

Data Interchange Release Schedule - May 2022

1.00 April 2022

Pre-production: Thursday 28 April 2022

Production: Thursday 19 May 2022

Release series: DI0422





Important notice

Purpose & audience

This document describes the technical changes required to participant's systems for the AEMO Release Schedule - Data Interchange April 2022 (Release). The Australian Energy Market Operator (AEMO) provides this information as a service targeting business analysts and IT staff in participant organisations. It provides guidance about the changes to their market systems under the National Gas or Electricity Rules (Rules), as at the date of publication.

How to use this document

- If you have questions about the business aspects of these changes, please see Consultations on AEMO's website.
- The references listed throughout this document are primary resources and take precedence over this document.
- Unless otherwise stated, you can find resources mentioned in this guide on AEMO's website.
- **Text in this format** is a link to related information.
- **Text in this format**, indicates a reference to a document on AEMO's website.
- **Text in this format** is an action to perform in the Markets Portal.
- This document is written in plain language for easy reading. Where there is a discrepancy between the Rules and information or a term in this document, the Rules take precedence.
- Glossary Terms are capitalised and have the meanings listed against them in the Glossary.
- Rules Terms have the meaning listed against them in the [National Gas Rules](#) or [National Electricity Rules](#) (Rules).
- Times are Australian Eastern Standard Time (AEST).

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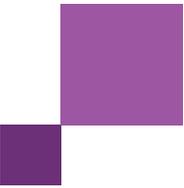
1.00 Initial publication

Documents made obsolete

The release of this document changes only the version of Data Interchange Release Schedule - May 2022.

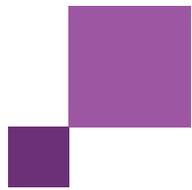
Support hub

To contact AEMO's Support Hub use the [Contact Us](#) form on AEMO's website.

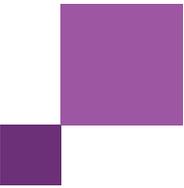


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1 Introduction

1.1 Purpose

This Data Interchange Release Schedule - May 2022 (Release) advises participants about the AEMO Data Interchange 2022 software release.

1.2 Audience

AEMO provides this information as a service targeting Registered Participants':

1. Business analysts
2. Technology staff responsible for maintaining AEMO Data Interchange installations.
3. Cyber staff responsible for managing the industry response to the Log4J2 vulnerability threat.

1.3 Status

| Version | Status |
|---------|--|
| 1.00 | This release schedule is for participant review/information only. Please provide feedback in AEMO's website contact us form |

1.4 Release dates

Scheduled for implementation in:

- Pre-production: Thursday 28 April 2022
- Production: Thursday 19 May 2022

1.5 Version numbers

AEMO releases new versions of this document as the technical requirements are streamlined.

Incremental version numbers such as 1.01, 2.01 and so on mean there is a minor change to the technical specification.

Major version numbers such as 1.00, 2.00 means there are substantial changes to the technical specification. Participants must carefully review the changes detailed in this Release.

1.6 Changes in this version

No changes, this is the initial version.

1.7 Related resources

Once published, these resources take precedence over this technical specification.

These guides and resources are updated according to this release schedule and published for the pre-production Release Date.

| Title | Description | Status |
|---------------------------------------|---|-------------|
| PDR Software | PDR software available | In progress |
| pdrBatcher Implementation Note | Document outlining the functional changes, configuration updates and installation/upgrade instructions for the pdrBatcher product | In progress |
| pdrLoader Implementation Note | Document outlining the functional changes, configuration updates and installation/upgrade instructions for the pdrLoader product | In progress |
| pdrMonitor Implementation Note | Document outlining the functional changes, configuration updates and installation/upgrade instructions for the pdrMonitor product | In progress |
| Data Interchange Online Help | Online documentation resource describing the features and functionality of the AEMO Data Interchange product suite | In progress |

1.8 Approval to change

AEMO request approval to proceed from all participant change controllers by close of business Wednesday 18 May 2022. Please send your response by email to the [Support Hub](#) with the following details:

- Name
- Organisation

- Contact details
- Response Yes or No
- Comments

AEMO deems the change approved if no response is received within 15 business days.

1.9 Market systems user group meetings

The Market Systems User Group (MSUG) is an industry user group established to discuss NEM wholesale and retail IT systems releases. Its purpose is to facilitate the continuing improvement of AEMO's IT systems by seeking feedback and collaboration from participants.

