Release guide

ERDAS APOLLO 2023 Update 4

Version 16.8.4

May 2025

Contents

About this release

- ERDAS APOLLO 2023 was the culmination of the largest product modernization effort in over 10 years, building on the LuciadFusion platform while migrating or rebuilding key functionalities from previous ERDAS APOLLO releases
- ERDAS APOLLO 2023 Update 1 built on the substantial initial release version by making further improvements and bug fixes based on the significant interest in adopting v2023 and feedback already received
- With the release of ERDAS APOLLO 2023 Update 2, we added significant improvements as well as several bug fixes
- With the ERDAS APOLLO 2023 Update 3 release, we upgraded to the LuciadFusion 2024.0 release as well as added enhancements and several customer bug fixes
- Now with the ERDAS APOLLO 2023 Update 4 release, we have upgraded to the LuciadFusion 2024.1 release, added several enhancements and bug fixes, and done substantial work to improve performance across the board for large catalogs
- Our next version will be our ERDAS APOLLO 2025 major release where we have some exciting new capabilities

This Update 4 release does not include an update to the Migration Tool due to a lack of use in previous releases. However, if needed, the Migration Tool provided in the Update 3 release can assist in migrating from ERDAS APOLLO 2022 Update 2 to ERDAS APOLLO 2023 Update 3. From there, one can upgrade to ERDAS APOLLO 2023 Update 4.

This release guide highlights key points but should not be considered exhaustive. Existing customers are encouraged to contact their Hexagon representatives to discuss individual platform usage and to plan any migration to account for significant release changes.

This release is a full release and will require the old version of ERDAS APOLLO 2023 (if applicable) to be removed prior to loading the ERDAS APOLLO 2023 Update 4 release. However, you can point the new version to an existing catalog database.

NOTE: The ERDAS APOLLO 2023 Update 4 release includes updates to underlying configuration properties. Follow these instructions to ensure your software upgrade contains the correct properties and values. Briefly, the steps are as follows: stop the ERDAS APOLLO services, uninstall the previous version by retaining the previous configuration properties, install the new version, review and edit the properties files as needed and then restart the ERDAS APOLLO services.

1. Stop ERDAS APOLLO services
    - From the Start menu, go to Hexagon > Configuration Console
    - In the Configuration Console, open the Service Status tab and select Stop to stop the services
    - Wait until the status updates to STOPPED, then exit the Configuration Console
2. Uninstall previous ERDAS APOLLO version
    - In Windows Programs and Features, uninstall ERDAS APOLLO Suite Installer 2023
      IMPORTANT: Ensure that "Remove all configuration and log files..." option is unchecked
3. Delete outdated components

- In Windows File Explorer, delete the folder located at C:\Program Files\Hexagon\ERDAS APOLLO

4. Install ERDAS APOLLO 2023 Update 4
   - Run the Update 4 installer. When installation is complete, check the box to Launch Server Configuration and click Finish.
   - The Configuration Console will open. Before making *any* changes, click Save All.
5. Edit configuration properties for Update 4
   Using a text editor, review the following properties and make adjustments as needed:

   File: **application-fusion.apollo.properties**
   Location: %ProgramData%\Hexagon\ERDAS APOLLO\config\application-fusion.apollo.properties
   Change: Remove the values dt0;dt1;dt2 from apollo.eraster.supportedFormats property value.

   File: **application-gsp.coordinator.properties**
   Location: %ProgramData%\Hexagon\ERDAS APOLLO\config\application-gsp.coordinator.properties
   Change: Set geoprocessing.db.internal.connectionPool.poolName property value to APL\:CoordDbPool

   File: **application-gsp.worker.properties**
   Location: %ProgramData%\Hexagon\ERDAS APOLLO\config\application-gsp.worker.properties
   Changes:
   Set geoprocessing.db.internal.connectionPool.poolName property value to APL\:WrkDbPool
   Set workflows.jms.execution.destination.name property value to GeoprocessingExecution
   Set workflows.jms.validation.destination.name property value to GeoprocessingValidation

   Save the edits to each properties file.

6. Complete configuration in the console
   - Return to the Configuration Console. Make any necessary adjustments for your environment.
   - Open the Service Status tab, click Save All, then select Start to start the services
   - Monitor the services initialization in the Diagnostics tab by selecting Begin Diagnostics; all items should show a green indicator when they are ready
7. Exit the Configuration Console

ERDAS APOLLO product tiers

ERDAS APOLLO provides a comprehensive data management server solution that helps identify, locate, secure and organize your geospatial and related business data into a searchable, secure repository while enabling simple distribution through interoperable web services.

ERDAS APOLLO also alleviates pressures associated with optimizing spatial data archive storage requirements using Hexagon's industry-leading ECW image compression and HSPC point cloud storage technology. Wherever possible, ERDAS APOLLO aims to read data as-is with no conversion based on other best of breed industry format standards.

ERDAS APOLLO Essentials

Essentials is the perfect solution for organizations that require an enterprise solution to make sense of their traditional spatial data archive. Building on ERDAS APOLLO Essentials' history of rapid imagery services, beginning with 2023, the Essentials tier will service an expanded target market covering all traditional spatial data types with a robust catalog and security model with matching web service delivery options. The expanded ERDAS APOLLO Studio Web Administrator is now available across all tiers, enabling rapid administration and control. Essentials is an ideal starter solution for customers seeking a catalog with distribution capabilities for traditional 2D raster or vector data sources.

ERDAS APOLLO Advantage

Advantage takes things to the third dimension by adding point clouds, 3D meshes and BIM/CAD data types to the catalog model. It also expands support from the traditional file-based data types to cover spatial data residing in databases such as Microsoft SQL Server, PostgreSQL and Oracle, among others. Defense industry users also gain support for VPF, MGCP and other defense-aligned formats and visualization standards. Additionally, 360-degree panoramic imagery is now supported from E57 or Hexagon's Leica Pegasus sensors. All these data types inherit the foundational workflow and security model introduced with ERDAS APOLLO Essentials. These data formats are discovered seamlessly through automatic data crawlers to locate, insert and extract metadata.

ERDAS APOLLO Professional

Professional provides a powerful server-side geoprocessing solution for geospatial data, employing complex algorithms that underpin the engine within ERDAS IMAGINE or GeoMedia. Geospatial analysts create custom models using these desktop expert tools and publish them to the Geoprocessing Server to enable execution on demand by other users. In v2023, the Data Extraction Service builds on the Geoprocessing execution model to provide expanded capabilities and is no longer limited to just the raster domain.

