

# Release Notes

Online Version of Documentation also available

 This documentation was produced with [Confluence](#) software. A PDF version was generated directly from Confluence. An online, updated version of this 6.x Documentation is also available at: <https://wiki.duraspace.org/display/DSDOC6x>

**Support for DSpace 6 ended on July 1, 2023.** See [Support for DSpace 5 and 6 is ending in 2023](#)

Welcome to Release 6.4, a bug-fix release for the DSpace 6.x platform. *Any previous version of DSpace may be upgraded to DSpace 6 directly. For more information, please see [Upgrading DSpace](#).*

- [6.4 Release Notes](#)
  - [6.4 Acknowledgments](#)
- [6.3 Release Notes](#)
  - [6.3 Acknowledgments](#)
- [6.2 Release Notes](#)
  - [6.2 Acknowledgments](#)
- [6.1 Release Notes](#)
  - [6.1 Acknowledgments](#)
- [6.0 Release Notes](#)
  - [6.0 Acknowledgments](#)

## 6.4 Release Notes

We highly recommend ALL users of DSpace 6.x upgrade to 6.4

 DSpace 6.4 contains security fixes for both the JSPUI and XMLUI. To ensure your 6.x site is secure, **we highly recommend ALL DSpace 6.x users upgrade to DSpace 6.4!**

*DSpace 6.4 upgrade instructions are available at: [Upgrading DSpace](#)*

DSpace 6.4 is a bug fix release to resolve several issues located in previous 6.x releases. As it only provides only bug fixes, DSpace 6.4 should constitute an easy upgrade from DSpace 6.x for most users. No database changes should be necessary when upgrading from DSpace 6.x to 6.4.

### Security fixes include:

- [HIGH] [CVE-2022-31195](#) (impacts XMLUI and JSPUI): *Path traversal vulnerability in Simple Archive Format package import (ItemImportService API). This means a malicious SAF (simple archive format) package could cause a file/directory to be created anywhere the Tomcat/DSpace user can write to on the server. This path traversal is only possible by a user with special privileges (Administrators or someone with command-line access to the server).*
  - Reported by Johannes Moritz of Ripstech
- [HIGH] [CVE-2022-31194](#) (impacts JSPUI only) : *The JSPUI resumable upload implementations in SubmissionController and FileUploadRequest are vulnerable to multiple path traversal attacks, allowing an attacker to create files/directories anywhere on the server writable by the Tomcat /DSpace user, just by modifying some request parameters during submission. This path traversal can only be executed by a user with submitter rights.*
  - Reported by Johannes Moritz of Ripstech
- [HIGH] [CVE-2022-31193](#) (impacts JSPUI only) : *The JSPUI controlled vocabulary servlet is vulnerable to an open redirect attack, where an attacker can craft a malicious URL that looks like a legitimate DSpace/repository URL. When that URL is clicked by the target, it redirects them to a site of the attacker's choice.*
  - Reported by Johannes Moritz of Ripstech
- [MODERATE] [CVE-2022-31191](#) (impacts JSPUI only) : *The JSPUI spellcheck "Did you mean" HTML escapes the data-spell attribute in the link, but not the actual displayed text. Similarly, the JSPUI autocomplete HTML does not properly escape text passed to it. Both are vulnerable to Cross Site Scripting (XSS).*
  - Reported by Hassan Bhuiyan, Brunel University London
- [MODERATE] [CVE-2022-31192](#) (impacts JSPUI only) : *The JSPUI "Request a Copy" feature is vulnerable to Cross Site Scripting (XSS) attacks.*
  - Reported by Andrea Bollini of 4Science
- [LOW] [CVE-2022-31189](#) (impacts JSPUI only) *When an "Internal System Error" occurs in the JSPUI, then entire exception (including stack trace) is available. Information in this stacktrace may be useful to an attacker in launching a more sophisticated attack.*
  - Reported by Johannes Moritz of Ripstech
- [LOW] [CVE-2022-31190](#) (impacts XMLUI only) *Metadata of withdrawn Items is exposed to anonymous users in XMLUI.*
  - Reported by David Cavrenne of Atmire

### Major bug fixes include:

- Fix Mirage 2 build broken by disappearance of JRuby gems [torquebox.org](#) mirror: [#8292](#)
  - Requires some action on sites with heavily customized JavaScript or stylesheets, see [Mirage 2's readme.md](#)
- Replace log4j with [reload4j](#): [#8144](#)
  - Note: this may impact custom modules pulled into your poms if they pull in log4j v1. We recommend only using reload4j.
- Implement GDPR-compliant statistics anonymization for Solr: [DS-4440 \(#2693\)](#)
- Update Sherpa Romeo integration for API v2: [DS-3940 \(#2739\)](#), [DS-4377 \(#2567\)](#)
- Add utility to [migrate legacy pre-6.x Solr statistics IDs to UUIDs](#): [DS-4075 \(#2260\)](#)
- Various improvements to Docker configuration and deployment: [DS-4356 \(#2542\)](#), [DS-4355 \(#2540\)](#), [DS-4349 \(#2534\)](#), [DS-4346 \(#2523\)](#), [DS-4321 \(#2476\)](#), [DS-4336 \(#2510\)](#), [DS-4126 \(#2307\)](#), [DS-4142 \(#2322\)](#), [DS-4012 \(#2218\)](#)
- Updated JSPUI and XMLUI to use jQuery v3: [DS-4508 \(#2918\)](#)
- Database fixes:
  - Change `maxwait` default to 10 seconds: [DS-4562 \(#7895\)](#)
  - Upgrade DBCP2 dependencies: [DS-4574 \(#3162\)](#)

