mysqlpump, 535

add-missing option

ndb\_blob\_tool, 4342

ADDDATE(), 2189

adding

character sets, 2034

new account privileges, 1246

new user privileges, 1246

addition (+), 2177

ADDTIME(), 2189

ADD\_GDB\_INDEX option

CMake, 247

admin-ssl option

mysqld, 746

ADMINISTRABLE\_ROLE\_AUTHORIZATIONS

INFORMATION\_SCHEMA table, 4848

administration

server, 463

administration of NDB Cluster, 4335

administrative connection interface, 1007, 1009

administrative programs, 356

admin\_address system variable, 774

admin\_port system variable, 775

admin\_ssl\_ca system variable, 775

admin\_ssl\_capath system variable, 776

admin\_ssl\_cert system variable, 776

admin\_ssl\_cipher system variable, 776

admin\_ssl\_crl system variable, 777

admin\_ssl\_crlpath system variable, 777

admin\_ssl\_key system variable, 777

admin\_tls\_ciphersuites system variable, 778

admin\_tls\_version system variable, 778

ADO.NET, 6162

AES\_DECRYPT(), 2303

AES\_ENCRYPT(), 2303

After create

thread state, 1893

age

calculating, 331

aggregate functions, 2420

ai-increment option

ndb\_import, 4389

ai-offset option

ndb\_import, 4389

ai-prefetch-sz option

ndb\_import, 4389

AIO, 6162

alias names

case sensitivity, 1923

aliases

for expressions, 2438

for tables, 2691

in GROUP BY clauses, 2438

names, 1919

on expressions, 2691

ALL, 2712

SELECT modifier, 2695

ALL join type

optimizer, 1818

ALL privilege, 1213

ALL PRIVILEGES privilege, 1213

all-databases option

mysqlcheck, 480

mysqldump, 511

mysqlpump, 535

all-in- 1 option

mysqlcheck, 480

all-tablespaces option

mysqldump, 502

Alliance Key Manager

keyring\_okv keyring plugin, 1459

allow-keywords option

mysqldump, 502

allow-mismatches option

innochecksum, 574

allow-pk-changes option

ndb\_restore, 4432

allow-suspicious-udfs option

mysqld, 747

AllowSpinOverhead, 4186

AllowUnresolvedHostNames, 4287

ALLOW\_INVALID\_DATES SQL mode, 997

ALTER COLUMN, 2516

ALTER DATABASE, 2494

removed features, 54

ALTER EVENT, 2499

and replication, 3715

ALTER FUNCTION, 2501

ALTER INSTANCE, 2501

ALTER LOGFILE GROUP, 2503

(see also [NDB Cluster Disk Data](#_bookmark1))

ALTER privilege, 1213

ALTER PROCEDURE, 2504

ALTER RESOURCE GROUP statement, 2917

ALTER ROUTINE privilege, 1213

ALTER SCHEMA, 2494

ALTER SERVER, 2505

ALTER TABLE, 2505, 2516, 5364

and replication metadata repositories, 3648

monitoring, 3363

ROW\_FORMAT, 3202

ALTER TABLE ... UPGRADE PARTITIONING

removed features, 58

ALTER TABLESPACE

general tablespace, 2528

NDB Cluster Disk Data, 2528

undo tablespace, 2528

ALTER USER statement, 1267, 2866

ALTER VIEW, 2530

altering

database, 2494

schema, 2494

altering table

thread state, 1893

altering user accounts, 2866

analyze option

myisamchk, 587

mysqlcheck, 481

ANALYZE TABLE

and partitioning, 4775

ANALYZE TABLE statement, 2920

Analyzing

thread state, 1894

AND

bitwise, 2299

logical, 2169

anonymous user, 1241, 1244

ANSI, 6162

ANSI mode

running, 89

ansi option

mysqld, 747

ANSI SQL mode, 997, 1002

ANSI\_QUOTES SQL mode, 997

ANY, 2711

ANY\_VALUE(), 2462

Apache, 350

API, 6162

API node (NDB Cluster)

defined, 3990

API nodes (see SQL nodes)