New technology

ERDAS APOLLO Server

ERDAS APOLLO 2023 Update 4 continues to build on the previously released versions by making further improvements and bug fixes based on the significant interest in adopting v2023 and feedback already received**.**

Upgrade to LuciadFusion 2024.1

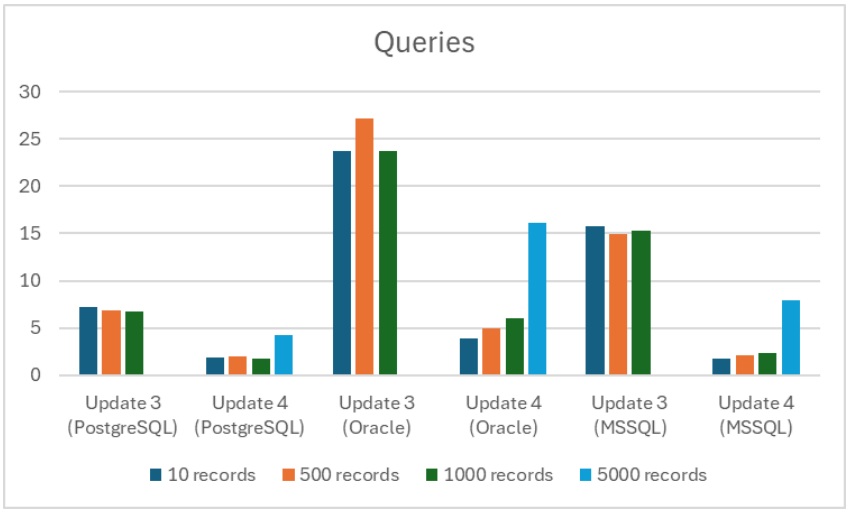
ERDAS APOLLO 2023 Update 4 has been upgraded to LuciadFusion 2024.1.10. This release includes several important enhancements like improved panoramic support, support for Web Feature Service – Transactional (WFS-T) and catalog indexing to vastly improve performance. See the Issues resolved section of this document to see a complete list of LuciadFusion updates.

Security updates to dependency platforms

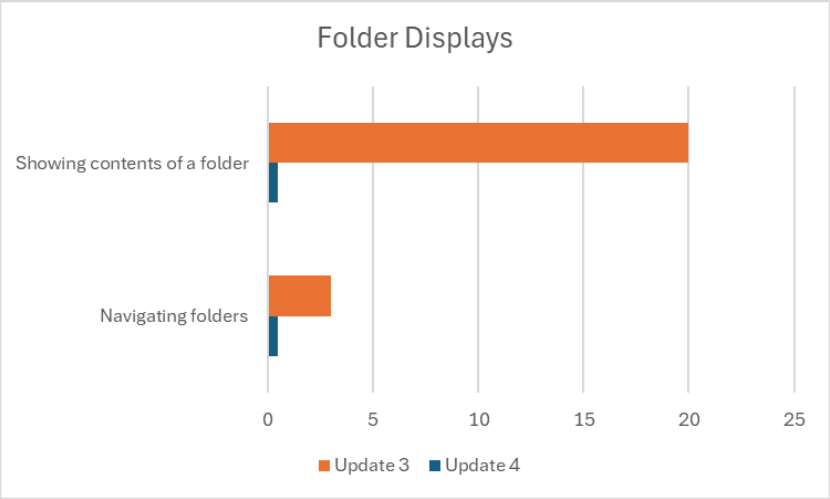
Several APOLLO platforms were also updated for consistency with LuciadFusion and to eliminate many security vulnerabilities.

Performance improvements

As the adoption of the ERDAS APOLLO 2023 product continues to grow, we are rapidly seeing a need for the product to support very large catalogs in a performant way. We have made numerous changes to how the software works, reduced unneeded API calls and included several new indexes on columns in the catalog database. We have achieved substantial performance boosts in queries, listing of folders has improved about 400 times, folder navigation has improved nearly 10 times and our crawling has improved its memory usage so the crawl times remain flat over large crawls rather than gradually increasing. The charts below show samples of the performance numbers we are seeing now:



Represents queries returning 10, 500, 1,000 and 5,000 responses. Update 3 could only return 1,000.



Times taken on a catalog with more than 200,000 entries

Enhanced panoramic format coverage

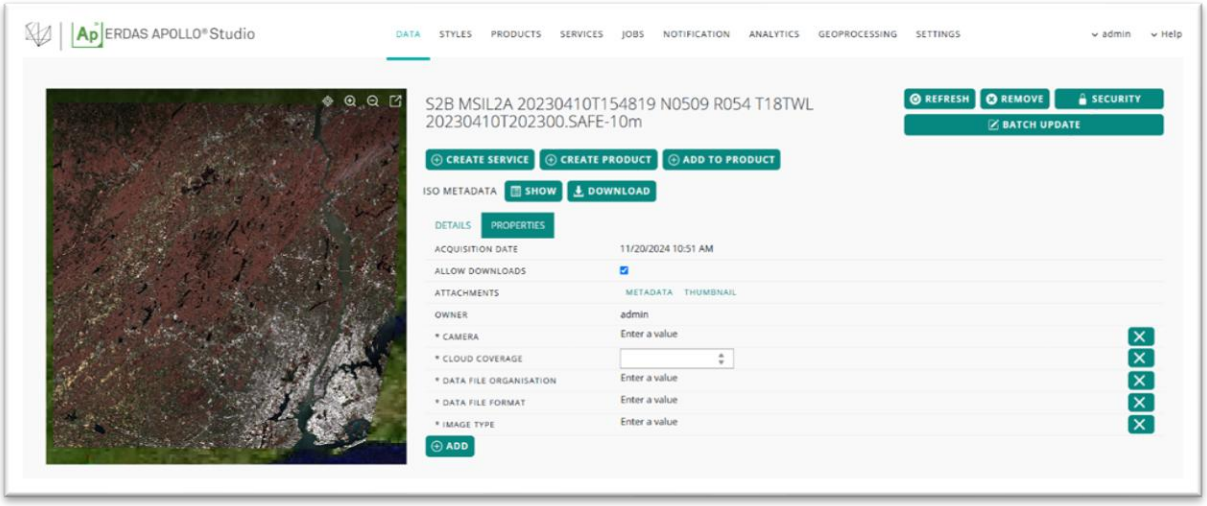
Several enhancements and improvements have been made to the APOLLO server in support of delivery services. These include:

- New Leica Geosystems LGSx file format support. This relatively new compound format includes panorama support from the Leica Geosystems Reality Capture ecosystem of BLK and processing software including Cyclone and TruView.
- New Cyclomedia Cyclorama panorama support
- Improvements and bug fixes to the existing E57 and Leica Geosystems Pegasus formats

Expanding panorama format support will continue with further enhancements planned for the next update.

Patching of individual custom properties

One of the biggest annoyances reported by several of our partners and customers using our APIs to build out additional clients involved the updating of custom properties. Until now, one needed to include all the custom properties in the update request body even if only one property was being changed. With the Update 4 release, this has changed to only require the property or properties being changed.



Internationalization improvements

Several changes have been made to the internationalization files for Update 4. Many of our regional colleagues and partners have graciously helped us to refine our translations so they are more appropriate for respective regions. Below is a list of all our current translations with notations for those that are new (*) and those that have been reviewed (**).