- Fix OAI-PMH `Identify` verb when using Oracle RDBMS: [DS-3453 \(#2112\)](#)
- Migrate `update-sequences.sql` script to `dspace database` command: [DS-4167 \(#2362\)](#)
- XMLUI fixes:
  - Add `noindex` HTML meta tag to prevent robots from indexing private items: [DS-1980 \(#5346\)](#)
  - Update Mirage2 build to support Node.js 14 LTS: [#8331](#)
  - Update confidence when manually editing authority controlled metadata values: [DS-4580 \(#7913\)](#)
  - Fix breaking of feedback link on sites without a sub-domain: [DS-4362 \(#7701\)](#)
  - Improve performance of item counter (aka "strengths"): [DS-3976 \(#7323\)](#)
  - Fix jumping to a specific year in search results when site is not using the default sort order: [DS-4208 \(#7548\)](#)
  - Fix word-break CSS class: [DS-4190 \(#2374\)](#)
  - Improvements and bug fixes to `starts_with` parameter on browse pages: [DS-4201](#), [DS-3945 \(#2113\)](#)
  - Re-enable HTTP Ranges support: [DS-4579 \(#3228\)](#)
  - Fix Known/Supported labels in UploadStep/UploadWithEmbargoStep: [DS-4293 \(#2465\)](#)
  - Fix Discovery label for metadata values under authority control: [DS-2852 \(#1800\)](#)
  - Fix incorrect escaping of `citation_` meta tags: [DS-4135 \(#2317\)](#)
  - Fail gracefully if the Creative Commons API is down: [DS-2569 \(#2977\)](#)
  - Respect primary bitstreams with text/html mime types in Mirage2 item view: [DS-3888 \(#2021\)](#)
  - Use null for empty language when editing item metadata: [DS-4169 \(#2350\)](#)
  - Properly show results for 0-9 link in Browse: [DS-4291 \(#2463\)](#)
  - Fix missing date values while faceting: [DS-3791 \(#1901\)](#)
  - Fix support for custom `sitemap.xmap` in Mirage 2: [DS-3545 \(#1690\)](#)
  - Fix broken "reset" button in Discovery advanced search filters: [#8330](#)
  - Fix incorrect totals on Discovery "view more" page: [DS-3881 \(#2371\)](#)
- JSPUI fixes:
  - Improve results in item mapper: [#2649](#)
  - Make sure that transactions are committed in curation tasks: [DS-4564 \(#3087\)](#)
  - Performance enhancement for large uploads: [DS-4551 \(#2964\)](#)
  - Port ORCID author lookup integration to JSPUI: [DS-2715](#), [DS-4439 \(#2710\)](#)
  - Fix bug in JSPUI Shibboleth session renewal: [DS-3444 \(#2358\)](#)
  - Add missing keys for search filters in `Messages.properties`: [DS-4029 \(#2556\)](#)
  - Fix issue with duplicate headers when bitstream title has a comma: [DS-4340 \(#2513\)](#)
- Other API-level fixes (affecting all UIs):
  - Improve Solr search results for Discovery `contains` queries by using double quotes instead of brackets: [DS-4271 \(#7611\)](#)
  - Add a check to make sure the source and target collections are not the same when moving an item: [#8055](#)
  - Avoid exporting metadata of mapped item more than once: [#7988](#)
  - Make sure "Save and Exit" in workflow actually saves changes to the database: [DS-4157 \(#7499\)](#)
  - Fix `NullPointerException` in ORCIDv2 API responses with missing data: [DS-3998 \(#7345\)](#)
  - Fix `NullPointerException` when selecting items published today in initial questions step: [DS-4238 \(#7668\)](#)
  - Fix `NullPointerException` on empty sub-communities in `metadata-export`: [DS-4211 \(#2396\)](#)
  - Fix "homepage" Discovery configuration not being used due to missing IDs: [DS-3725 \(#7072\)](#)
  - Fix ingesting items without a license not using the default license: [DS-3643 \(#6992\)](#)
  - Prevent empty string assignment for language when importing a SAF bundle: [DS-4493 \(#2753\)](#)
  - Fix searching for text values containing diacritics: [DS-4034 \(#2276\)](#)
  - Fix for view permissions when Anonymous is a sub-group: [DS-4534 \(#2832\)](#)
  - `FindByValue` should pass in value, not qualifier: [DS-4073 \(#2699\)](#)
  - Fix exception when harvesting by UUID: [DS-4353 \(#2537\)](#)
  - Fix `NullPointerException` in "request a copy" function: [DS-4032 \(#2452\)](#)
- REST API fixes:
  - Fix Maven build issue due to blocking of plaintext HTTP repositories: [#3247](#)
  - Return items in deterministic order: [DS-3849 \(#2501\)](#)
  - Improve performance of collections endpoints: [DS-4342 \(#2516\)](#)
  - Fix schema registry lookup with null qualifier: [#7993](#)

