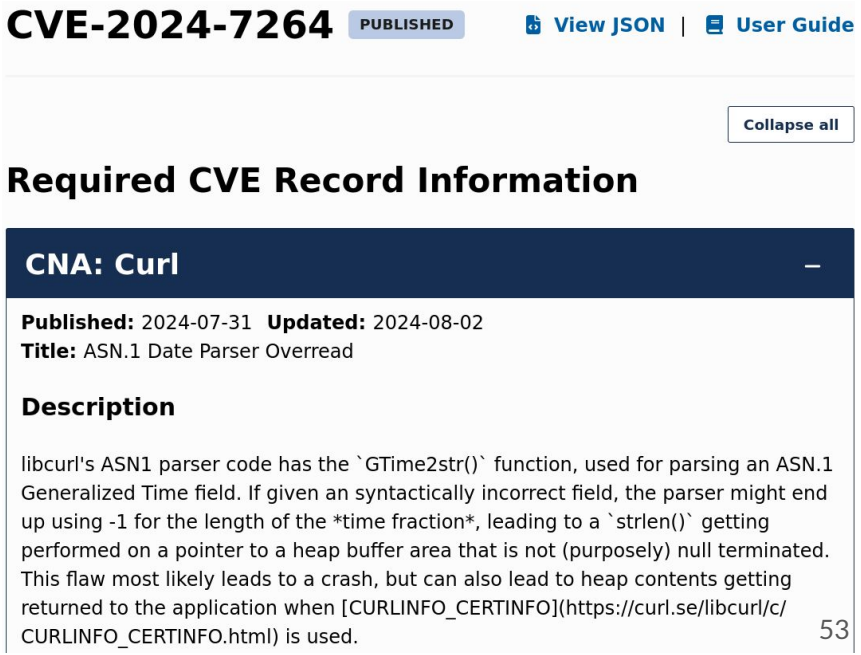

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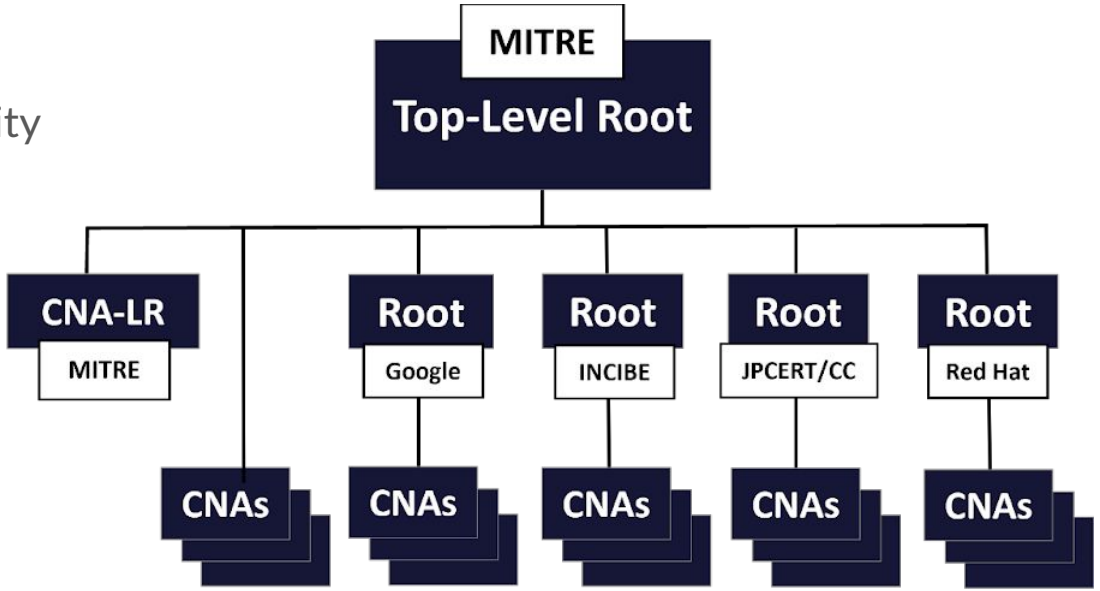