MSUG meetings are open to all interested parties, with invitations sent to all included on the distribution list. If you have a technical question for a project and want to attend the MSUG ask your company's support team to include your email address in their **AEMO Help Desk Bulletin (CRM)** distribution list.

2 Release Details

This release schedule describes a summary of changes to the Participant Data Replication (PDR) applications. The PDR Implementation Notes will contain more detail about these changes. For details, see [Related Resources](#).

2.1 log4j2 vulnerability

Apache Software Foundation (ASF) identified a critical zero-day vulnerability in the Java logging library (log4j version 2) possibly allowing remote code execution of affected systems. This vulnerability is impacting servers worldwide.

Production releases of AEMO's Data Interchange software uses v2.8.1 of the Log4j library, which is the version impacted by this vulnerability.

On 13 December 2021 in **Help Desk Bulletin No. 2838**, AEMO issued remediation measures recommending participants take action to remove the threat of this vulnerability.

The Data Interchange 2022 release is the second phase of AEMO's response to address the vulnerability by upgrading the AEMO Data Interchange applications to the latest version of the Log4J2 library.

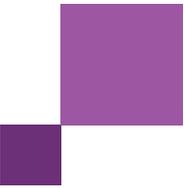
2.2 Functional enhancements and fixes

There are also a number of functional enhancements and minor defect fixes included in this Release.

2.3 About data interchange

The Data Interchange suite includes 4 products:

- **pdrBatcher**: Supports file exchange with AEMO wholesale market systems.
- **pdrLoader**: Supports loading of data to participants' local databases.
- **pdrMonitor**: Supports configuration management and logging events (replaces the Replication Manager).
- **Data Model**: The industry standard information store for the electricity and gas Data Models for participants to load market data.



AEMO works to the assumption that participants' systems are compliant with the minimum supported configuration of software and systems.

It is strongly recommended participants complete these upgrades as a finalisation to the Log4J2 vulnerability response.

3 Participant Impact

3.1 Must I do these upgrades?

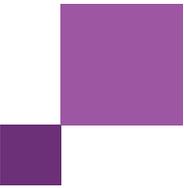
AEMO strongly recommends participants complete these upgrades as a finalisation to the Log4J2 vulnerability response.

To ensure continuing support from AEMO in the event of an issue, AEMO encourages participants to ensure their Data Interchange installations are compliant with the minimum supported software versions.

3.2 Supported software versions

This table summarises the supported software versions supported from the Release Dates.

| Component | Current version | Legacy version |
|------------------------|------------------------|----------------|
| Electricity Data Model | 5.1 | 5.0 |
| Gas Data Model | 2.1 | 2.0 |
| PDR Loader | 7.5 | 7.4 |
| PDR Batchter | 7.5 | 7.4 |
| PDR Monitor | 1.2 | 1.1 |
| Java | 11 | 11 |
| Microsoft SQL Server | 2019 | 2017, 2014 |
| Oracle | 19c | 12c |
| Operating systems | Windows and Unix -like | |



3.3 Product Interoperability

This table summarises the interoperability of the AEMO Data Interchange products.

| pdrMonitor version | pdrBatcher version | pdrLoader version |
|--------------------|--------------------|-------------------|
| 1.1 | >= 7.4.1 | >= 7.4.2 |
| 1.2 | >= 7.5 | >= 7.5 |

3.4 Certification

Participants having requirements to run alternate JRE installations/versions or database platforms outside of the certified platforms and versions are encouraged to test and validate the software in a non-production environment before applying such configurations to a production system. Please report any issues to AEMO's Support Hub if you identify any issues.

3.4.1 JRE

The AEMO Data Interchange products are certified against OpenJDK 11: <https://jdk.java.net/java-se-ri/11>. They do not operate against lower versions of the JRE. Alternate versions of the JRE, for example, Oracle are expected to operate but are not specifically validated by AEMO.

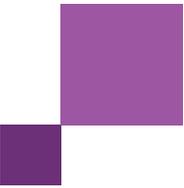
Later versions of the JRE are also expected to work but are not specifically validated by AEMO.

3.4.2 Oracle and SQL server

This release of the AEMO Data Interchange products moves to generalised installations for the Oracle and SQL Server database platforms. It is expected that alternate versions (Oracle >= 12c, SQL >= 2012) will also operate correctly, but these have not been specifically validated.

3.4.3 Open-source database systems

AEMO provides software releases for the AEMO Data Interchange products targeting popular open-source RDBMS platforms such as MySQL and PostgreSQL. AEMO performs limited integration testing against these database platforms. Participants electing to use open-source



RDBMS platforms must validate the AEMO Data Interchange software operates correctly against the target RDBMS platform in a non-production environment in the same way they would for the RDBMS software itself before using the software for production purposes.