#### Minor improvements include:

- Limit the usage of `PDFBoxThumbnail` media filter to PDFs: [DS-3873 \(#2124\)](#)
- Update PDFBox version: [#2742](#)
- Update spider user agent file for more accurate Solr usage statistics: [DS-4587 \(#3333\)](#)
- Update JavaScript dependencies: [DS-4508 \(#2918\)](#)
- Remove non-existent command from OAI's CLI help: [DS-4260 \(#2439\)](#)
- Fix Discovery index command when using the "-c" (clean) option: [DS-4393 \(#2606\)](#)
- Fix issue with `bulkedit.ignore-on-export` parameter on `DSpaceCSV`: [#2661](#)
- Improve `dspace structure-builder` error messages: [DS-4087 \(#2681\)](#)
- Remove GeolP download Ant target, reconfigure for external provision: [DS-4409 \(#2652\)](#)
- Restores `getSize()` in Bitstream for replication task suite: [DS-3895 \(#2683\)](#)
- Remove unnecessary second Context in `RDFConsumer`: [#8152](#)
- Fix minor security issue with HTML links using `target="_blank"`: [DS-3891 \(#7238\)](#)
- Correctly remove Handle server lock file: [DS-3946 \(#2114\)](#)
- Make automatic Discovery re-indexing configurable: [DS-3658 \(#2184\)](#)
- Allow configuring max results per page in search: [DS-4120 \(#2306\)](#)
- Improve OAI performance for large installs: [DS-4136 \(#2320\)](#)
- Avoid crosswalking invalid publish dates for Google Scholar: [DS-4104 \(#2294\)](#)
- Bitstreams should keep their formats when being versioned: [DS-4078 \(#2261\)](#)
- Only execute ImageMagick `identify` on the first page of PDF: [DS-3664 \(#2201\)](#)
- Allow OAI Harvester to continue if it encounters an Item missing a handle: [DS-3939 \(#2106\)](#)
  - Note: the OAI Harvester Consumer has been completely removed from the DSpace codebase and should be removed from any configuration files referencing it: [DS-4129 \(#2314\)](#).

View the [full list of changes for DSpace 6.4 on GitHub](#).

## 6.4 Acknowledgments

The 6.4 release was led by [Alan Orth](#), [Kim Shepherd](#), [Nicholas Woodward](#) and [Hrafn Malmquist](#) (of Cottage Labs).

The following individuals provided tests, code, bug fixes, or review to the 6.4 release (in alphabetical order by given name): Alan Orth, Alexander Sulfrian, Andrea Bollini, Andrea Jenis Saroni, Andrew Wood, Anis, Bram Luyten, Chris Herron, Chris Wilper, Cornelius Matjka, Francesco Pio Scognamiglio, Giuseppe Digilio, Hrafn Malmquist, Huma Zafar, Iordanis Kostelidis, Istvan Vig, Jonas Van Goolen, Kim Shepherd, Kristof De Langhe, Leonardo Guerrero, Lotte Hofstede, Luigi Andrea Pascarelli, Mark H. Wood, Martin Walk, Nicholas Woodward, Pascal-Nicolas Becker, Paulo Graça, Philip Vissenaekens, PTrottier, Saiful Amin, Samuel, santit96, sslim, Terry Brady, Tim Donohue, Toni Prieto.

## 6.3 Release Notes

We highly recommend ALL JSPUI users of DSpace 6.x upgrade to 6.3

 DSpace 6.3 contains security fixes for the JSPUI (only). To ensure your 6.x JSPUI site is secure, **we highly recommend ALL JSPUI DSpace 6.x users upgrade to DSpace 6.3**

DSpace 6.x XMLUI users may also wish to upgrade as several major bugs have been fixed in the XMLUI as well.

*DSpace 6.3 upgrade instructions are available at: [Upgrading DSpace](#)*

DSpace 6.3 is a bug fix release to resolve several issues located in previous 6.x releases. As it only provides only bug fixes, DSpace 6.3 should constitute an easy upgrade from DSpace 6.x for most users. No database changes should be necessary when upgrading from DSpace 6.x to 6.3. One configuration addition (`orcid.api.url` property) has been made to the default `dspace.cfg` to support the new ORCID API v2, for ORCID Authority Control users.

### JSPUI security fixes include

- *[HIGH SEVERITY] A user can inject malicious Javascript into the names of EPeople or Groups. This is most severe in sites which allow anyone to register for a new account. (<https://jira.duraspace.org/browse/DS-3866> - requires a JIRA account to access.)*
  - Reported by Julio Brafman
- *[MEDIUM SEVERITY] Any user was able to export metadata to CSV format if they knew the correct JSPUI path/parameters. Additionally, the exported CSV included metadata fields which are flagged as hidden in configuration. (<https://jira.duraspace.org/browse/DS-3840> - requires a JIRA account to access.)*
  - Reported by Eike Kleiner (ZHAW, Zurich University of Applied Sciences)