CVEs for Debian

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Open issues

Bug	bullseye	bookworm	trixie	sid
CVE-2024-7264	vulnerable (no DSA)	vulnerable (no DSA)	fixed	fixed
CVE-2023-46219	vulnerable (no DSA, ignored)	fixed	fixed	fixed
CVE-2023-23915	vulnerable (no DSA, ignored)	fixed	fixed	fixed
CVE-2023-23914	vulnerable (no DSA, ignored)	fixed	fixed	fixed
CVE-2022-43551	vulnerable (no DSA, ignored)	fixed	fixed	fixed
CVE-2022-42916	vulnerable (no DSA, ignored)	fixed	fixed	fixed

Open unimportant issues

Bug	bullseye	bookworm	trixie	sid	Description
CVE-2024-2379	vulnerable	vulnerable	fixed	fixed	libcurl skips the ce

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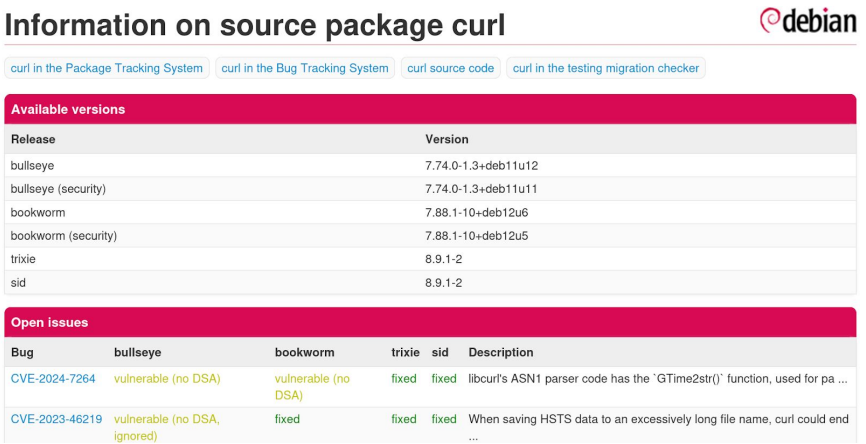
Fixed by: https://github.com/curl/curl/commit
```

Security Team

- Composed of Debian Developers (10)
  - Members, Assistants and Contributors
- Many tasks
  - Release Debian Security Advisories
  - Manage embargoed vulnerabilities
  - Manage fixes in proposed-updates
  - Handle special packages
  - Front Desk: handle inbox
  - Manage team's private key
  - Manage Debian's CVE ID pool
  - Manage Security Tracker



Information on source package curl

curl in the Package Tracking System | curl in the Bug Tracking System | curl source code | curl in the testing migration checker

Available versions

Release	Version
bullseye	7.74.0-1.3+deb11u12
bullseye (security)	7.74.0-1.3+deb11u11
bookworm	7.88.1-10+deb12u6
bookworm (security)	7.88.1-10+deb12u5
trixie	8.9.1-2
sid	8.9.1-2

Open issues

Bug	bullseye	bookworm	trixie	sid	Description
CVE-2024-7264	vulnerable (no DSA)	vulnerable (no DSA)	fixed	fixed	libcurl's ASN1 parser code has the `GTime2str()` function, used for pa ...
CVE-2023-46219	vulnerable (no DSA, ignored)	fixed	fixed	fixed	When saving HSTS data to an excessively long file name, curl could end ...

Security Tracker

- security-tracker.debian.org
  - Website and git repo
  - Constantly updates CVE list
  - ~80 new CVEs daily (2023)
  - From Mitre, distros@openwall and mail (team@security.d.o)

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CVE-2023-46219	vulnerable (no DSA, ignored)	fixed	fixed	fixed
CVE-2023-23915	vulnerable (no DSA, ignored)	fixed	fixed	fixed
CVE-2023-23914	vulnerable (no DSA, ignored)	fixed	fixed	fixed
CVE-2022-43551	vulnerable (no DSA, ignored)	fixed	fixed	fixed
CVE-2022-42916	vulnerable (no DSA, ignored)	fixed	fixed	fixed

Open unimportant issues

Bug	bullseye	bookworm	trixie	sid	Description
CVE-2024-2379	vulnerable	vulnerable	fixed	fixed	libcurl skips the ce

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- Can be fixed by anyone

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  - ~80 new CVEs daily (2023)
  - From Mitre, distros@openwall and mail (team@security.d.o)
- Needs evaluation and call to action
- Can be fixed by anyone
- Security Team might issue a DSA
  - Debian Security Advisory

[SECURITY] [DSA 5587-1] curl security update

- *To*: debian-security-announce@lists.debian.org
- *Subject*: [SECURITY] [DSA 5587-1] curl security update
- *From*: Moritz Muehlenhoff <jmm@debian.org>
- *Date*: Sat, 23 Dec 2023 19:13:59 +0000