APIs, 5267

list of, 103

Perl, 5271

append option

ndb\_restore, 4434

APPLICABLE\_ROLES

INFORMATION\_SCHEMA table, 4848

application error handling, 1207

application programming interface (API), 6162

APPLICATION\_PASSWORD\_ADMIN privilege, 1219

apply, 6162

apply-replica-statements option

mysqldump, 504

apply-slave-statements option

mysqldump, 504

apply\_status table (OBSOLETE), 4686

(see also [NDB Cluster replication](#_bookmark2))

approximate-value literals, 2477

approximate-value numeric literals, 1910, 2478

Arbitration, 4170

ArbitrationDelay, 4114, 4218

ArbitrationRank, 4113, 4218

ArbitrationTimeout, 4169

arbitrator\_validity\_detail

ndbinfo table, 4588

arbitrator\_validity\_summary

ndbinfo table, 4588

ARCHIVE storage engine, 3423, 3441

Area()

removed features, 53

arithmetic expressions, 2177

arithmetic functions, 2290

arithmetic operators, 2290

.ARM file, 6161

array

JSON, 2108

.ARZ file, 6161

AS, 2691, 2698, 6162

AsBinary()

removed features, 53

ASCII

deprecated features, 47

ASCII(), 2211

ASIN(), 2179

ASP.net, 6162

assembly, 6162

assigning roles, 2916

assignment operator

:=, 2170

=, 2171

assignment operators, 2170

AsText()

removed features, 53

AsWKB()

removed features, 53

AsWKT()

removed features, 53

asymmetric\_decrypt(), 1651

asymmetric\_decrypt() legacy function, 1655

asymmetric\_derive() legacy function, 1655

asymmetric\_encrypt(), 1651

asymmetric\_encrypt() legacy function, 1656

asymmetric\_sign(), 1652

asymmetric\_sign() legacy function, 1657

asymmetric\_verify(), 1652

asymmetric\_verify() legacy function, 1657

asynchronous I/O, 3161, 6162

asynchronous replication (see [NDB Cluster replication](#_bookmark2))

asynchronous\_connection\_failover\_add\_managed() function, 2813

asynchronous\_connection\_failover\_add\_source() function, 2812

asynchronous\_connection\_failover\_delete\_managed() function, 2815

asynchronous\_connection\_failover\_delete\_source() function, 2813

asynchronous\_connection\_failover\_reset() function, 2815

ATAN(), 2180

ATAN2(), 2180

atomic, 6163

atomic DDL, 2488, 6163

new features, 9

atomic instruction, 6163

attackers

security against,

1199

attribute demotion

replication, 3709

attribute promotion

replication, 3709

attributes

resource groups,

1029

audit API functions

audit\_api\_message\_emit\_udf(), 1596

audit log encryption functions

audit\_log\_encryption\_password\_get(), 1539, 1575

audit\_log\_encryption\_password\_set(), 1539, 1576

audit log filtering

event field replacement, 1566

legacy mode, 1551, 1562, 1572

rule based, 1549

audit log filtering functions

audit\_log\_filter\_flush(), 1576

audit\_log\_filter\_remove\_filter(), 1577

audit\_log\_filter\_remove\_user(), 1577

audit\_log\_filter\_set\_filter(), 1578

audit\_log\_filter\_set\_user(), 1579

audit log reading functions

audit\_log\_read(), 1546, 1579

audit\_log\_read\_bookmark(), 1546, 1581

audit log rotate functions

audit\_log\_rotate(), 1581

audit plugin

sha2\_cache\_cleaner, 1341

audit-log option

mysqld, 1582

AUDIT\_ABORT\_EXEMPT privilege, 1219

AUDIT\_ADMIN privilege, 1219

audit\_api\_message\_emit\_udf() audit API function, 1596

audit\_log plugin, 1512

installing, 1513

audit\_log\_buffer\_size system variable, 1583

audit\_log\_compression system variable, 1584

audit\_log\_connection\_policy system variable, 1584

audit\_log\_current\_session system variable, 1585

Audit\_log\_current\_size status variable, 1594

audit\_log\_disable variable, 1585

audit\_log\_encryption system variable, 1585

audit\_log\_encryption\_password\_get() audit log encryption function, 1539, 1575

audit\_log\_encryption\_password\_set() audit log encryption function, 1539, 1576