### Major bug fixes include:

- Update DSpace [ORCID Integration](#) to use ORCID API v2 (instead of now obsolete ORCID v1): [DS-3447](#)
- Update DSpace [Statistics](#) to use GeolP API v2 (instead of now discontinued GeolP API v1): [DS-3832](#)
- Database specific fixes
  - Oracle database migration fix. Configurable Workflow migration threw errors: [DS-3788](#)
  - PostgreSQL JDBC driver upgraded to latest version (to allow for full compatibility with PostgreSQL v10): [DS-3854](#)
  - Fix issue where DSpace wasn't starting if it used a database connection pool supplied through JNDI: [DS-3434](#)
- Bitstream deletion issues ("dspace cleanup" command)
  - Fixed issues where Bitstreams were not being flagged for deletion when an Item was deleted: [DS-3729](#)
  - Fixed issues where Bitstreams were not being removed from assetstore even when flagged as deleted: [DS-3627](#) and [DS-3461](#)
    - *Note: This issue was limited to 6.0, 6.1 or 6.2, and specifically occurred when [Item Level Versioning](#) was NOT enabled (which is the default setting) or when [Item Level Versioning](#) was first enabled on DSpace version 6.0, 6.1 or 6.2*
  - Fixed issues where Bitstreams were removed from all versions of an Item (resulting in inaccurate versioning) when deleted from the latest version of an Item: [DS-3627](#)
    - *Note: This issue was limited to 6.0, 6.1 or 6.2, and specifically ONLY occurred when [Item Level Versioning](#) was first enabled on DSpace version 4.x or 5.x (and that old versioning data had since been migrated to 6.x).*
- Other API-level fixes (affecting all UIs)
  - Fixed issues where [Item Level Versioning](#) accidentally duplicated both metadata ([DS-3703](#)) and bitstreams ([DS-3702](#))
  - Fixed issue where Shibboleth authentication plugin appeared to login when no password provided: [DS-3662](#)
  - Fixed issues with Solr Search Query escaping in both UIs: [DS-3507](#)
  - Update last modified timestamp (on Item) when a new bitstream is added: [DS-3734](#)
  - Ensure [ImageMagick thumbnails](#) respect the orientation of original file: [DS-3839](#)
  - Fix MediaFilter "too many open files" issues (where it forgot to close an input stream): [DS-3700](#)
  - Fix PubMed Import submission step ([StartSubmissionLookupStep](#)) to use updated URL of PubMed API: [DS-3933](#)
  - Cleanup EHCACHE configuration: [DS-3694](#) and [DS-3710](#)
- JSPUI fixes
  - Fixed issues with authority control popup: [DS-3404](#)
  - Fixed issues with pausing HTML5 uploads: [DS-3865](#)
- XMLUI fixes
  - Fixed Mirage v2 build issues caused by Bower Registry URL change: [DS-3936](#)
  - Fixed performance issues for Items with 100+ bitstreams: [DS-3883](#)
  - Fixed occasional Hibernate LazyInitializationException when completing submissions: [DS-3775](#)
  - Fixed Unicode character issues in metadata: [DS-3733](#)
  - Fix issue where search results lose Community/Collection context when sorting: [DS-3835](#)
  - Fixed bitstream download issues which could leave AWS connections open when using S3 [storage backend](#): [DS-3870](#)
  - Update Mirage to use recommended [MathJax inline delimiters](#) ([DS-3087](#)) and to use new CDN location ([DS-3560](#))
- OAI-PMH Fixes
  - Ensure OAI-PMH updates harvestable items when an item is made private ([DS-3707](#)) or an embargo expires ([DS-3715](#))
  - Fixed Unicode character issues in metadata: [DS-3733](#) and [DS-3556](#)

- Fix content type of OAI-PMH response: [DS-3889](#)
- Enhanced "oai import" command to report on items that cause indexing issues: [DS-3852](#)
- REST API fixes and minor improvements
  - Fixed issue where REST API was no longer able to return JSON responses: [DS-3903](#)
  - Fixed update bitstream data returning 500 response: [DS-3511](#)
  - Improvements to [REST Based Quality Control Reports](#):
    - Enable login via Shibboleth: [DS-3811](#)
    - Add bitstream field data to item listing: [DS-3704](#)
    - Fix bug filtering for bitstream permissions: [DS-3713](#)
    - Improve ability to find withdrawn items: [DS-3714](#)

For more information, see the [Changes section](#) in the DuraSpace Wiki.

## 6.3 Acknowledgments

The 6.3 release was led by [Kim Shepherd](#)

The following individuals provided tests, code or bug fixes or review to the 6.3 release: Saiful Amin, Pascal-Nicolas Becker, Ben Bosman, Terry Brady, Per Broman, Jacob Brown, James Creel, Tom Desair, Tim Donohue, Stefan Fritzsche, Hendrik Geßner, Werner Greßhoff, Marsa Haoua, Iris Hausmann, Chris Herron, Lotte Hofstede, Eike Kleiner, Ivan Masár, Dinesh Mendhe, Philip Münch, Sébastien Nadeau, Miika Nurminen, Alan Orth, Hardy Pottinger, Jakub ihák, J. Savell, Christian Scheible, Kim Shepherd, Ilja Sidoroff, S. Solim, Eduardo Speroni, Alexander Sulfrian, Jonas Van Goolen, Philip Vissenaekens, Martin Walk, Andrew Wood, Mark Wood

## 6.2 Release Notes

DSpace 6.2 is a bug fix release to resolve several issues located in previous 6.x releases. As it only provides only bug fixes, DSpace 6.2 should constitute an easy upgrade from DSpace 6.x for most users. No database changes or additional configuration changes should be necessary when upgrading from DSpace 6.x to 6.2.

### Major bug fixes include:

- Important bug fixes to DSpace database connection/caching management
  - *Indexing*: Items failed to be reindexed after metadata changes were made: [DS-3660](#)
  - *Batch processing*: XMLUI Batch Import Failure: [DS-3648](#)
  - *Group creation*: Database migrations sometimes failed to create initial groups (Administrator and Anonymous) in fresh\_installs: [DS-3659](#)
  - *Cache management*: DOIOrganiser CLI does not change the database anymore: [DS-3656](#)
  - *Cache Management*: Database changes of consumers aren't persisted anymore: [DS-3680](#)
  - *Cache Management*: Slow batch operations due to Hibernate caching: [DS-3286](#)
- General bug fixes (to all UIs):
  - Pre-6.x Bitstream statistics were not being displayed: [DS-3602](#)
  - ImageMagick PDF thumbnail should always create sRGB JPEG files: [DS-3517](#)
  - ImageMagick PDF Processing Degraded with Changes in 5.7 release: [DS-3661](#)

## 6.2 Acknowledgments

The 6.2 release was led by the DSpace Committers.