```
-----BEGIN PGP SIGNED MESSAGE-----
Hash: SHA512

- -------------------------------------------------------------------------
Debian Security Advisory DSA-5587-1                   security@debian.org
https://www.debian.org/security/                       Moritz Muehlenhoff
December 23, 2023                      https://www.debian.org/security/faq
- -------------------------------------------------------------------------

Package        : curl
CVE ID         : CVE-2023-46218 CVE-2023-46219

Two security issues were discovered in Curl: Cookies were incorrectly
validated against the public suffix list of domains and in same cases
HSTS data could fail to save to disk.

For the oldstable distribution (bullseye), these problems have been fixed
in version 7.74.0-1.3+deb11u11.

For the stable distribution (bookworm), these problems have been fixed in
version 7.88.1-10+deb12u5.

We recommend that you upgrade your curl packages.

For the detailed security status of curl please refer to
its security tracker page at:
https://security-tracker.debian.org/tracker/curl

Further information about Debian Security Advisories, how to apply
these updates to your system and frequently asked questions can be
found at: https://www.debian.org/security/

Mailing list: debian-security-announce@lists.debian.org
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Security Team

- 3 options for CVEs
  - Apply fix and release DSA
    - Security feed
    - Embargoed (?)

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Security Team

- 3 options for CVEs
  - Apply fix and release DSA
    - Security feed
    - Embargoed (?)
  - Document and contact Maintainer
    - Proposed updates
    - Public - BTS and Infrastructure