Audit\_log\_events status variable, 1594

Audit\_log\_events\_filtered status variable, 1594

Audit\_log\_events\_lost status variable, 1594

Audit\_log\_events\_written status variable, 1595

Audit\_log\_event\_max\_drop\_size status variable, 1594

audit\_log\_exclude\_accounts system variable, 1585

audit\_log\_file system variable, 1545, 1586

audit\_log\_filter table

system table, 1044

audit\_log\_filter\_flush() audit log filtering function, 1576

audit\_log\_filter\_id system variable, 1586

audit\_log\_filter\_remove\_filter() audit log filtering function, 1577

audit\_log\_filter\_remove\_user() audit log filtering function, 1577

audit\_log\_filter\_set\_filter() audit log filtering function, 1578

audit\_log\_filter\_set\_user() audit log filtering function, 1579

audit\_log\_flush system variable, 1587

audit\_log\_format system variable, 1587

audit\_log\_format\_unix\_timestamp system variable, 1587

audit\_log\_include\_accounts system variable, 1588

audit\_log\_max\_size system variable, 1588

audit\_log\_password\_history\_keep\_days system variable, 1589

audit\_log\_policy system variable, 1590

audit\_log\_prune\_seconds system variable, 1591

audit\_log\_read() audit log reading function, 1546, 1579

audit\_log\_read\_bookmark() audit log reading function, 1546, 1581

audit\_log\_read\_buffer\_size system variable, 1549, 1592

audit\_log\_rotate() audit log rotate function, 1581

audit\_log\_rotate\_on\_size system variable, 1592

audit\_log\_statement\_policy system variable, 1593

audit\_log\_strategy system variable, 1594

Audit\_log\_total\_size status variable, 1595

audit\_log\_user table

system table, 1044

Audit\_log\_write\_waits status variable, 1595

authentication

FIDO, 1397

for the InnoDB memcached interface, 3391

Kerberos, 1381

LDAP, 1361

multifactor, 1286

SASL, 1361

authentication plugin

authentication\_fido, 1397

authentication\_fido\_client, 1397

authentication\_kerberos, 1381

authentication\_kerberos\_client, 1381

authentication\_ldap\_sasl, 1361

authentication\_ldap\_sasl\_client, 1361

authentication\_ldap\_simple, 1361

authentication\_pam, 1346

authentication\_windows, 1357

authentication\_windows\_client, 1357

auth\_socket, 1395

auth\_test\_plugin, 1403

caching\_sha2\_password, 1336

mysql\_clear\_password, 1346

mysql\_clear\_plugin, 1361

mysql\_native\_password, 1336

mysql\_no\_login, 1393

sha256\_password, 1342

test\_plugin\_server, 1403

authentication plugins

client/server compatibility, 1284

client/server protocol, 1284

default plugin, 1283

authentication server, 6163

authentication\_fido authentication plugin, 1397

authentication\_fido\_client authentication plugin, 1397

authentication\_fido\_rp\_id system variable, 1406

authentication\_kerberos authentication plugin, 1381

authentication\_kerberos\_client authentication plugin, 1381

AUTHENTICATION\_KERBEROS\_CLIENT\_LOG environment variable, 646, 1392

authentication\_kerberos\_service\_key\_tab system variable, 1406

authentication\_kerberos\_service\_principal system variable, 1407

AUTHENTICATION\_LDAP\_CLIENT\_LOG environment variable, 646, 1413

authentication\_ldap\_sasl\_auth\_method\_name system variable, 1407