The following individuals provided code or bug fixes or review to the 6.2 release: Pascal-Nicolas Becker, Terry Brady, Tom Desair, Tim Donohue, jawadma kki, Steve Michaels, Sébastien Nadeau, Alan Orth, Hardy Pottinger, Adan Roman, Sven Soliman, Alexander Sulfrian, Chris Wilper, Mark Wood.

## 6.1 Release Notes

We highly recommend ALL users of DSpace 6.x upgrade to 6.1

 DSpace 6.1 contains security fixes for the XMLUI and JSPUI and REST. To ensure your 6.x site is secure, **we highly recommend ALL DSpace 6.x users upgrade to DSpace 6.1.**

DSpace 6.1 upgrade instructions are available at: [Upgrading DSpace](#)

DSpace 6.1 is a security & bug fix release to resolve several issues located in previous 6.x releases. As it only provides bug/security fixes, DSpace 6.1 should constitute an easy upgrade from DSpace 6.x for most users. No database changes or additional configuration changes should be necessary when upgrading from DSpace 6.x to 6.1.

### Major bug fixes include:

- Security fixes for both JSPUI and XMLUI:
  - *[HIGH SEVERITY] Basic (Traditional) Workflow approval process is vulnerable to unauthorized manipulations.*(<https://jira.duraspace.org/browse/DS-3647> - requires a JIRA account to access.)
    - Discovered by Pascal Becker (The Library Code / TU Berlin).
  - *[LOW SEVERITY] DSpace failed to check if policies had valid dates when checking access permissions.*(<https://jira.duraspace.org/browse/DS-3619> - requires a JIRA account to access.)
    - Discovered by Pascal Becker (The Library Code / TU Berlin).

- Security fixes for REST API:
  - [HIGH SEVERITY] A user with submit permissions can bypass workflow approvals by depositing via REST API. (<https://jira.duraspace.org/browse/DS-3281> - requires a JIRA account to access.)
    - Discovered by Emilio Lorenzo.
  - [LOW SEVERITY] The "find-by-metadata" path publicly exposes metadata from access-restricted items. (<https://jira.duraspace.org/browse/DS-3628> - requires a JIRA account to access.)
    - Reported by Bram Luyten (Atmire).
- General bug fixes (to all UIs):
  - Performance improvements at API layer: [DS-3558](#), [DS-3552](#)
  - Submitters (who are not Admins) could not remove bitstreams from their in progress submission: [DS-3446](#)
  - Full text searching was only possible in the first bitstream (file): [DS-2952](#)
  - Configurable Workflow was throwing "Authorization is Denied" errors: [DS-3367](#)
  - IP Authorization range restrictions were not working properly: [DS-3463](#)
  - Item Versioning was not saving properly: [DS-3381](#)
  - Improve the text of database migration errors: [DS-3571](#)
  - Improve cache management for command line processes: [DS-3579](#)
  - Resolve CSV line break issue in bulk edit: [DS-3245](#)
  - Resolve error with null referrer to feedback page: [DS-3601](#)
  - Support all UTF-8 characters in configuration files: [DS-3568](#)
  - Fix update-handle-prefix script to no longer update handle suffix: [DS-3632](#)
- XMLUI bug fixes:
  - /handlerresolver path was no longer working: [DS-3366](#)
  - Display a restricted image thumbnail for access restricted bitstreams: [DS-2789](#)
  - Fix broken images when running Mirage 2 on Jetty: [DS-3289](#)
  - Archived submissions were being displayed chronologically instead of reverse chronologically: [DS-3334](#)
  - On Move Item page, the list of Collections was sorted by Collection name, instead of being first grouped by Community: [DS-3336](#)
  - ORCID / Authority Lookup button was no longer working in Mirage 2: [DS-3387](#)
  - Improve error message when user attempts to update an e-mail address to an existing address: [DS-3584](#)
  - Allow localization of input-forms.xml with XMLUI: [DS-3598](#)
  - Fix error when uploading large files (>2GB) via a web browser: [DS-2359](#)
  - Various other minor bug fixes
- JSPUI bug fixes
  - READ access rights not being respected on Collection homepage: [DS-3441](#)
  - Fix issue where database connections were being kept open on some JSPUI pages: [DS-3582](#)
- Oracle support bug fixes:
  - Oracle migrations took forever because of missing indexes: [DS-3378](#)
  - Community and Collection handles were not properly migrated between 5.x and 6.x: [DS-3409](#)
- OAI-PMH bug fixes:
  - DIM crosswalks repeated authority information: [DS-2947](#)
- REST API bug fixes:
  - Support for Shibboleth added: [DS-3108](#)
- Solr Statistics fixes:
  - Item Statistics displayed UUID instead of file name: [DS-3164](#)
  - Sharding statistics corrupted some fields and was unstable: [DS-3436](#), [DS-3457](#), [DS-3458](#)
- AIP Backup and Restore fixes:
  - Failed AIP imports left files in assetstore: [DS-2227](#)
  - Could not restore items from AIP if embargo lift date was in the past: [hDS-3348](#)
  - [Replication Task Suite](#) plugin was not working with 6.0: [DS-3389](#)

#### Minor improvements include:

- SEO improvement: Add configurable support for whitelisting specific file formats for Google Scholar citation\_pdf\_url tag: [DS-3127](#)
- Add support for \*.docx files (newer MS Word) to indexing process (via media filters). See [DS-1140](#)
- Add ability to multi-select options in XMLUI's My Submission page. See [DS-3448](#)
- Filter labels were missing in XMLUI's search screen. See [DS-3573](#)
- Minor improvements to logging and error reporting.