Notes

```
[bookworm] - curl <no-dsa> (Minor issue)
[bullseye] - curl <no-dsa> (Minor issue)
https://curl.se/docs/CVE-2024-7264.html
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- 3 options for CVEs
  - Apply fix and release DSA
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  - Document and contact Maintainer
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    - Public - BTS and Infrastructure
  - Do nothing
    - Document

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- 3 options for CVEs
  - Apply fix and release DSA
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    - Embargoed (?)
  - Document and contact Maintainer
    - Proposed updates
    - Public - BTS and Infrastructure
  - Do nothing
    - Document
- Fixed with “backporting” changes

Notes

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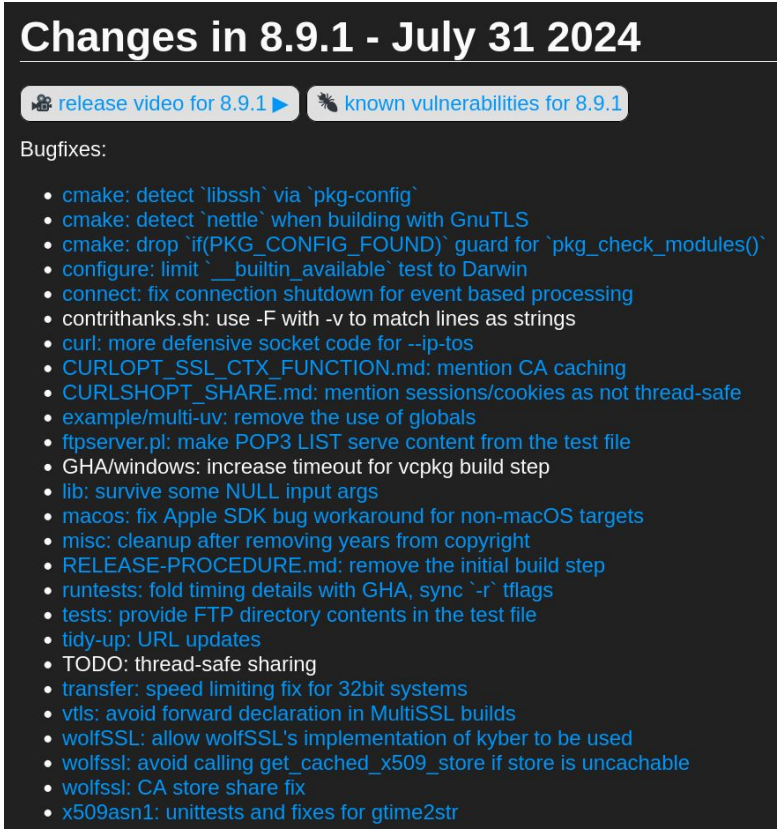
Fixing CVEs

Different Views

- Upstream
  - Fix the issues
    - New major release
    - Minor/Patch release
    - Complete documentation



Changes in 8.9.1 - July 31 2024

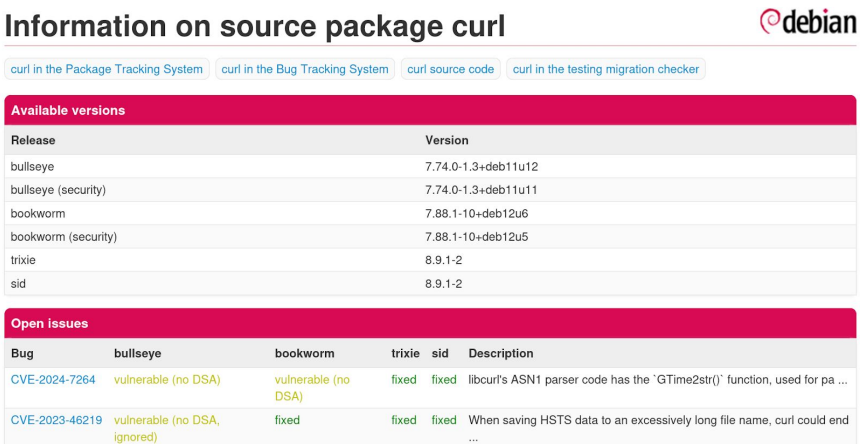
release video for 8.9.1 ▶ | known vulnerabilities for 8.9.1

Bugfixes:

- cmake: detect `libssh` via `pkg-config`