Due to multiple available versions of the open-source database systems, it is difficult for AEMO to provide support for all widely-used versions. The Data Model versions AEMO provides are database agnostic so should work with most systems.

If participants raise Support Hub calls for the open-source database systems, AEMO attempts to recreate the issue independently and provide as much assistance as possible, for example: issues related to queries, platform size, database tuning, indexes, or defects in AEMO applications. Please understand performance issues are difficult to recreate due to hardware and other limitations.

3.5 Upgrading

Before proceeding with an upgrade, ensure your environment is consistent with the supported software versions.

3.5.1 Upgrading instructions

The **Implementation Note** for each PDR product has the instructions for a new install or upgrade of the AEMO Data Interchange products. Please read these documents before doing your upgrade or install for details of the features, functionality, configuration changes, and installation instructions.

For details about the PDR Implementation Notes, see [Related resources](#).

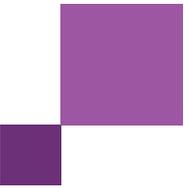
3.5.2 Recommended upgrade order

Participants can upgrade pdrBatcher and pdrLoader installations independently of each other with no requirement for which to complete first.

The new v7.5 pdrBatcher/pdrLoader applications are compatible with the legacy pdrMonitor v1.1 release so complete the upgrade to pdrMonitor v1.2 as the final step.

3.6 Support

For the most expedient support responses, AEMO recommends participants run the latest production release of the supported software versions.



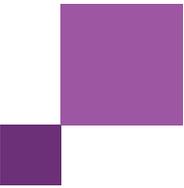
Participants requesting support who are not running a **supported software version** are required to upgrade prior to AEMO providing a support response.

AEMO may require participants running legacy versions of software to update to the current production release as part of a support resolution. Open-source database management systems

4 Proposed Timeline

The dates for the Market System User Group Meetings (MSUG) are tentative. We will provide an invitation one week prior to the meeting.

| Milestone | Date | Description |
|--|-----------------------------|--|
| Release schedule published | Tuesday, 26 April 2022 | The date when this document is issued |
| Approval required | Wednesday 18 May 2022 | Final date for participant approval of this Release |
| MSUG meeting: pre-production review and PDR upgrade walkthrough | Wednesday, 4 May 2022 | Market Systems User Group Meeting (MSUG) to review technical specifications and ask AEMO technical SMEs questions This date is tentative. We will provide an invitation one week prior to the meeting |
| PDR pre-production software available | Thursday 28 April 2022 | PDR pre-production software available for participants For details, see Related resources |
| Pre-production available | Thursday 28 April 2022 | Testing period begins for participants |
| Related resources published | Thursday 19 May 2022 | For details, see Related resources |
| Participant testing | 20 April 2022 - 17 May 2022 | Unstructured/bilateral participant testing in the pre-production environment |
| Production systems available | Thursday 19 May 2022 | Production systems available to participants |
| PDR production software available | Thursday 19 May 2022 | PDR software available for participants For details, see Related resources |
| MSUG meeting: post-production review | Wednesday, 1 June 2022 | Market Systems User Group Meeting (MSUG) to review technical specifications and ask AEMO technical SMEs questions This date is tentative. We will provide an invitation one week prior to the meeting |



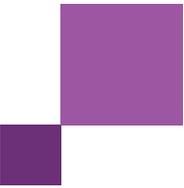
5 pdrBatcher

The pdrBatcher v7.5.0 release is an upgrade from any existing v7.4.n installation.

5.1 Functional enhancements

| Function | Changed to support |
|--------------------------------|--|
| Configuration structure | Containerisation |
| Properties file | Parsing of system and environment variables into the properties file |
| | Data vault configuration (docker secrets file) and parsing of this configuration into the properties file |
| | Comma-delimited specification for a parameter: batcher_thread_\${N}_source_dir |
| | Filtering based on minimum file size: batcher_thread_{N}_min_size_bytes |
| | New global property: participant_identifier References by various other properties to enable a single point of configuration |
| pdrEnvironment scripts | Wildcard for CLASSPATH for third-party libraries |
| | Enhanced logic for identification of path separator instead of hard coding '/' |
| Key management | Azure Key Vault, AWS Secrets Manager, and Google Secrets Manager integration |