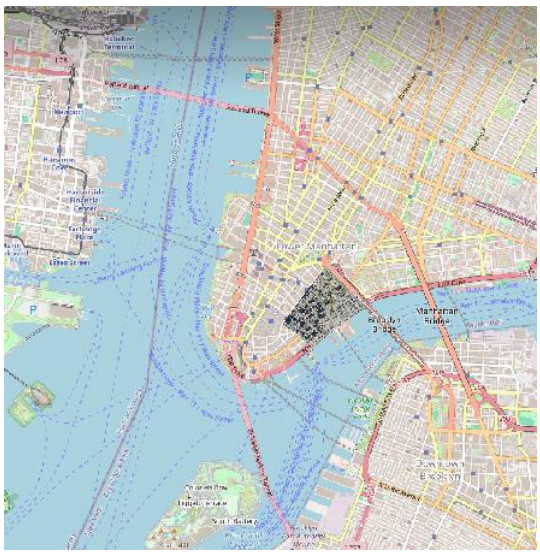
Language	Reviewed	New
Arabic		
Chinese		
Czech		
Dutch	X	
English	X	
French	X	
German	X	
Hebrew	X	
Indonesian		

Italian	X	
Korean		
Polish		
Portuguese	X	
Slavic		X
Spanish		
Turkish	X	

Since our developers are not native speakers of most of these languages, there may still be some improvements that can be made. Please feel free to reach out to us with any corrections you might want to see. Also, if you would like to review a language that has not yet been reviewed, please let us know.

Red hatching fill for thumbnails

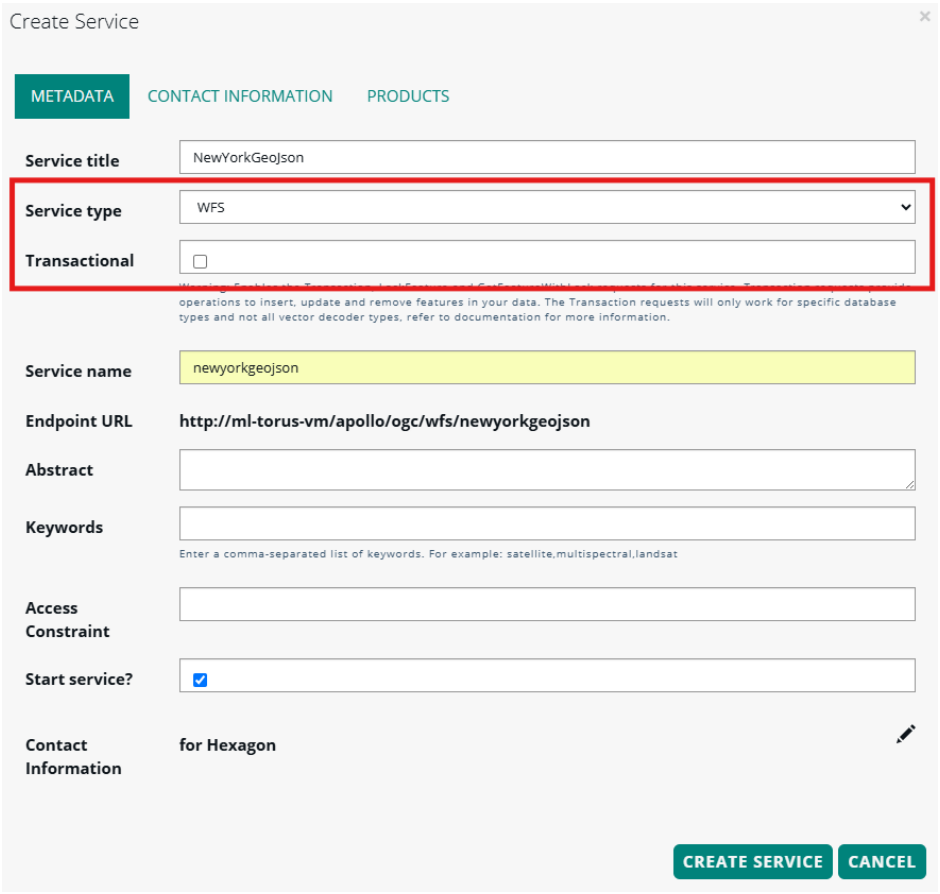
In initial releases of ERDAS APOLLO 2023, renderings of the data might be shown as a red hatched image as shown below. This was a combination of a lack of pyramids at image creation and a setting within LuciadFusion that would hatch the image based on display scale. This also affected how thumbnails were being rendered. However, both issues have been resolved in the Update 4 release and images are being displayed correctly.



WFS-transactional service

Although ERDAS APOLLO 2023 has supported Web Feature Services (WFS), previous releases did not support transactional updates (WFS-T). With the release of Update 4, a user can now optionally mark a service as transactional. By doing this, the service will be set up to support the following requests:

- LockFeature
- GetFeatureWithLock
- Transaction



Miscellaneous

A substantial number of additional issues have been resolved, including external bugs, internal bugs and enhancements. Many of these items have come through suggestions from customers and partners. Please see the Issues resolved section for more details.

Catalog Explorer

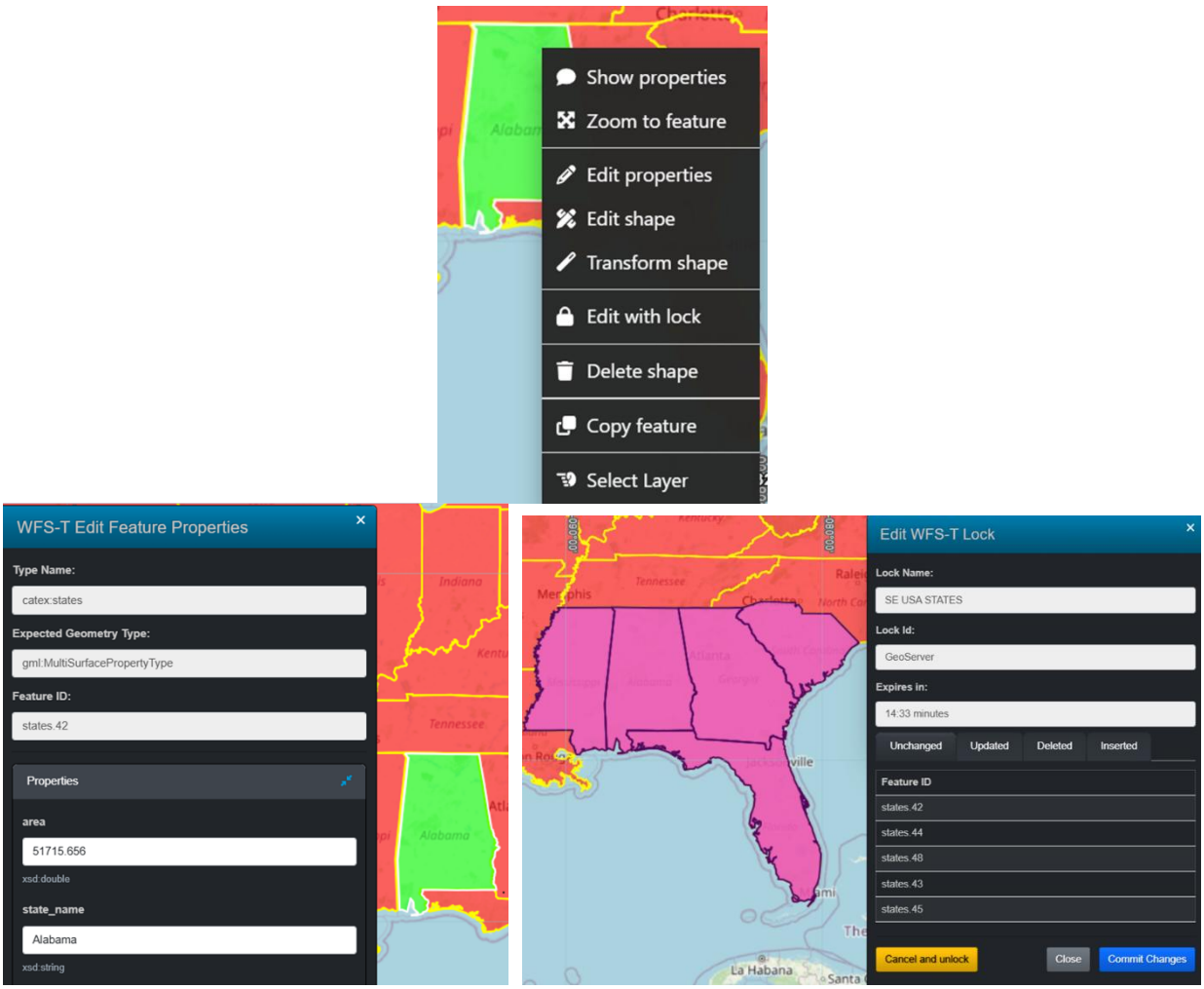
Catalog Explorer continues as a robust exhaustive web-based exploitation client based on the LuciadRIA platform. We have continued to enhance it with capabilities consistent with other ERDAS APOLLO enhancements and other customer requests.