In addition, this release fixes a variety of minor bugs in the 6.x releases. For more information, see the [Changes in 6.x](#) section.

## 6.1 Acknowledgments

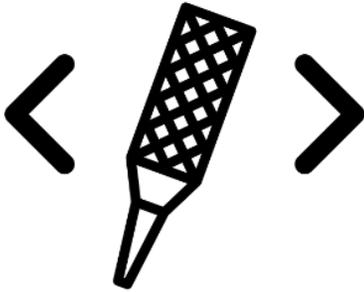
The 6.1 release was led by the DSpace Committers.

The following individuals provided code or bug fixes to the 6.1 release: Pascal-Nicolas Becker (pnbecker), Andrew Bennet (AndrewBennet), Andrea Bollini (abollini), Terry Brady (terrywbrady), Per Broman (pbroman), Samuel Cambien (samuelcambien), Yana De Pauw, Tom Desair (tomdesair), Peter Dietz (peterdietz), Roeland Dillen, Tim Donohue (tdonohue), edusperoni, Frederic-Atmire, Generalelektrix, Claudia Juergen (cjuergen), Bram Luyten (bram-atmire), Enrique Martínez Zúñiga (enrique), Ivan Masar (helix84), Miika Nurminen (minurmin), Alan Orth (alanorth), Andrea Pascarelli (lap82), Hardy Pottinger (hardyoyo), Toni Prieto (toniprieto). Christian Scheible (christian-scheible), Andrea Schweer (aschweer), Kim Shepherd (kshepherd), Alexander Sulfrian (AlexanderS), Jonas Van Goolen (jonas-atmire), Philip Vissenaekens (PhilipVis), and Mark Wood (mwoodiupui).

## 6.0 Release Notes

The following is a list of the new features included for the 6.x platform (not an exhaustive list):

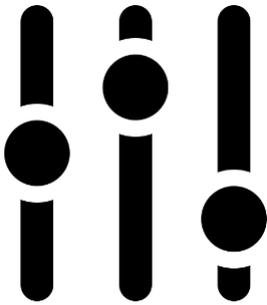
DSpace 6.0 ships with a number of new features. Certain features are automatically enabled by default while others require deliberate activation. The following non-exhaustive list contains the major new features in 6.0



Major Java API refactor, supporting [UUIDs](#) and [Hibernate](#). The DSpace Java API has been refactored significantly to make it more modular, and make it easier to achieve future [RoadMap](#) modularity goals. For more detailed information, see [DSpace Service based api](#) or [DS-2701](#). This feature was contributed by Kevin Van de Velde of [@mire](#), with support/help from the [DSpace Committers](#).

- [Hibernate](#) allows us more stability in our database layer (decreases the likelihood of database specific bugs), and potentially allows us to support additional database platforms in the future
- [UUIDs](#) provide all objects with stable, globally unique identifiers (instead of existing incremental, non-unique database identifiers). This simplifies the management of identifiers in our object model. See also [DS-1782](#).
- The Java API itself is now split into three "layers" which are all now initialized via Spring
  - Service layer, which contains DSpace business logic
  - Database Access Object (DAO) layer, which contains specific Hibernate database queries to locate/find individual objects
  - Database Object layer, which provides access to specific database columns, object properties via Hibernate

Most sites will not notice this major API refactor, as the upgrade is seamless. However, if you've performed major (Java-level) customizations, you may need to refactor your own customizations to use this newly refactored API. Some examples are on the [DSpace Service based api](#) page.



Enhanced (Reloadable) Configuration System. See [Configuration Reference](#), [Enhanced Configuration Scheme](#) and [DS-2654](#). This feature was contributed by Tim Donohue of DuraSpace.

- Provides easier management of local configurations via a new `local.cfg` file. Any configurations (from `*.cfg` files) can be overridden in DSpace by simply copying them into your `local.cfg` and changing the value. See [Configuration Reference](#)
- Many configurations now automatically reload as soon as you save your `local.cfg` file. This means you don't need to restart Tomcat every time you need to change a configuration.
  - *Please note: Unfortunately, at this time, some configurations do still get cached in the XMLUI or JSPUI (or similar). So, while many will reload, not all of them yet support this feature.*



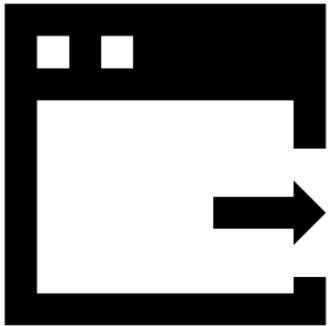
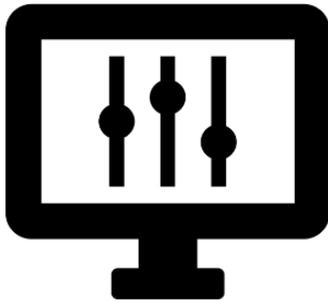
Enhanced file (bitstream) storage plugins, including support for Amazon S3 file storage. This feature was contributed by Peter Dietz of [Longsight](#).