authentication\_ldap\_sasl\_bind\_base\_dn system variable, 1408

authentication\_ldap\_sasl\_bind\_root\_dn system variable, 1409

authentication\_ldap\_sasl\_bind\_root\_pwd system variable, 1410

authentication\_ldap\_sasl\_ca\_path system variable, 1410

authentication\_ldap\_sasl\_group\_search\_attr system variable, 1410

authentication\_ldap\_sasl\_group\_search\_filter system variable, 1411

authentication\_ldap\_sasl\_init\_pool\_size system variable, 1411

authentication\_ldap\_sasl\_log\_status system variable, 1412

authentication\_ldap\_sasl\_max\_pool\_size system variable, 1413

authentication\_ldap\_sasl\_referral system variable, 1413

authentication\_ldap\_sasl\_server\_host system variable, 1414

authentication\_ldap\_sasl\_server\_port system variable, 1414

Authentication\_ldap\_sasl\_supported\_methods status variable, 968

authentication\_ldap\_sasl\_tls system variable, 1414

authentication\_ldap\_sasl\_user\_search\_attr system variable, 1415

authentication\_ldap\_simple\_auth\_method\_name system variable, 1415

authentication\_ldap\_simple\_bind\_base\_dn system variable, 1416

authentication\_ldap\_simple\_bind\_root\_dn system variable, 1416

authentication\_ldap\_simple\_bind\_root\_pwd system variable, 1417

authentication\_ldap\_simple\_ca\_path system variable, 1417

authentication\_ldap\_simple\_group\_search\_attr system variable, 1418

authentication\_ldap\_simple\_group\_search\_filter system variable, 1418

authentication\_ldap\_simple\_init\_pool\_size system variable, 1419

authentication\_ldap\_simple\_log\_status system variable, 1419

authentication\_ldap\_simple\_max\_pool\_size system variable, 1420

authentication\_ldap\_simple\_referral system variable, 1420

authentication\_ldap\_simple\_server\_host system variable, 1421

authentication\_ldap\_simple\_server\_port system variable, 1422

authentication\_ldap\_simple\_tls system variable, 1423

authentication\_ldap\_simple\_user\_search\_attr system variable, 1423

authentication\_pam authentication plugin, 1346

AUTHENTICATION\_PAM\_LOG environment variable, 646, 1356

authentication\_policy system variable, 778, 1283

AUTHENTICATION\_POLICY\_ADMIN privilege, 1219

authentication\_windows authentication plugin, 1357

authentication\_windows\_client authentication plugin, 1357

authentication\_windows\_log\_level system variable, 782

authentication\_windows\_use\_principal\_name system variable, 782

auth\_socket authentication plugin, 1395

auth\_test\_plugin authentication plugin, 1403

auto-generate-sql option

mysqlslap, 561

auto-generate-sql-add-autoincrement option

mysqlslap, 561

auto-generate-sql-execute-number option

mysqlslap, 561

auto-generate-sql-guid-primary option

mysqlslap, 561

auto-generate-sql-load-type option

mysqlslap, 561

auto-generate-sql-secondary-indexes option

mysqlslap, 562

auto-generate-sql-unique-query-number option

mysqlslap, 562

auto-generate-sql-unique-write-number option

mysqlslap, 562

auto-generate-sql-write-number option

mysqlslap, 562

auto-inc lock, 3114

auto-inc option

ndb\_desc, 4370

auto-increment, 3067, 3067, 3073, 3074, 6163

auto-increment locking, 6163

auto-rehash option

mysql, 435

auto-repair option