- cmake: detect `nettle` when building with GnuTLS
- cmake: drop `if(PKG_CONFIG_FOUND)` guard for `pkg_check_modules()`
- configure: limit `__builtin_available` test to Darwin
- connect: fix connection shutdown for event based processing
- contrithanks.sh: use -F with -v to match lines as strings
- curl: more defensive socket code for --ip-tos
- CURLOPT_SSL_CTX_FUNCTION.md: mention CA caching
- CURLSHOPT_SHARE.md: mention sessions/cookies as not thread-safe
- example/multi-uv: remove the use of globals
- ftpserver.pl: make POP3 LIST serve content from the test file
- GHA/windows: increase timeout for vcpkg build step
- lib: survive some NULL input args
- macos: fix Apple SDK bug workaround for non-macOS targets
- misc: cleanup after removing years from copyright
- RELEASE-PROCEDURE.md: remove the initial build step
- runtests: fold timing details with GHA, sync `-r` tflags
- tests: provide FTP directory contents in the test file
- tidy-up: URL updates
- TODO: thread-safe sharing
- transfer: speed limiting fix for 32bit systems
- vtls: avoid forward declaration in MultiSSL builds
- wolfSSL: allow wolfSSL's implementation of kyber to be used
- wolfssl: avoid calling get_cached_x509_store if store is uncachable
- wolfssl: CA store share fix