Upgrade LuciadRIA to 2024.1

To stay up to date with the latest Luciad platforms, we have upgraded Catalog Explorer to LuciadRIA 2024.1.07. See the Issues resolved section for details regarding fixes and enhancements that are available in this release of LuciadRIA.

WFS-T support

With the ability to create transactional WFS services being added to the APOLLO Server, Catalog Explorer now provides tools for users to create and edit vector features through an OGC WFS-T service. Authenticated users can edit property values, modify geometries, create new features or delete existing ones. Additionally, users can lock specific features during editing to prevent conflicts with other users accessing the same features.



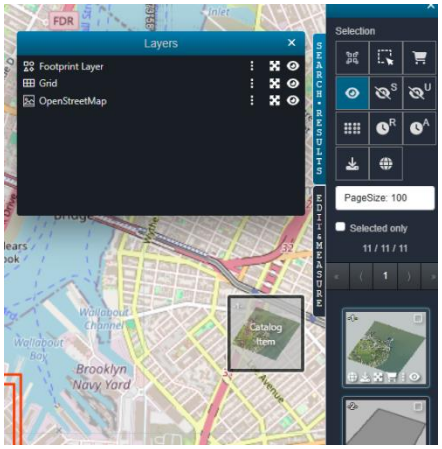
Drag and drop search results

Catalog Explorer supports drag-and-drop functionality using the text/plain MIME type. Once you have obtained search results, you can drag a catalog item from the Search Results panel to any desktop application developed in C++, C#, Java or other languages. This functionality also extends to web applications. This enhancement increases compatibility and facilitates communication with applications developed in various programming languages.

The catalog item is encoded as a JSON string that contains two properties:

```
{
  "catalogItem": {...content},
  "filename": "path/to/file"
 }
```

- catalogItem: An object containing all the properties of the catalog item
- filename: The path to the file; note that the filename may be an empty string in older catalog versions



Client support for external security

Catalog Explorer login now supports the standard protocol, OpenID Connect, as an option. We recommend using Keycloak for the OpenID Connect configuration; however, we support direct access using Microsoft Entra ID or ZITADEL Open Source. The login verifies user identity and role-based access.
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Miscellaneous

- New platform support added for Microsoft Windows Server 2025 and PostgreSQL v17
- Several additional issues have been resolved, including external bugs, internal bugs and enhancements; please see the Issues resolved section for more details

Dependency updates

Resolving security vulnerabilities and improving core functionality continues across all software releases. Key component upgrades are identified below with many smaller updates being updated throughout the product lifecycle.

Refer to the System requirements for more information on the current release.

Dependency	v2023	Update 1	Update 2	Update 3	Update 4
Apache Tomcat	10.0.27	9.0.83	9.0.89	10.1.31	10.1.39
Jakarta Servlet	5.0	4.0	4.0	6.0	6.0
LuciadFusion	2023.0.4	2023.0.11	2023.1.13	2024.0.07	2024.1.10
LuciadRIA	2023.0.4	2023.0.11	2023.1.13	2024.0.07	2024.1.07
Spatial Modeler			16.8.0.2506	16.8.0.3790	16.8.0.3843
Spring framework			5.3	6.1.2	6.1.14
Spring boot			2.7	3.1	3.2.11

System requirements

	ERDAS APOLLO Core	ERDAS APOLLO
Computer/processor	Intel or AMD x86 quad-core processor with a clock speed of 2.0 GHz or higher and released since 2016	
Memory (RAM)	16 GB or more strongly recommended	
Server disk space	5 GB for application footprint, 10 GB at a minimum for application cache	
Peripherals	Gigabit ethernet	
Server operating systems	• Windows Server 2019 • Windows Server 2022 • Red Hat Enterprise Linux 8.x (and compatible systems)	• Windows Server 2019 • Windows Server 2022 • Windows Server 2025
Cloud environments	Amazon Elastic Cloud Compute (EC2), Azure Virtual Machines	
Software	Java LTS version 17 is supported and recommended	
Licensing	Geospatial Licensing Administrator 2023 with 16.8 feature code versions configured	
Application servers	Microsoft IIS 10 or higher (Windows) Apache 2.4 or higher (Linux)	Tomcat 10.1.30 (embedded in installer)
Databases	• Oracle Database, Standard or Enterprise Edition • 19c • 23ai • Microsoft SQL Server, Standard or Enterprise Edition • 2019 • 2022 • PostgreSQL version 15 - 17, with PostGIS 3.4 – 3.5 • SQLite (ERDAS APOLLO Core only)	
Admin tools	ERDAS APOLLO Core Console	ERDAS APOLLO Studio
Compatible client applications	• Catalog Explorer 2023 • GeoCompressor 2023 • Any OGC-compliant WMS, WFS, WMTS, WCS, CSW and OGC API processes compliant client applications	

Migration guide

Due to the significant changes, please read carefully.

ERDAS APOLLO Core v2022 to ERDAS APOLLO Core v2023

Upgrading from v2022 to v2023 with the ERDAS APOLLO Core installer follows previously established upgrade patterns where the previous version should be uninstalled, configuration kept when prompted and the new 2023 version deployed. An in-place upgrade of the configuration and database will be performed.

Please refer to the user guide for more information and ensure appropriate backups are taken.

ERDAS APOLLO Core v2022/v2023 to ERDAS APOLLO v2023

Existing imagery-based customers who have deployed using the previous ERDAS APOLLO Core/Essentials installer but are interested in the new capabilities must recreate their raster services.

This process is manual; however, in most cases a significant portion of the data archive can be readded using the new Data Root functionality and then remapping to the published service types.