mysqlcheck, 481

auto-vertical-output option

mysql, 435

auto.cnf file, 3512

and SHOW REPLICAS statement, 2981

autocommit, 6164

autocommit mode, 3121

autocommit system variable, 783

AutomaticThreadConfig, 4188

automatic\_sp\_privileges system variable, 783

AutoReconnect

API and SQL nodes, 4221

autowrapped JSON values, 2112

auto\_generate\_certs system variable, 784

AUTO\_INCREMENT, 348, 2061

and NULL values, 5360

and replication, 3704

auto\_increment\_increment system variable, 3522

auto\_increment\_offset system variable, 3524

availability, 6164

AVG(), 2421

AVG(DISTINCT), 2421

avoid\_temporal\_upgrade system variable, 784

**B**

B-tree, 6164

B-tree indexes, 1773, 3075

background threads, 3161

read, 3160

write, 3160

backslash

escape character, 1907

backspace (\b), 1908, 2399, 2672

backticks, 6164

backup, 6164

BACKUP Events (NDB Cluster), 4532

backup identifiers

native backup and restore, 4553

backup lock

new features, 29

backup option

myisamchk, 585

myisampack, 596

backup-key option

ndb\_print\_backup\_file, 4418

backup-key-from-stdin option

ndb\_print\_backup\_file, 4418

backup-password option

ndb\_print\_backup\_file, 4418

ndb\_restore, 4434

backup-password-from-stdin option

ndb\_mgm, 4337

ndb\_print\_backup\_file, 4419

ndb\_restore, 4435

backup-path option

ndb\_restore, 4434

BackupDataBufferSize, 4178, 4554

BackupDataDir, 4123

BackupDiskWriteSpeedPct, 4179

backupid option

ndb\_restore, 4435

BackupLogBufferSize, 4179, 4554

BackupMaxWriteSize, 4181, 4555

BackupMemory, 4180, 4554

BackupReportFrequency, 4180

backups, 1667, 5274

databases and tables, 487, 528

in NDB Cluster, 4428, 4550, 4550, 4551, 4554

in NDB Cluster replication, 4699

InnoDB, 3375

with mysqldump, 1676

backups, troubleshooting

in NDB Cluster, 4555

BackupWriteSize, 4181, 4554

BACKUP\_ADMIN privilege, 1219

back\_log system variable, 785

base column, 6165

base64-output option

mysqlbinlog, 620

basedir option

mysql.server, 406

mysqld, 747

mysqld\_safe, 400

basedir system variable, 785

batch mode, 341

batch option

mysql, 435

batch SQL files, 428

BatchByteSize, 4219

Batched Key Access

optimization, 1725, 1726

batched updates (NDB Cluster Replication), 4696

BatchSize, 4219

BatchSizePerLocalScan, 4136

BEGIN, 2745, 2830

labels, 2831

XA transactions, 2760

BENCHMARK(), 2313

benchmarks, 1889

beta, 6165

BETWEEN ... AND, 2165

bidirectional replication

in NDB Cluster, 4705

NDB Cluster, 4713

big5, 5312

BIGINT data type, 2058

big\_tables system variable, 786

BIN(), 2212

BINARY, 2267

deprecated features, 47, 49

binary collation, 2002

BINARY data type, 2078, 2081

binary distributions

installing, 126

binary log, 1071, 6165

event groups, 3632

invisible columns, 2612

binary log encryption, 3666

binary logging

ALTER USER, 2881

and NDB Cluster, 4042

CREATE USER, 2894

binary-as-hex option

mysql, 435

binary-mode option

mysql, 436

bind-address option

mysql, 436

mysqladmin, 470

mysqlbinlog, 620

mysqlcheck, 481

mysqldump, 497

mysqlimport, 521

mysqlpump, 535

mysqlshow, 551

mysql\_upgrade, 423

ndb\_mgmd, 4326

bind\_address system variable, 786

binlog, 6165

Binlog Dump

thread command, 1891