| Function | Changed to support |
|---|---|
| File translation | REPLACE Replaces text within a file |
| | TAIL Filters a file for selected lines |
| | INSERT Injects text at the specified line number |
| | FILTER Filters the input file to include/exclude lines with the specified search text |
| | NEMCSV_TO_JSON Translates a NEM csv format file into JSON |
| | ASEXML_TO_CSV Extracts embedded csv content from an aseXML file |
| | OS_COMMAND Allows execution of an operating system command with data piped via stdin and stdout streams |
| | OS_SCRIPT Allows execution an operating system script |
| Command line facility | Testing of translation expressions: AppPdrBatcherTransformTest |
| | Script to validate FTP connection configuration: pdrConnectionTest |
| Storage | Google |
| | AWS S3 API access from v2 to v4 API signing algorithm |
| Compression | 7z, tgz, & gz formats |
| New default thread configuration | Downloading baseline data configured and executed as an API call |
| New thread parameter | EXCLUSIVE & AND options for include/exclude file mask specification: batcher_thread_{N}_mask_mode |
| File download | Optimised standard configuration performance |
| Wrapper script | Execution of batcher thread in API mode. Scripts are: <ul style="list-style-type: none"> - pdrThreadExecute.bat - pdrThreadExecute.sh |



5.2 Bug fixes

- Log4j2 vulnerability.
- Graceful shutdown of CRON or API initiated threads.
- Define FILE_ID for gas INT format files. Required to support reporting views in pdrMonitor.

6 pdrLoader

The pdrLoader v7.5.0 release is an upgrade from any existing v7.4.n installation.

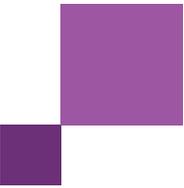
6.1 Functional enhancements

| Function | Changed to support |
|-------------------------------------|--|
| Configuration structure | Containerisation |
| Properties file | Parsing of system and environment variables into the properties file |
| | Data vault configuration (docker secrets file) and parsing of this configuration into the properties file |
| Csv files | Loading of flat csv files without column headings The column headings are implied by the database table |
| Tables | Flexible filtering of rows for loading with new table PDR_DATA_FILTER_CONFIG |
| | Logging of changes to mapping configuration in PDR_* management tables to the application log |
| pdrEnvironment scripts | Wildcard for CLASSPATH for third-party libraries |
| | Added wrapper scripts for data export facility |
| | Checks for correct setup of PDR_* database management tables at start up |
| Key management | Azure Key Vault, AWS Secrets Manager, and Google Secrets Manager integration |
| Data sources | MANFCAS & NORFCAS for production |
| PDR_REPORT_RECORDS | Attempts to roll forward previous version configuration in the event missing configuration is detected in PDR_REPORT_RECORDS |
| | Any rows within PDR_REPORT_RECORDS with a destination table of <NEW> are set as inactive |
| Compression | 7z, tgz, & gz formats |
| Command line facility | Script to validate FTP connection configuration: pdrConnectionTest |
| Default thread configuration | Downloading baseline data configured and executed as an API call |

| Function | Changed to support |
|--------------------------------|--|
| Thread parameters | EXCLUSIVE & AND options for include/exclude file mask specification: file_load_thread_{N}_mask_mode |
| | file_load_threads_active replaces file_load_threads |
| File download | Optimised standard configuration performance |
| Wrapper script | Execution of batcher thread in API mode. Scripts are: <ul style="list-style-type: none"> - pdrThreadExecute.bat - pdrThreadExecute.sh |
| JDBC drivers | SQL Server mssql-jdbc-10.2.0.jre11.jar Oracle Database 21c (21.4.0.0.1) |
| Report file load errors | API functionality |
| Automated recovery | Default threshold for maximum archive requests and rejections from 10 to 5. Ensures the process does not consume the 10 re-delivery attempts from AEMO's end before manual intervention is possible |
| Manifest | Ability to manage maximum request count within manifest processes |

6.2 Bug fixes

- Log4j2 vulnerability.
- Define FILE_ID for gas INT format files. Required to support reporting views in pdrMonitor.
- Removes files from Requests folder when timeout detected.



7 pdrMonitor

The pdrMonitor v1.2.0 release is an upgrade from any existing v1.1.n installation.