- [Configuring the Bitstream Store](#) (also see <https://github.com/DSpace/DSpace/pull/1159> and [DS-1117](#))



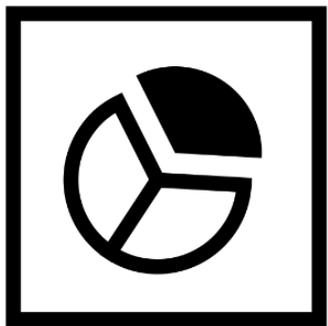
Configurable site healthcheck (i.e. repository status) reports via email. This feature was contributed by Jozef Misutka of [Lindat](#).

- [Healthcheck reports](#) (also see [DS-2659](#)).



#### XMLUI new features

- New framework for metadata import from external sources (including an out-of-the-box plugin supporting PubMed, and hopefully more coming soon). This concept was previously only supported in JSPUI. Screencast example: <http://screencast.com/t/QBImSGbAUZ>. These features were contributed by @mire. The PubMed metadata import plugin was also contributed by the Netherlands Cancer Institute.
  - Framework to support metadata import from external sources: [DS-2876](#)
  - PubMed metadata import plugin: [DS-2880](#)
- [Extensible administrative control panel](#), allowing institutions to override or customize the tabs in the XMLUI administrative "control panel" (see also [DS-2625](#)). This feature was contributed by Jozef Misutka of [Lindat](#).
- [Export of XMLUI search results to CSV](#) for batch metadata editing. This feature was previously only supported in JSPUI. See also [DS-1262](#). This feature was contributed by William Welling of Texas A&M



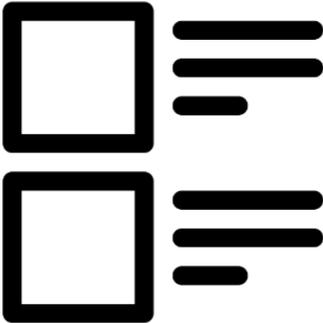
#### REST API new features

- [REST Based Quality Control Reports](#) for collection manager. See also [DS-2583](#). This feature was contributed by Terry Brady of Georgetown University
  - See [Metadata Query Report on demo.dspace.org](#)
  - See [Collection Filter Report on demo.dspace.org](#)
- Support for all authentication methods via REST (e.g. Shibboleth, LDAP, etc). See also [DS-2898](#).
- New `/registries` endpoint which provides access to the [metadata registries via REST](#). See also [DS-2539](#). This feature was contributed by Terry Brady of Georgetown University.
- REST API now provides a version via `/status` endpoint (inherits the version of DSpace API). See [DS-2619](#). This feature was contributed by Ivan Masár.



#### Search/Discovery enhancements

- All searches now default to boolean AND. See [DS-2809](#). This enhancement was contributed by Andrea Schweer.
- New **"Has File" facet**, which allows you to easily filter by items that have one or more files. See [DS-2648](#). This enhancement was contributed by Christian Scheible.
- Full text indexing of Excel spreadsheets, so that they are now searchable. See [DS-2629](#). This enhancement was contributed by Ed Goulet.
- Right-to-left text in PDFs is now indexed for searching. See [DS-1187](#). This enhancement was contributed by Saiful Amin



#### Other enhancements:

- PDFBox was upgraded to version 2.0 ([DS-3035](#)). A new PDFBox Thumbnail generator was also added and enabled by default ([DS-3052](#)). These features were contributed by Ivan Masár.
- OAI-PMH was upgraded for compliance with the OpenAIRE 3.0 guidelines for literature repositories. This enhancement was contributed by Pedro Príncipe.



#### Features Removed or Replaced in 6.0

- **The `build.properties` configuration file has been replaced by an enhanced `local.cfg` configuration file.** The new `local.cfg` allows you to easily override *any* configuration (from `dspace.cfg` or `modules/*.cfg` files) by simply copying it into your `local.cfg` and specifying a new value. It also provides enhanced configuration options as detailed in the [Configuration Reference](#) documentation. The old `build.properties` file is no longer used nor supported.
  - **WARNING:** As part of adding this new configuration scheme, many of the configuration settings in DSpace (primarily those in `modules/*.cfg` files) had to be renamed or prepended with the name of the module. This means that 5.x (or below) configurations are no longer guaranteed to be compatible with 6.x. If possible, we recommend starting with fresh configs (see below), and moving all your locally customized settings into the new `local.cfg` file.
- **The [PDF Citation Cover Page](#) configuration file has been renamed** (from `disseminate-citation.cfg` to `citation-page.cfg`). See this feature's documentation for more details.
- **The legacy search engine (based on Apache Lucene) and legacy Browse system (based on database tables) have been removed** from DSpace 6.0 or above. Instead, DSpace now only uses [Discovery](#) (based on Apache Solr) for all Search/Browse capabilities. See [DS-2160](#). The legacy browse system was removed by Kevin Van de Velde. The legacy search system was removed by Tim Donohue.
- **The DSpace [Lightweight Networking Interface \(LNI\)](#), supporting WebDAV / SOAP / RPC API, has been removed** from DSpace 6.0 or above. We recommend using REST or SWORD (v1 or v2) as a replacement. However, if you still require it, the old (unmaintained) LNI codebase is still available at <https://github.com/DSpace/dspace-lni>. This change was contributed by Robin Taylor of University of Edinburgh.
- **Support for SRB (Storage Resource Broker) file storage has been removed** from DSpace 6.0 or above. As it was unmaintained (and seemingly unused) for many years, this feature was removed along with its configurations. As a replacement, a new file storage plugin system was added, featuring a traditional local file storage option (default) and an Amazon S3 file storage option (see [Storage Layer](#) documentation, especially [Configuring the Bitstream Store](#)). For more information on the removal of SRB support, also see [DS-3055](#). This change was contributed by Peter Dietz of Longsight.
- **The user groups Administrator and Anonymous cannot be renamed or deleted.** If you had renamed them, they will be renamed back to the stock names during the upgrade. DSpace is now dependent on these specific names due to internal changes. This change was contributed by Mark Wood of IUPUI.
- **XPDF PDF Thumbnail generation has been removed.** Please use the [ImageMagick](#) or PDFBox thumbnail generators instead. See [DS-2159](#). This change was contributed by Mark Wood of IUPUI.
- **The default strategy to create new handles for versioned items has changed.** If you have [Item Level Versioning](#) enabled and you have versioned items in your DSpace installation, you may want to change the configuration to continue using the mechanism to create handles as it was in DSpace 4 and 5. You can find more information here: [Item Level Versioning#IdentifierServiceOverride](#).
- **Elasticsearch Usage Statistics feature is deprecated in the 6.0 release.** While they still function, and you can continue to use them, in a future DSpace release they will be removed. If you are looking for a usage statistics option, we recommend instead using the default [SOLR Statistics](#) engine and/or DSpace's integration with [Google Analytics](#). See [DS-2897](#) for more information.