The two options can be deployed side by side; however, we recommend a separate installation to enable a simpler comparison and deployment. Due to the number of features now available on the Essentials tier, we expect some customers to explore this option, especially those looking to take advantage of the expanded capabilities outside the traditional raster at the Essentials level.

ERDAS APOLLO Advantage/Professional v2022 to ERDAS APOLLO v2023

A Migration Tool is available to assist in the migration from ERDAS APOLLO 2022 to ERDAS APOLLO 2023. Because most systems are handling the upgrades internally, we are not delivering a Migration Tool based on Update 4. However, users can use the tool to upgrade to ERDAS APOLLO 2023 Update 3 and then migrate from Update 3 to this Update 4 release. Before beginning the migration, you must be on ERDAS APOLLO 2022 Update 2. You will need to ensure you have all the necessary roles defined in your 2023 version to properly map your 2022 system.

Please contact your Hexagon representative regarding availability and requirements for the Migration Tool.

ERDAS APOLLO v2023 upgrade to ERDAS APOLLO v2023 Update 4

The Migration Tool is not required for intra-2023 update. Please refer to the user guide for more information on workflow to uninstall, leaving configuration and then deploying the new version. Any necessary updates will be applied.

Conversely, new deployments do not require installation of previous v2023 versions. Simply install ERDAS APOLLO Update 4.

Known limitations

This release continues to change the foundations of ERDAS APOLLO through necessary technical modernizations. While this offers significant improvements, it also presents challenges for existing customers to migrate and does not guarantee functional feature parity.

While we are confident this release provides substantial value for new and existing customers, the latter group should carefully review the following known limitations and contact Hexagon Support to find out more. In many cases these limitations are not permanent and are planned to be reintroduced during the v2023 release cycle.

Limitations in v2023	Comment
The ability to crawl video based data	This is still being evaluated, but plans are to begin including this in our near-term roadmap.
The ability to crawl third-party OGC CSW instances is no longer supported	This is still being evaluated according to customer need.
Not all geometries are being handled in the new File GeoDatabase (FGDB) decoder.	We will be working to add the additional geometry definitions in the near future.

Issues resolved

ERDAS APOLLO v2023 Update 4

Development ticket	Customer ticket	Summary
TR-3035	00434196	APOLLO 2023 U3 - APOLLO service failed to start if mail server is down/not responding
TR-3029	00433860	SET STYLE for a data in PRODUCTS tab does not work
TR-2956	00411464	Generic and Business Data - Footprints displaying in wrong coordinates
TR-2953	00411468	Attachments in Generic and Business Data are not working
TR-2951	00411381	Studio Documentation Missing: How to Configure the Map Preview for OSM
TR-2950	00411383	APOLLO 2023 U3 - Studio Upload Location Unclear
TR-2940	00411467	Thumbnail is not working properly with Generic and Business data
TR-2937	00411384	Add data with Upload method issues
TR-2934	00411463	GIM Documentation Missing for Generic and Business Data in Apollo 2023
TR-2928	00411385	Uploading Files with the Same Name from Different Folders overwrites each other
TR-2924	00411382	APOLLO 2023 U3 - Studio Background Data Issue with Location and Error Message
TR-2919	00410956	APOLLO 2023 U3 - Studio "Add Data" Allows Selecting Folders Instead of Files
TR-2912	00410572 00416136	Cannot assign raster style to product data
TR-2911	00410377	APOLLO 2023 U3 - REST API GET /api/data/{id} Returns Incorrect Status Code
TR-2909	00410373	APOLLO 2023 U3 - Studio Error Message When Adding Data suggest the entire process failed
TR-2908	00410372	APOLLO 2023 U3 - Interfaces Blocked During Parallel POST /api/data
TR-2907	00410370	APOLLO 2023 U3 - Unable to Filter Files by Extension when Adding to a Folder in Studio

TR-2906	00408090	APOLLO 2023 U3 - Issues with JDBC Connections During Parallel Requests to DELETE /api/data/{ID}
TR-2902	00407717	Bad performance of spatial query in OGC API Records
TR-2897	00407715	APOLLO 2023 U3 - Deletion Strategy Prone to Data Orphans
TR-2896	00407714	U3 - Studio displays "New Data Added" message when creating a folder
TR-2892	00407023	APOLLO 2023 U3 - Queryable.xml Default Values Not Supported (missing feature from 2022)
TR-2891	00407025	Insufficient information in Studio when adding existing data
TR-2882	00405074	APOLLO 2023 U3 - Redundant API Calls to /api/data Causing High Database Load and Slow Data Display in Studio
TR-2881	00405072	APOLLO 2023 U3 - Inefficient Thumbnail Storage in Apollo 2023 U3 Database
TR-2879	00405058	APOLLO 2023 U3 - Database Storage Optimization - Disable Excessive Storage Settings for ISO-XML Data in IMPORTED_DATA.ISO_METADATA_CONTENT and APOLLO.ATTACHMENTS
TR-2878	00405057	APOLLO 2023 U3 - Functionality for Folder Deletion in Apollo 2023 U3 DELETE /api/data/{id} vs. DELETE /api/folder/{id}
TR-2877	00405056	APOLLO 2023 U3 - Issues with REST API`POST /api/folder related to MIME types, returned content structure, undocumented behaviours, and inconsistencies in functionality
TR-2876	00405055	APOLLO 2023 U3 - Issues with REST API /api/folder inconsistencies with the implementation and documentation
TR-2873	00403539 00404881	Documentation for multi-node configuration lacks information about Redis/Valkey
TR-2863	00404564	No thumbnail "Failed to commit pending changed to the index"
TR-2853	00403683	APOLLO 2023 U3 - API - Incomplete and Inconsistent Custom Properties in Dataset Creation Response
TR-2850	00403679	ADMIN role not being added by default when creating folder through REST API
TR-2846	00403492	APOLLO 2023 U3 - API Post Interface to add a new attachment to a existing dataset not working with Oracle Database
TR-2845	00402777	Apollo catalog explorer browser doesn't list Panoramics data
TR-2823	00401297	Add Slovak translation to Apollo Studio
TR-2821	00411451	Upgrade Apache Tomcat to 10.1.34 or higher

TR-2799	00394563 00394572	Unable to assign style to a product
TR-2797	00394077	APOLLO 2023 U3 - Issue with Thumbnail Storage in Database
TR-2793	00393611	Studio not accessible through 'http://server/apollo/studio'
TR-2791	00393046	Keyword search doesn't work properly
TR-2790	00392796	Studio session loss causing an unexpected reload
TR-2785	00392610	Studio: OpenID Bearer token is not always current causing loading loop
TR-2783	00129816	Studio - Security principals drop down list is not ordered
TR-2773	00390974	Unable to crawl generic XML files along with .gim files with TAplBusinessDecoder
TR-2688	00386179	Could not search PostGIS features in Apollo catalog explorer advanced search (keyword)
TR-2567	00362050	HSPC issue with Catalog Explorer, no issue with Luciad RIA
TR-2480	00322811	"customProperties" is required when using PATCH /api/data/{id}
TR-2379	00298645	APOLLO 2023 U2 - Studio - some Keyword terms presented in search field suggestions return 'no data found'
TR-2330	00285081	Apollo 2023u2 Tomcat should not use %SystemRoot%\TEMP\APOLLO\ for temp files
TR-1917	00215986	Vertical CRS info not being accepted for GeoTIFF DEM files
TR-1910	00215739	Cannot connect to REST-only WMTS services
TR-1794	00200689 00344781	No generate thumbnail @ Apollo 2023
TR-1493	00183062	Missing option to define a bounding box for CAD files
TR-1272	00213094	ECW files that have associated ERS files get rendered via the Fusion ECW model decoder not our model decoder.
TR-679		POST to create AOI Notification returns wrong status code
TR-742		Always draw image when we have pyramids, default to hatch pattern when we dont.
TR-745		Force IMAGINE to render an image even if pyramid does not exist
TR-847		EPSG 5070 dataset is sometimes mistakenly decoded as EPSG 0 / RAW