- x509asn1: unittests and fixes for gtime2str

Different Views

- Upstream
  - Fix the issues
    - New major release
    - Minor/Patch release
    - Complete documentation
- Debian
  - Older version
  - Frozen in time
  - Backport the patches
    - New **Debian** release (+deb12u1)



Information on source package curl

debian

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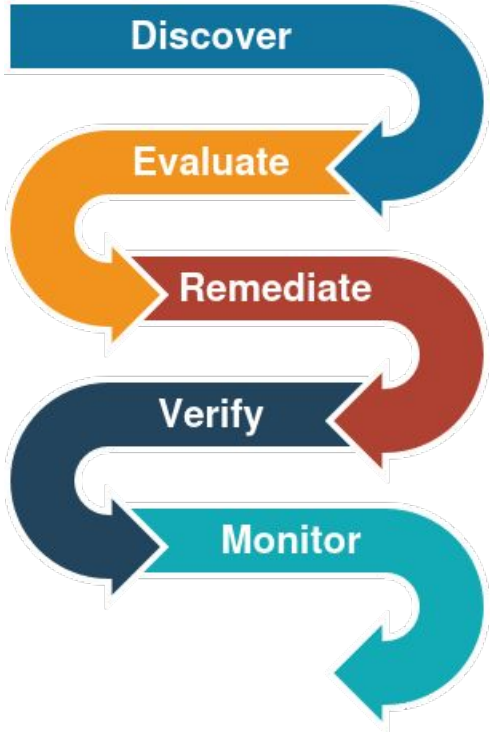
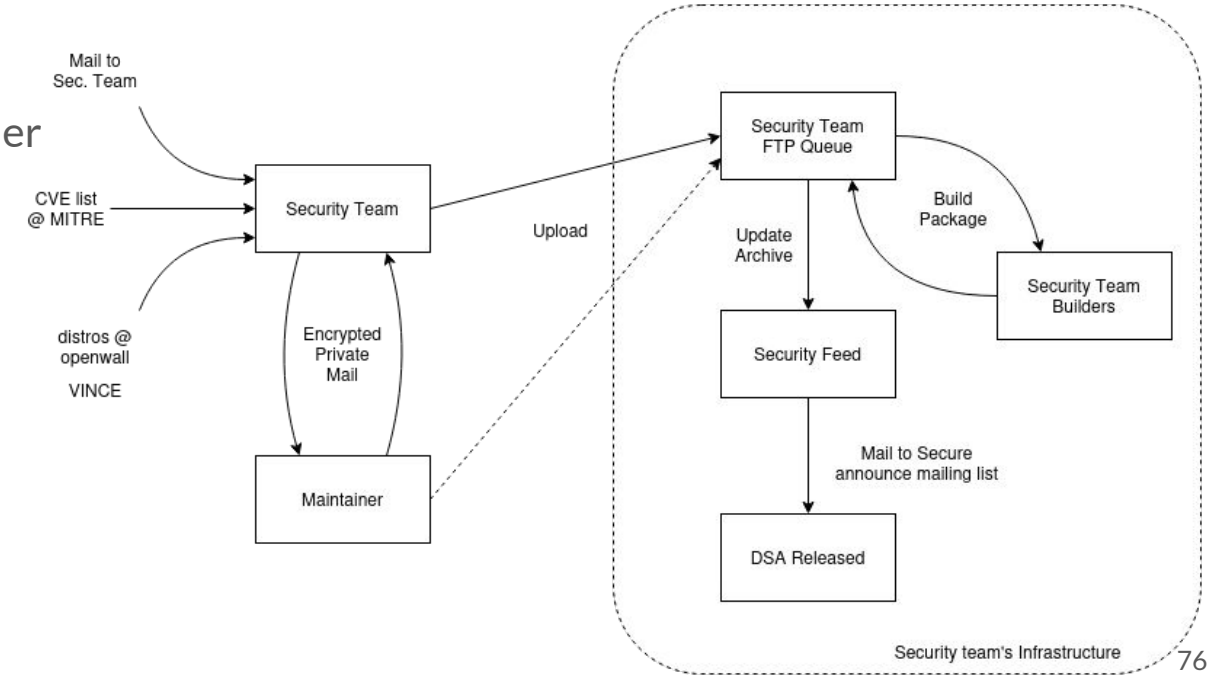
The Process

- Find a CVE to fix
- Confirm impact
- Identify the fix
  - Apply the patches
  - Modify the patch
  - Document changes
- Review backporting changes
- Test the changes
- Submit the fixed package
- Watch for regressions



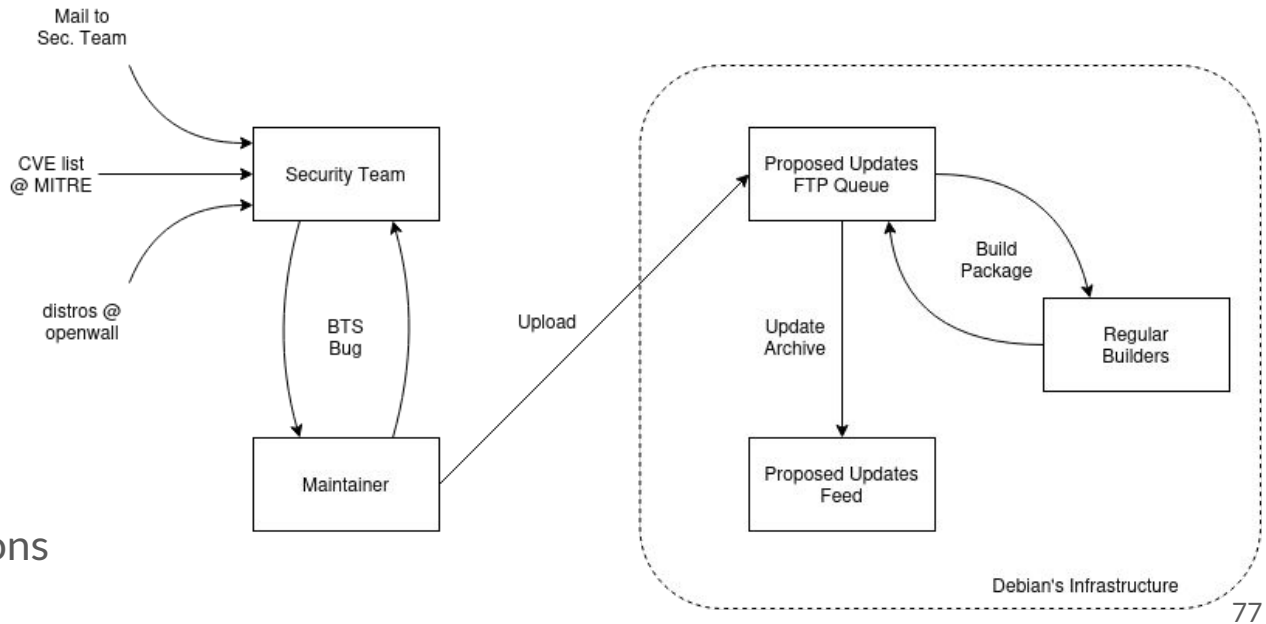
Severe Vulnerabilities

- Sec. Team informed
  - Contact maintainer
- Evaluate CVE
- Identify the fix
- Backport fix
- Prepare the upload
- Prepare DSA
- Watch for regressions



Minor Vulnerabilities

- Sec. Team informed
- Evaluate CVE
- Identify the fix
- Contact maintainer
  - BTS
- Backport fix
- Prepare the upload
- Watch for regressions



Contact

- **charles** [at] debian [dot] org
- Matrix: charles:matrix.debian.social
- IRC: charles (oftc/libera)
- Questions or Comments?
- License: CC BY-SA 4.0