A full list of all changes / bug fixes in 6.x is available in the [Changes in 6.x](#) section.

## 6.0 Acknowledgments

The following individuals have contributed directly to this release of DSpace: Tim Donohue, Mark H. Wood, Pascal-Nicolas Becker, Kevin Van de Velde, Ivan Masár, Hardy Pottinger, Terry Brady, Andrea Schweer, Philip Vissenaekens, Peter Dietz, Jonas Van Goolen, Tom Desair, Dylan MEEUS, Luigi Andrea Pascarelli, William Welling, Christian Scheible, Andrea Bollini, Aleksander Kotyski-Burya, Ondej Košarko, Jozef Mišutka, Chris Wilper, Ilja Sidoroff, Roeland Dillen, Bram Luyten, Marsa Haoua, Claudia Jürgen, Kim Shepherd, Art Lowel, Ivo Prajer, Petr Karel, Mini Pillai, Facundo Gabriel Adorno, Luiz Claudio Santos, Robin Taylor, Tim Van den Langenbergh, Arnaud de Bossoreille, Bill Tantzen, Tiago Guimarães, Oriol Olivé Comadira, Àlex Magaz Graça, Anne Lawrence, Brad Dewar, Bruno Nocera Zanette, David Baker, Ed Goulet, Mateusz Neumann, Monika Mevenkamp, Pablo Buenaposada, Patricio Marrone, Petya Kohts, Eike Kleiner, Antoine Snyers, Bjorn Jaspers, Chris Herron, Dan Scott, David Cook, Davor Cubranic, José Carvalho, Jozsef Marton, Juan Manuel Catá, Panagiotis Koutsourakis, Pantelis Karamolegkos, Pedro Príncipe, Philippe Gray, Rodrigo Prado de Jesus, RomanticCat, Saiful Amin, junwei1229, Keith Gilbertson, Nicolas Schwab, Pablo Buenaposada, Michael Martila, samuel, tmtvl, and others who reviewed and commented on their work. Many of these could not do this work without the support (release time and financial) of their associated institutions. We offer thanks to those institutions for supporting their staff to take time to contribute to the DSpace project.

A big thank you also goes out to the [DSpace Community Advisory Team](#) (DCAT), who helped the developers to prioritize and plan out several of the new features that made it into this release. The current DCAT members include: Augustine Gitonga, Bram Luyten, Bharat Chaudhari, Claire Bundy, Dibyendra Hyoju, Elin Stangeland, Felicity A Dykas, Iryna Kuchma, James Evans, Jim Ottaviani, Kate Dohe, Kathleen Schweitzberger, Leonie Hayes, Lilly Li, Maureen Walsh, Pauline Ward, Roger Weaver, Sarah Molloy, Sarah Potvin, Steve Van Tuyl, Terry Brady, Yan Han and Valorie Hollister.

We apologize to any contributor accidentally left off this list. DSpace has such a large, active development community that we sometimes lose track of all our contributors. Our ongoing list of all known people/institutions that have contributed to DSpace software can be found on our [DSpace Contributors page](#). Acknowledgments to those left off will be made in future releases.

**Want to see your name appear in our list of contributors?** All you have to do is report an issue, fix a bug, improve our documentation or help us determine the necessary requirements for a new feature! Visit our [Issue Tracker](#) to report a bug, or join [dspace-devel mailing list](#) to take part in development work. If you'd like to help improve our current documentation, please get in touch with one of our [Committers](#) with your ideas. You don't even need to be a developer! Repository managers can also get involved by volunteering to join the [DSpace Community Advisory Team](#) and helping our developers to plan new features.

The Release Team consisted of:

- Tim Donohue (DuraSpace)
- Kevin Van de Velde (@mire)
- Pascal-Nicolas Becker (Technische Universität Berlin)

Additional thanks to Tim Donohue from DuraSpace for keeping all of us focused on the work at hand, for calming us when we got excited, and for the general support for the DSpace project.