

---

# MySQL NDB Cluster 9.1 Release Notes

## Abstract

This document contains release notes for the changes in each release of MySQL NDB Cluster that uses version 9.1 of the [NDB \(NDBCLUSTER\)](#) storage engine.

Each NDB Cluster 9.1 release is based on a mainline MySQL Server release and a particular version of the [NDB](#) storage engine, as shown in the version string returned by executing `SELECT VERSION()` in the `mysql` client, or by executing the `ndb_mgm` client `SHOW` or `STATUS` command; for more information, see [MySQL NDB Cluster 9.1](#).

For general information about features added in NDB Cluster 9.1, see [What is New in MySQL NDB Cluster 9.1](#). For a complete list of all bug fixes and feature changes in MySQL NDB Cluster, please refer to the changelog section for each individual NDB Cluster release.

For additional MySQL 9.1 documentation, see the [MySQL 9.1 Reference Manual](#), which includes an overview of features added in MySQL 9.1 that are not specific to NDB Cluster ([What Is New in MySQL 9.1](#)), and discussion of upgrade issues that you may encounter for upgrades from MySQL 9.0 to MySQL 9.1 ([Changes in MySQL 9.1](#)). For a complete list of all bug fixes and feature changes made in MySQL 9.1 that are not specific to [NDB](#), see [MySQL 9.1 Release Notes](#).

Updates to these notes occur as new product features are added, so that everybody can follow the development process. If a recent version is listed here that you cannot find on the download page (<https://dev.mysql.com/downloads/>), the version has not yet been released.

The documentation included in source and binary distributions may not be fully up to date with respect to release note entries because integration of the documentation occurs at release build time. For the most up-to-date release notes, please refer to the online documentation instead.

For legal information, see the [Legal Notices](#).

For help with using MySQL, please visit the [MySQL Forums](#), where you can discuss your issues with other MySQL users.

Document generated on: 2024-11-06 (revision: 29294)

## Table of Contents

Preface and Legal Notices .....	1
Changes in MySQL NDB Cluster 9.1.0 (2024-10-16, Innovation Release) .....	3
Index .....	5

## Preface and Legal Notices

This document contains release notes for the changes in each release of MySQL NDB Cluster that uses version 9.1 of the [NDB](#) storage engine.

### Legal Notices

Copyright © 1997, 2024, Oracle and/or its affiliates.

#### License Restrictions

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

### **Warranty Disclaimer**

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

### **Restricted Rights Notice**

If this is software, software documentation, data (as defined in the Federal Acquisition Regulation), or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, then the following notice is applicable:

U.S. GOVERNMENT END USERS: Oracle programs (including any operating system, integrated software, any programs embedded, installed, or activated on delivered hardware, and modifications of such programs) and Oracle computer documentation or other Oracle data delivered to or accessed by U.S. Government end users are "commercial computer software," "commercial computer software documentation," or "limited rights data" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, the use, reproduction, duplication, release, display, disclosure, modification, preparation of derivative works, and/or adaptation of i) Oracle programs (including any operating system, integrated software, any programs embedded, installed, or activated on delivered hardware, and modifications of such programs), ii) Oracle computer documentation and/or iii) other Oracle data, is subject to the rights and limitations specified in the license contained in the applicable contract. The terms governing the U.S. Government's use of Oracle cloud services are defined by the applicable contract for such services. No other rights are granted to the U.S. Government.

### **Hazardous Applications Notice**

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

### **Trademark Notice**

Oracle, Java, MySQL, and NetSuite are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Inside are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Epyc, and the AMD logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

### **Third-Party Content, Products, and Services Disclaimer**

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services

unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle.

### Use of This Documentation

This documentation is NOT distributed under a GPL license. Use of this documentation is subject to the following terms:

You may create a printed copy of this documentation solely for your own personal use. Conversion to other formats is allowed as long as the actual content is not altered or edited in any way. You shall not publish or distribute this documentation in any form or on any media, except if you distribute the documentation in a manner similar to how Oracle disseminates it (that is, electronically for download on a Web site with the software) or on a CD-ROM or similar medium, provided however that the documentation is disseminated together with the software on the same medium. Any other use, such as any dissemination of printed copies or use of this documentation, in whole or in part, in another publication, requires the prior written consent from an authorized representative of Oracle. Oracle and/or its affiliates reserve any and all rights to this documentation not expressly granted above.

## Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

## Access to Oracle Support for Accessibility

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

## Changes in MySQL NDB Cluster 9.1.0 (2024-10-16, Innovation Release)

MySQL NDB Cluster 9.1.0 is a new Innovation release of NDB Cluster, based on MySQL Server 9.1 and including features in version 9.1 of the [NDB](#) storage engine, as well as fixing recently discovered bugs in previous NDB Cluster releases.