TR-1308		Time zone conversion incorrectly applied to Zulu Time properties
TR-1386		Clearing a style when the layer is not visible will create a new style set
TR-1424		Default CRON values are wrong
TR-1441		Catalog Explorer does not work with services using OpenID authentication
TR-1537		Business data crawl failures detected by metadata.business.business tests
TR-1774		Apollo Studio doesn't delete the folders if the dataroot is deleted during crawl in progress
TR-1792		Create Vector Style fails with OpenID configuration
TR-1920		LAS/LAZ files rejected due to point type are not identical with LAS format error
TR-1921		LAZ 1.4 files unsupported
TR-1952		Applying a style and creating one style set, create multiple style sets
TR-2023		OGC Filter ignored in WMS GetMap request
TR-2039		Unable to upload multiple SLDs at once
TR-2083		Studio folder browser is very slow on folders with thousands of files.
TR-2148		Race condition between getmap requests and the generation of pyramids.
TR-2158		Studio add data can submit incomplete requests
TR-2166		Add data UI (select) is disabled when manually entering a dataset location
TR-2191		Provide a way to remove a queryable property from a dataset
TR-2209		Save is disabled on Image Chain Style Editor attempting to clone SLD style imported from APOLLO data pack
TR-2218		Configuration Console Diagnostics incorrectly checking Geoprocessing Coordinator health status in secondary cluster nodes
TR-2290		Crawl job is not rolling over to a Fusion decoder when an APOLLO decoder is not successful
TR-2318		CRS override is not enabling elevation

TR-2478		Ensure valid thumbnails for all catalog records
TR-2486		Config Console - Update javafx to latest 17 to address vulnerabilities
TR-2529		Studio data attachments should be linkable
TR-2543		Catalog Explorer WFS connection defaults to unsupported GEOJSON format type
TR-2610		Custom Properties are not there - overwritten? lost?
TR-2620		Update Apollo crawl priority to decode pdf files as business documents
TR-2625		Update to LuciadFusion 2024.1
TR-2626		Update Studio to LuciadRIA 2024.1
TR-2647		Update OGC API - Records to the released version of the standard
TR-2672		Upgrade to SMSDK 3843 - New warning after upgrade of the SMSDK 3790
TR-2686		APOLLO - GDAL is decoding pdf document when it should be handled by business document decoder
TR-2728		Integrate SMSDK latest release and MachineOperator Point Cloud
TR-2733		Studio - Catalog Explorer on main login page should not be translated
TR-2736		Temporal extent control not updating the Year value consistently
TR-2741		Studio - Show ISO Metadata not working with OpenID, metadata edit (save) not working regardless of auth type
TR-2756		Catalog Explorer - Table View not opening ISO Metadata from link for OpenID
TR-2768		Catalog Explorer - Custom Extension missing context menu for edit/delete/export to zip
TR-2771		APOLLO -DES not working with PostGIS crawled vector data
TR-2776		Catalog Explorer - custom extensions with forms are not displaying
TR-2777		Catalog Explorer - add ability to download latest Custom Extension API file
TR-2800		Catalog Explorer - add temporal extents to the Advanced Search

TR-2809		Reduce time spent deleting non-existent pyramids when removing a Data Root
TR-2824		Remove the ability choose datasets by filepath from DES requests due to it being a security concern
TR-2833		Provide an interface to submit edits to features back to the server if transactional is supported.
TR-2834		Add hidpi display scaling support to CXP
TR-2842		Studio- Image Chain Style Editor band selection displays bad when there is an error
TR-2860		Catalog Explorer - Improve time controller
TR-2866		ADS40 Metadata parser is losing metadata properties if both a .sup and .xml metadata files exist.
TR-2868		Replace unnecessary data crawls with faster, single file, adds
TR-2914		Catalog Explorer - Adding support for external authentication based on oauth2
TR-2923		Need to refresh page before new style is visible
TR-2929		3dtile preprocessing jobs fail to complete
TR-2936		Support for Cyclomedia Panoramics
TR-2944		Catalog Explorer - login with OpenID get in bad state if user has no roles
TR-2945		Add External Preference to Add Data and Add Data Root dialogs
TR-2946		Applying fine-grain security mask or scale does not purge existing cached tiles
TR-2948		Catalog Explorer - OGC API Records search by queryables not working
TR-2957		There is no link to fluid topics User Guide in Catalog Explorer
TR-2969		Improve WFS-T to support geoserver implementation
TR-2970		Catalog Explorer crashes on incomplete/invalid URL as input in WFS/WMS/WMTS...etc
TR-2978		In the GUI, when custom properties exist, we should display the overridden CRS

TR-2982		Can't edit projected features from Geoserver WFS-T service.
TR-2991		Catalog Explorer = Implement WFS-T updates with locked features
TR-2998		Improve Security masking dialog workflow
TR-3016		Catalog Explorer - Preserve the query parameters in requested URL when a login is triggered
TR-3030		Revise the default number of data records fetched
TR-3041		Catalog Explorer - Application crashes when opening Overview Map
TR-3042		Catalog Explorer - Expose commands for UI button events in Custom Extensions
TR-3043		Catalog Explorer - WFS-T with locking failed with different EPSG than 4326
TR-3044		Update language translations with region reviewed versions
TR-3055		Catalog Explorer - feature selection tool is broken
TR-3065		"Jobs" in the studio navbar's pagelinks displays in lower case in some languages
TR-3069		CXP 3dtile point cloud ReturnNumber not supported
TR-3093		Newly Created Vector Style Toast Says Fails to Add, but They Add Fine
TR-3101		Catalog Explorer - Allow specify the projection for HSPC layers.
TR-3117		Catalog Explorer - Prevent flickering of map on night sky

LuciadFusion

2024.1.10

- Added indexes to data categories and keywords tables, to improve performance requests to fetch Data. LF-2719
- Fixed an issue opening certain DWG files that have region objects referring to non-existing blocks. LCD-13790
- Resolved an access control issue that made it possible for any authenticated user to update information via the REST API, as opposed to only allowing ADMIN users to do so. LF-2720
- Fixed a bug in TLcdShapeUtil.isSelfIntersectingEllipsoidal which could cause an exception to be thrown for certain shapes. LCD-13791

- Upgrade to add database indexes to improve the performance of filtering data using custom properties. LF-2628