BINLOG statement, 3000

mysqlbinlog output, 633

binlog-checksum option

mysqld, 3592

binlog-do-db option

mysqld, 3590

binlog-ignore-db option

mysqld, 3591

binlog-row-event-max-size option

mysqlbinlog, 620

mysqld, 3588

BINLOG\_ADMIN privilege, 1219

Binlog\_cache\_disk\_use status variable, 969

binlog\_cache\_size system variable, 3593

Binlog\_cache\_use status variable, 969

binlog\_checksum system variable, 3594

binlog\_direct\_non\_transactional\_updates system variable, 3595

binlog\_encryption system variable, 3595

BINLOG\_ENCRYPTION\_ADMIN privilege, 1219

binlog\_error\_action system variable, 3596

binlog\_expire\_logs\_auto\_purge system variable, 3598

binlog\_expire\_logs\_seconds, 3597

binlog\_format

BLACKHOLE, 3705

binlog\_format system variable, 3598

binlog\_group\_commit\_sync\_delay, 3600

binlog\_group\_commit\_sync\_no\_delay\_count, 3601

binlog\_gtid\_simple\_recovery, 3620

binlog\_index table (OBSOLETE) (see [NDB Cluster replication](#_bookmark2))

binlog\_max\_flush\_queue\_time system variable, 3601

binlog\_order\_commits system variable, 3601

binlog\_rotate\_encryption\_master\_key\_at\_startup system variable, 3602

binlog\_rows\_query\_log\_events system variable, 3606

binlog\_row\_event\_max\_size system variable, 3602

binlog\_row\_image system variable, 3603

binlog\_row\_metadata system variable, 3604

binlog\_row\_value\_options system variable, 3605

Binlog\_stmt\_cache\_disk\_use status variable, 969

binlog\_stmt\_cache\_size system variable, 3606

Binlog\_stmt\_cache\_use status variable, 969

binlog\_transaction\_compression system variable, 3607

binlog\_transaction\_compression\_level\_zstd system variable, 3608

binlog\_transaction\_dependency\_history\_size system variable, 3610

binlog\_transaction\_dependency\_tracking system variable, 3609

BIN\_TO\_UUID(), 2464

BIT data type, 2057

bit functions, 2290

example, 347

bit operations

bit-value literals, 1919

hexadecimal literals, 1917

bit operators, 2290

bit-value literal introducer, 1918

bit-value literals, 1917

bit operations, 1919

BIT\_AND(), 2421

BIT\_COUNT, 347

BIT\_COUNT(), 2301

BIT\_LENGTH(), 2212

BIT\_OR, 347

BIT\_OR(), 2422

BIT\_XOR(), 2422

BLACKHOLE

binlog\_format, 3705

replication, 3705

BLACKHOLE storage engine, 3423, 3443

blind query expansion, 2249, 6165

BLOB, 6165

BLOB columns

default values, 2083

indexing, 1769, 2566

inserting binary data, 1909

size, 2128

BLOB data type, 2078, 2082

blob-info option

ndb\_desc, 4370

blobs

ndbinfo table, 4590

BLOB\_INLINE\_SIZE, 2616

Block Nested-Loop

optimization, 1725, 1726

Block Nested-Loop join algorithm, 1713

block-search option

myisamchk, 587

blocked hosts

unblocking, 1014

blocks

ndbinfo table, 4591

block\_encryption\_mode system variable, 788

BOOL data type, 2057

BOOLEAN data type, 2057

boolean literals, 1919

boolean options, 367

Boolean search, 2244

bottleneck, 6165

bounce, 6166

brackets

square, 2056

buddy allocator, 3330, 6166

buffer, 6166

buffer pool, 1863, 3145, 3150, 3151, 3152, 3153, 3155, 6166

and compressed tables, 3190

monitoring, 3043, 3148, 3157

buffer pool instance, 6166

buffer sizes, 1863, 3145

client, 5267

Buffer()