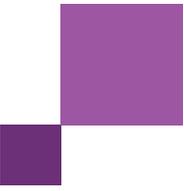
7.1 Functional enhancements

| Function | Changed to support |
|---|--|
| Configuration structure | Containerisation |
| | New Data Interchange action "populate baseline data" |
| XML configuration file | Parsing of system and environment variables |
| | Data vault configuration (docker secrets file) and parsing of this configuration |
| Key management | Azure Key Vault, AWS Secrets Manager, and Google Secrets Manager integration |
| Configuration data | Periodic refresh of configuration data from database to support direct config manipulation via SQL |
| Protocols | Https protocol for HTML5 browser interfaces |
| Command line facility | Registering of new system and application to provide the ability to bypass the GUI for basic setup |
| | pdrConnectionTest to validate database connection configuration |
| JDBC drivers | SQL Server mssql-jdbc-10.2.0.jre11.jar |
| | Oracle Database 21c (21.4.0.0.1) |
| pdrBatcher and pdrloader performance tab | Showing total number of jobs on chart |
| | Filtering chart results by FILE_ID |
| | Analytics functionality |

| Function | Changed to support |
|--------------------------------------|---|
| Browser | Csv download of tabular data |
| Performance reporting | Works when subscribed to LEGACY files only |
| Data Interchange performance | Analysis of non-periodic FileId |
| | Chart and tabular data output options |
| Transaction search | pdrBatcher, pdrLoader, and Data Interchange tabs |
| New reports | End-to-end SLA breaches |
| | Throughput for pdrBatcher and pdrLoader |
| Data SLA configuration | Viewing and editing via web forms |
| Data Interchange dashboard | File load errors |
| | Reprocessing files via action |
| pdrLoader manifest | Increasing re-request count of ABANDONED files via action |
| Data Interchange settings tab | New column: IsNew |

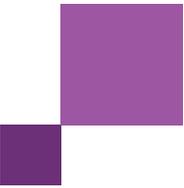
7.2 Bug fixes

- Log4j2 vulnerability
- Correct defect causing incorrect operation when starting without a dependent database service present.
- Trims log messages to a maximum of 1000 characters ensuring they can be ingested into the database.
- When drilling down in the chart when local time is DST, the correct reporting interval displays.



8 Implementation

For details, see [Participant Impact](#).



9 FAQs

9.1 Do I have to upgrade?

AEMO strongly recommends participants complete these upgrades as a finalisation to the Log4J2 vulnerability response.

9.2 Is there a specific order to upgrade?

See [Recommended upgrade order](#).

9.3 What are the new software versions?

See [Supported software versions](#).

9.4 What if I'm not using the latest DI version?

See [Support](#).

9.5 Where do I get the new software from?

See [Data interchange and data model resources](#).

10 Terms

10.1 Rules Terms

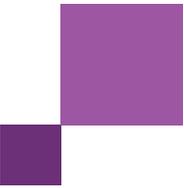
You can find the following terms defined in the [Energy Rules](#).

| Term | Term |
|--------------|------|
| AEMO | NEM |
| AEMO Website | |

10.2 Glossary

You can find a full list of terms in [Data Interchange Glossary](#).

| Abbreviation/Term | Explanation |
|-------------------|---|
| FTP | File Transfer Protocol |
| JRE | Java Runtime Environment |
| Log4J2 | Java logging library allowing configuration of advanced logging best practices such as rolling files, different types of logging output destinations, support for structured logging formats such as JSON or XML, using multiple loggers and filters, and custom log levels |
| PDR | Participant Data Replication |
| Release | Data Interchange Release Schedule - May 2022 |
| Release Dates | Pre-production: Thursday 28 April 2022? Production: Thursday 19 May 2022 |
| TBC | To be confirmed |



11 References

Guide to Information Systems: Provides guidance for Registered Participants and interested parties about AEMO's participant electricity market systems.

11.1 Data interchange and data model resources

11.1.1 About

Information about setting up a Data Interchange environment: Data Interchange Help > [About Data Interchange](#).

11.1.2 Help

- [Data interchange online help](#)

11.1.3 Software

You can find Data Interchange software in the following locations:

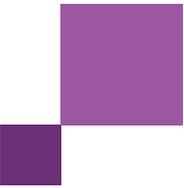
- Data Interchange Help > [Software Releases](#).
- Releases directory on the participant file share: FTP to 146.178.211.25 > Data Interchange, pdrBatcher, pdrLoader, or pdrMonitor.

11.1.4 Reports

- Data Interchange Help > [Data Model Reports](#).

11.1.5 Releases

- Data Interchange Help > [Release Documents](#).



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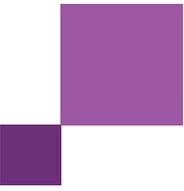
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A1. Version history

This is the initial publication, there is no version history.