2024.1.08

- The constructor of TLcdWMSGeoJsonGetFeatureInfoEncoder now accepts a parameter that indicates whether a property's name TLcdDataProperty#getName() or its display name TLcdDataProperty#getDisplayName() should be used as key for the feature info properties. By default, a property's name is used, but you can plug in your own TLcdWMSGeoJsonGetFeatureInfoEncoder to change this. LCD-13772
- The coordinates of panoramic images are now only transformed to the default UCS (User Coordinate System) of the LGSx file when an external reference is provided. This way the treatment of panoramic images and packed HSPC files stored in the same LGSx file is inline. LF-2715
- TLspShapeLayerBuilder: when vector data is defined in a grid reference with a large unit of measure, the data loading of the layer could take a long time. LCD-13764
- An issue has been resolved where in some cases the type of the elements decoded by the TLcdGeoPackageModelDecoder did not match with the instance class of the datatype. LCD-13769
- Fixed a race condition in the OGC Filter's property evaluation logic that could trigger an IllegalArgumentException or ArrayIndexOutOfBoundsException when used in combination with SLD styling to render data on a Lightspeed view. LCD-13389 LCD-13390
- The TLcdIFCModelDecoder support for reading materials has been improved. The decoder can now read the material from the presentation layer of an object (IfcPresentationLayerWithStyle). We also added support for reading the material from IfcFillAreaStyle, IfcColourRgb and IfcDraughtingPreDefinedColour. In addition, when an unknown material construction is encountered in the IFC file, the decoder no longer assigns a 'black' material to the object, but instead logs a warning and reuses the material from the context, or the default 'white' material if no material was present in the context. LCD-13771 LCD-13773 LCD-13776
- The TLcdIFCModelDecoder now supports IfcProxy elements. Items that are encoded this way in the IFC file are now properly decoded and are returned in both the geometry and features models. LCD-13770

2024.1.07

- Resolved an issue where LuciadFusion could get stuck generating a unique name for crawled Data, in cases where a lot of Data with duplicate names have been crawled. LF-2710

2024.1.06

- Fixed an issue that caused the measure type codes of a data to be removed when adding or updating a custom property on that data. LF-2703, LF-2712

2024.1.05

- Fixed an issue that caused the keywords of a data to be removed when adding or updating a custom property on that data. LF-2702
- Fixed an issue where an anonymous user could receive WM(T)S tiles that were generated for an administrator user. LF-2701
- Fixed a bug where the resulting Luciad Panorama dataset could contain visual artefacts where the input images were stitched together. LF-2700

2024.1.04

- The WFS server did not correctly handle the expiry time of feature locks created via a LockFeature of GetFeatureWithLock request. Such locks were only released by using them in a Transaction request with a lock release action. LCD-13720
- Fixed an issue that caused the WCS client's default coverage decoder class TLcdGeoTIFFWCSCoverageDecoder to throw an ArrayIndexOutOfBoundsException in selected cases during decoding. LCD-13712
- Loading a GeoTIFF file containing tags referring to EPSG:28992 (Amersfoort / RD New) and vertical reference EPSG:5709 (NAP) would crash. LCD-13709
- ESPG references EPSG:28992 and EPSG:7415 didn't contain axis information. LCD-13709
- Fixed an issue that caused old cached data to be returned by a WMS, WMTS or WCS service after updating an access rule for a data that was published in the service. LF-2691
- Fixed an issue where GeoPackage files could not be added as data when LuciadFusion was obfuscated using the deployment script. LF-2696
- Added GML decoding/encoding support for ILcdSurface instances containing circles or circular arcs. LCD-13692

2024.1.01

- Improved the automatic detection of Leica Pegasus Panoramic images in the TLcdE57PanoramaModelDecoder, to facilitate out-of-the box support for datasets that are created with more recent versions of the Leica software. LCD-12988
- Fixed an issue where the line weight of objects in DWG datasets was erroneously rounded to 0. LCD-13662
- Fixed an issue that prevented the pre-process output folder to be deleted if a service was deleted. LF-2664
- Fixed a bug in TLcdE57PanoramaModelDecoder where separate panoramic image locations from an E57 dataset were accidentally merged into a single panorama. LCD-13589
- TLcd3DTilesProcessorBuilder: fixed an issue that could cause points to get moved far away from the mesh, which resulted in unexpected extruded triangles and overly large bounding boxes. LCD-13541
- TLcd3DTilesProcessorBuilder: fixed an issue where material colors were applied multiple times, causing textures to become darker than intended. This happened if a texture was referenced multiple times in different materials. LCD-13631
- TLcd3DTilesProcessorBuilder: fixed a possible performance degradation when processing an OBJ file with textures. LCD-13369
- Fixed an issue where the TLcdIFCModelDecoder did not properly handle IfcBooleanResult subtractions in some cases, which could led to missing objects in the geometry model. LCD-13635

2024.1.00

- LuciadFusion Studio now supports LGSx data, a reality capture file format defined by Leica Geosystems. LGSx files archive a complete reality project in a single, highly compressed package, and may contain point clouds, imagery, assets, and metadata. LuciadFusion currently supports the following data types inside LGSx files:
  - Point cloud data, stored as packed HSPC data, which can be published in an HSPC service.
  - Panorama data, which can be published in a Panoramics service.
- LuciadFusion Studio now allows the user to make WFS services transactional. A transactional WFS (WFS-T) service supports these requests:
  - LockFeature
  - GetFeatureWithLock
  - Transaction

By default, these requests are possible for data stored in a TLcdDatabaseModel, which includes vector data decoded from Microsoft SQL Server, DB2 Spatial, Informix (Geodetic and Spatial), Oracle (Locator and Spatial), PostgreSQL PostGIS, SQLite SpatiaLite, and GeoPackage.

- LuciadFusion now has improved support for composite models (i.e. an ILcdModelContainer) in WFS services. A WFS service will map a composite model to multiple WFS feature types. These feature types will be listed in the capabilities document and can be used in all other WFS operations that require a WFS feature type.
- The GeoTIFF model decoder (TLcdGeoTIFFModelDecoder) now supports loading TIFF data with overview levels from an external file.
  For a file named <filename>.tif the overview file is expected to be named <filename>.tif.ovr. For a file named <filename>.tiff the overview file is expected to be named <filename>.tiff.ovr.
- The TLcdIFCModelDecoder now supports decoding IFC files in the IFC 4.3 file format.
- The LuciadFusion Studio web application has been made more robust against endpoint changes (for example, the endpoint for the WMS preview). LF-2648
- It is now possible to create services with the same name if these services have a different service type. LF-2655
- The timestamp of the default error responses now uses the default timezone of the JVM (TimeZone.getDefault) LF-2641
- It is now possible to crawl HSPC Pack (aka HSPCA) files and publish them in an HSPC service.
- PostgreSQL 17 is now officially supported
- The following service types now support single part HTTP range requests:
  - HSPC
  - Panoramics
  - OGC3DTiles
- The WMS and WMTS services now come with improved GetLegendGraphic support for layers styled with an SLD: LCD-13546
- The LuciadFusion Studio REST API and Java API now offer the capability to create, update, delete and fetch a single custom property at a time.