removed features, 53

bugs

known, 5365

NDB Cluster

reporting, 4382

reporting, 2, 84

bugs database, 84

bugs.mysql.com, 84

BuildIndexThreads, 4183

BUILD\_CONFIG option

CMake, 242

build\_id system variable, 788

built-in, 6166

built-in functions

reference, 2133

built-in operators

reference, 2133

bulk loading

for InnoDB tables, 1799

for MyISAM tables, 1808

bulk\_insert\_buffer\_size system variable, 789, 3430

BUNDLE\_RUNTIME\_LIBRARIES option

CMake, 242

business rules, 6166

Bytes\_received status variable, 969

Bytes\_sent status variable, 969

**C**

C, 6167

C API, 5267, 5270, 6167

FAQ, 5322

new features, 30

C#, 6167

C++, 5270, 6167

C:\my.cnf option file, 1176

cache, 6167

CACHE INDEX statement, 3000

caches

clearing, 3002

cache\_policies table, 3408

caching\_sha2\_password

authentication method unknown to the client error, 285

cannot be loaded error, 285

is not supported error, 285

caching\_sha2\_password authentication plugin, 1336

compatibility, 284

caching\_sha2\_password\_auto\_generate\_rsa\_keys system variable, 790

caching\_sha2\_password\_digest\_rounds system variable, 789

caching\_sha2\_password\_private\_key\_path system variable, 790

caching\_sha2\_password\_public\_key\_path system variable, 791

Caching\_sha2\_password\_rsa\_public\_key status variable, 969

calculating

aggregate value for a set of rows, 2420

cardinality, 2969

dates, 331

calendar, 2239

CALL, 2645

can't create/write to file, 5346

Can't reopen table

error message, 5364

CAN\_ACCESS\_COLUMN(), 2460

CAN\_ACCESS\_DATABASE(), 2460

CAN\_ACCESS\_TABLE(), 2461

CAN\_ACCESS\_USER(), 2461

CAN\_ACCESS\_VIEW(), 2461

cardinality, 1745, 6167

carriage return (\r), 1908, 2399, 2672

CASE, 2172, 2833

case sensitivity

access checking, 1237

account names, 1239

in identifiers, 1923

in names, 1923

in searches, 5357

in string comparisons, 2225

of database names, 90

of replication filtering options, 3656

of table names, 90

CAST, 2268

cast functions, 2266

new features, 31

cast operators, 2266

casts, 2157, 2163, 2266

catalogs table

data dictionary table, 1040

CC environment variable, 263, 646

CEIL(), 2180

CEILING(), 2180

Centroid()