**Obtaining MySQL NDB Cluster 9.1.** NDB Cluster 9.1 source code and binaries can be obtained from <https://dev.mysql.com/downloads/cluster/>.

For an overview of major changes made in NDB Cluster 9.1, see [What is New in MySQL NDB Cluster 9.1](#).

This release also incorporates all bug fixes and changes made in previous NDB Cluster releases, as well as all bug fixes and feature changes which were added in mainline MySQL 9 through MySQL 9.1.0 (see [Changes in MySQL 9.1.0 \(2024-10-15, Innovation Release\)](#)).

- [Deprecation and Removal Notes](#)
- [Functionality Added or Changed](#)
- [Bugs Fixed](#)

## Deprecation and Removal Notes

- Use of an `Ndb.cfg` file for setting the connection string for an NDB process was not well documented or supported. With this release, this file is now formally deprecated, and a warning is issued whenever it is used. You should expect support for this file to be removed in a future release of MySQL Cluster. (WL #15765)

## Functionality Added or Changed

- The `ndbcluster` plugin subscribes to all changes that occur in NDB and writes them epoch by epoch to the binary log. Each epoch received from NDB consists of a large number of changes, all of which are written to the binary log transaction cache before flushing them to the binary log. Previously, it was possible to configure the cache size for all threads, which often led to improper resource allocation for a MySQL Server used for writing a binary log of changes for NDB.

To enable dimensioning and configuring the system properly, we introduce a new system variable `ndb_log_cache_size` which makes it possible to set the size of the transaction cache used by the NDB binary log injector, so that this size can be set separately for writing the binary log for NDB transactions and (using `binlog_cache_size`) for writing other transactions whose sizes are likely to be smaller. (Bug #36694848)

## Bugs Fixed

- **NDB Cluster APIs:** Using `NdbRecord` and `OO_SETVALUE` from the NDB API to write the value of a `Varchar`, `Varbinary`, `Longvarchar`, or `Longvarbinary` column failed with error 829. (Bug #36989337)
- **MySQL NDB ClusterJ:** References to ClusterJPA and OpenJPA have been removed from the comments in the packaging files, as JPA code was already removed from ClusterJ some time ago. (Bug #36725675)
- **MySQL NDB ClusterJ:** `ReconnectTest` in the ClusterJ test suite failed sometimes due to a race condition. The test has been rewritten with proper synchronization. (Bug #28550140)
- Removed node management code from `TRIX` that was not actually used. (Bug #37006547)
- Submitting concurrent shutdown commands for individual nodes using `ndb_mgm SHUTDOWN node_id` or the MGM API sometimes had one or both of the following adverse results:
  - Cluster failure when all nodes in the same node group were stopped
  - Inability to recover when all nodes in the same node group were stopped, and the cluster had more than one node group

This was due to the fact that the (planned) shutdown of a single node assumed that only one such shutdown occurred at a time, but did not actually check this limitation.

We fix this so that concurrent single-node shutdown requests are serialized across the cluster, and any which would cause a cluster outage are rejected. (Bug #36943756)

References: See also: Bug #36839995.

- Shutdown of a data node late in a schema transaction updating index statistics caused the president node to shut down as well. (Bug #36886242)

References: See also: Bug #36877952.

- It was possible for duplicate events to be sent to user applications when a data node was shut down. (Bug #36750146)
- `BLOB_INLINE_SIZE=0` set within a column comment was not honored, and the default for the blob type was used instead (such as 256 bytes for `BLOB`).  
See [NDB\\_COLUMN Options](#), for more information. (Bug #36724336)
- Issues arose when an attempt was made to use a SHM transporter's wakeup socket before it was ready, due in part to error-handling when setting up the SHM transporter, which did not close the socket correctly prior to making another attempt at setup. (Bug #36568752, Bug #36623058)
- An error in a `my.cnf` file could cause the management node to shut down unexpectedly. (Bug #36508565)
- A race condition sometimes occurred between the watchdog thread and the signal execution thread trying to start node failure handling in parallel. (Bug #35728261)

## Index

### B

BLOB\_INLINE\_SIZE, 3

### C

configuration, 3

### F

failure handling, 3

### I

index statistics, 3

### M

MySQL NDB ClusterJ, 3

### N

NDB Cluster, 3  
NDB Cluster APIs, 3  
NdbRecord, 3  
ndb\_log\_cache\_size, 3  
node shutdown, 3

### O

OpenJPA, 3

### S

SHM, 3

### T

TRIX, 3