  To perform these operations in Java, the methods getCustomProperty(String) and cloneAsEditableData() have been added to the class TLfnData. Additionally, the class TLfnEditableData has been added which contains the following methods to modify the custom properties: putCustomProperty(String, Object), deleteCustomProperty(String).

- The TLcdLASModelDecoder can now additionally decode LASzip (LAZ) 1.4 files. LCD-10555, LCD-12804
- The TLcdGeoTIFFModelDecoder has improved support for GeoTIFF tags related to the vertical coordinate system of a reference. It now falls back on the EGM2008 vertical datum when the vertical datum is not supported.
- When parsing Well Known Text (WKT) references with a vertical datum, the parser now uses EGM2008 as fallback in case the vertical datum is not supported
- The Fusion Engine now uses the libjpeg-turbo library to encode images as JPEG. Depending on the used data and underlying hardware, this reduces the CPU usage during the processing of a coverage that uses JPEG as tile format.
- Added an option to TLcdLuciadPanoramaModelEncoder to modify the resolution of the output cubemap images: see setResolutionFactor(double). LCD-13600
- The TLcdMSSQLModelDecoder and TLcdMSSQLModelEncoder now have support for the CURVEPOLYGON geometry types. LCD-8431
- The LuciadFusion Studio web application will no longer stop working if the actuators endpoint is changed. LF-2647
- Resolved an issue in WFS Server, where feature types were not found when specifying the namespace of a feature type in the typeName parameter of a WFS Transaction request.

- TLcdLASModelDecoder now takes into account the extra bytes when calculating the format size, making it possible to decode files which triggered an error in earlier versions.
- The TLcdMSSQLModelDecoder now correctly takes into account the base of the CURVEPOLYGON geometry type as defined by the WKB string. LCD-11321
- Numerous updates to third-party dependencies

LuciadRIA

2024.1.06

- Enhancing the performance of OGC 3D Tiles on Intel Graphics Processing Units when shadows are disabled. RIA-5108
- In 3D, pick results (as from `map.pickAt()`) are now correctly sorted according to camera depth, instead of layer order. This means that the top-most object in the scene is now always picked first. Previously, in cases where multiple candidates from different layers were picked, an object from the top-most layer would always win, even though that object would be behind another object. RIA-5106
- Fixed a bug in large 3D tile sets where offsetTerrain could be ignored when precise is set to true. RIA-5112
- Fixed a bug where using the SwipeController on maps displayed on high resolution (hiDPI) screens resulted in incorrect behavior. RIA-5118

2024.1.05

- Fixed a bug where glTF data with normalized metadata loaded with incorrect values. RIA-5102
- Fixed an issue where a label's position was not refreshed when the feature's shape was updated. RIA-5097
- Fixed an issue in drawLabelInPath where some labels where not placed correctly near the equator. RIA-4902

2024.1.04

- The LoadSpatially strategy has been improved to handle edge cases. The strategy now better handles scenarios where FeatureModel.bounds has zero size or when the map bounds cannot be retrieved. Previously, an exception was thrown if these scenarios occurred, or no data would be returned. RIA-5088
- The bounds calculation of polylines and polygons didn't always take the curvature of the line segments into account. This could lead to bounds that are too small. This in turn could lead to other issues, such as the outline of a buffer not being visualized correctly. This is now fixed. RIA-5067
- The HereMapsTileSetModel has been updated to use the HERE Maps Raster Tile API v3. The HERE Maps Map Tile API v2 has been retired by HERE and is no longer available as of the end of Q1 2025. RIA-4773

2024.1.03

- You can now create cartesian references from WKT using ReferenceProvider.parseWellKnownText, using the LOCAL_CS WKT tag. RIA-5069

- You can now use WFSFeatureStore with WFS services that contain data in a local cartesian reference. In that case, the WFS reference should be a LOCAL_CS WKT, and the the store will have a CartesianReference. RIA-5070

2024.1.01

- TileSet3DLayer will now accurately report when it encounters data that cannot be interpreted. RIA-5037
- Fixed an issue in WMTS capabilities parsing. The bounds of WMTS TileMatrixSets that are defined in a CRS with a lat-lon axis order (for example EPSG:4258) were not correctly parsed. The order of the axes was swapped (lon-lat vs. lat-lon). As a consequence, the WMTS data appeared in the wrong location on the map. RIA-5062
- It is possible that a WMTS service reports in its capabilities TileMatrixSets that are not ordered according to scale denominator. LuciadRIA would throw an error when trying to create a WMTSTileSetModel model using such a TileMatrixSet. This is now fixed. RIA-5017
- Resolved an issue in OGC 3D tiles where changes to the selectable flag were ignored. RIA-4914

2024.1.00

- Statistics for HSPC are now available from the HSPCTilesModelDescriptor.properties. These properties are only defined if the pointcloud contains statistics. RIA-4956
- WebGLMap now supports display scaling. This allows for sharp and crisp map rendering on high resolution (hiDPI) displays. More information can be found in the Display scaling (hiDPI) in LuciadRIA guide.
- Symbology Encoding (SLD): added support for the vendor option 'inclusion'. You can now use the vendor option 'inclusion' in your SLD style files to differentiate between styling for legend entries and styling for regular maps. You can provide a `painterType` when creating a Symbology Encoding painter, to indicate which styles should be used. More information can be found in SLD legend, vendor option 'inclusion' - Usage and examples
- You can now set the reference of WebGLMap after the map has been created, instead of only at construction time. Please refer to WebGLMap.reference for more information and restrictions.

  All samples that can be run in multiple references now have a new button in the top left that allows users to change the reference of the map, without having to recreate the map

- Added support for the BezierCurve geometry. You can now create, visualize, and edit both quadratic and cubic Bézier curves. For more details on how to create these shapes
- LuciadRIA now supports RESTful encoding for WMTS GetCapabilities and GetTile requests. Previously only KVP WMTS endpoints were supported.
- You can now visualize video panoramas in LuciadRIA. To do this, you create a specialized PanoramaModel. For simple cases, you can use the convenience function VideoPanoramaModel#createVideoPanoramaModel to create the model
- HSPC attributes of the type 64 bits floats can now be used in expressions for point clouds. see HSPCTilesModel.properties for more info.
- LuciadRIA TypeScript definition files are now generated with TypeScript 5.6. The LuciadRIA samples and the LuciadRIA Toolbox now also use TypeScript 5.6. We recommend that you upgrade to TypeScript 5.6 as well
- LuciadRIA now supports the following features of the OGC 3D Tiles specification version 1.1:
  - GPU instancing with the EXT_mesh_gpu_instancing extension
  - Allow associating metadata with vertices or texels with the EXT_structural_metadata extension.
  - Loading of point clouds from GLB files
- A new lighting effet, directionalLight and headlight are now available

SMSDK / Spatial Model Runtime

- Improvements to compression type handling when writing to COG via a Spatial Model IM-75816
- Enhanced performance within the GeoPackage operator IM-76104
- Resolved a bug that could fail to convert LAZ to HSPC files via a Spatial Model IM-76245
- Miscellaneous other bug fixes and platform updates to address new security vulnerabilities

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