removed features, 53

.cfg file, 6167

cflags option

mysql\_config, 642

change buffer, 3045, 6168

monitoring, 3048

change buffering, 6168

disabling, 3047

CHANGE MASTER TO, 2768

in NDB Cluster, 4693

CHANGE REPLICATION FILTER, 2784

CHANGE REPLICATION SOURCE TO, 2786

in NDB Cluster, 4693

Change user

thread command, 1891

changes to privileges, 1266

changing

column, 2514

field, 2514

socket location, 406, 5356

table, 2505, 2516, 5364

Changing master

thread state, 1903

Changing replication source

thread state, 1904

channel, 3641

commands, 3642

CHAR data type, 2076, 2077

CHAR VARYING data type, 2078

CHAR(), 2212

CHARACTER data type, 2077

character set introducer, 1987

character set repertoire, 2011

character sets, 1974

adding, 2034

and replication, 3705

Asian, 2027

Baltic, 2027

binary, 2032

Central European, 2025

Cyrillic, 2027

Middle East, 2026

new features, 23

repertoire, 1977

restrictions, 2033

South European, 2026

Unicode, 2016

West European, 2023

CHARACTER VARYING data type, 2078

character-set-client-handshake option

mysqld, 747

character-sets-dir option

myisamchk, 585

myisampack, 596

mysql, 436

mysqladmin, 470

mysqlbinlog, 620

mysqlcheck, 481

mysqldump, 504

mysqlimport, 521

mysqlpump, 535

mysqlshow, 551

mysql\_upgrade, 424

ndbd, 4309

ndbinfo\_select\_all, 4319

ndb\_blob\_tool, 4343

ndb\_config, 4358

ndb\_delete\_all, 4361

ndb\_desc, 4370

ndb\_drop\_index, 4375

ndb\_drop\_table, 4380

ndb\_import, 4390

ndb\_index\_stat, 4403

ndb\_mgm, 4337

ndb\_mgmd, 4326

ndb\_move\_data, 4410

ndb\_restore, 4435

ndb\_select\_all, 4464

ndb\_select\_count, 4470

ndb\_show\_tables, 4474

ndb\_waiter, 4487

characters

multibyte, 2037

CHARACTER\_LENGTH(), 2213

CHARACTER\_SETS

INFORMATION\_SCHEMA table, 4849

character\_sets table

data dictionary table, 1040

character\_sets\_dir system variable, 794

character\_set\_client system variable, 791

character\_set\_connection system variable, 792

character\_set\_database system variable, 792

character\_set\_filesystem system variable, 792

character\_set\_results system variable, 793

character\_set\_server system variable, 793

character\_set\_system system variable, 793

charset command

mysql, 450

charset option

comp\_err, 411

CHARSET(), 2313

CHAR\_LENGTH(), 2213

CHECK constraints

ALTER TABLE, 2518

CREATE TABLE, 2601

RENAME TABLE, 2643

SHOW CREATE TABLE, 2953

with JSON\_SCHEMA\_VALID(), 2409

check option

myisamchk, 584

mysqlcheck, 481

check options

myisamchk, 584

CHECK TABLE

and partitioning, 4775

CHECK TABLE statement, 2926

check-missing option

ndb\_blob\_tool, 4343

check-only-changed option

myisamchk, 584

mysqlcheck, 481

check-orphans option

ndb\_blob\_tool, 4343

check-upgrade option

mysqlcheck, 481

checking

tables for errors, 1686

Checking master version

thread state, 1901

checking permissions

thread state, 1894

Checking source version

thread state, 1901

Checking table

thread state, 1894

checkpoint, 6168

CHECKPOINT Events (NDB Cluster), 4527

Checksum, 4287

checksum, 6168

Checksum (NDB Cluster), 4296

checksum errors, 220

CHECKSUM TABLE

and replication, 3705

CHECKSUM TABLE statement, 2929

CHECK\_CONSTRAINTS

INFORMATION\_SCHEMA table, 4849

check\_constraints table

data dictionary table, 1040

check\_proxy\_users system variable, 794, 1296

child table, 6169

Chinese, Japanese, Korean character sets

frequently asked questions, 5312

choosing

a MySQL version, 108

data types, 2129

chroot option

mysqld, 747

CIDR notation

in account names, 1239

circular replication

in NDB Cluster, 4679, 4705, 4713

CJK (Chinese, Japanese, Korean)

Access, PHP, etc., 5312

availability of specific characters, 5312

big5, 5312

character sets available, 5312

characters displayed as question marks, 5312

CJKV, 5312

collations, 5312, 5312

conversion problems with Japanese character sets, 5312

data truncation, 5312

Database and table names, 5312

documentation in Chinese, 5312

documentation in Japanese, 5312

documentation in Korean, 5312

FAQ, 5312

gb2312, gbk, 5312

Japanese character sets, 5312

Korean character set, 5312

LIKE and FULLTEXT, 5312

MySQL 4.0 behavior, 5312

ORDER BY treatment, 5312, 5312

problems with Access, PHP, etc., 5312

problems with Big5 character sets (Chinese), 5312

problems with data truncation, 5312

problems with euckr character set (Korean), 5312

problems with GB character sets (Chinese), 5312

problems with LIKE and FULLTEXT, 5312

problems with Yen sign (Japanese), 5312

rejected characters, 5312

sort order problems, 5312, 5312

sorting problems, 5312, 5312

testing availability of characters, 5312

Unicode collations, 5312

Vietnamese, 5312

Yen sign, 5312

ClassicFragmentation

ndbmtd, 4188

clean page, 6169

clean shutdown, 1037, 1171, 3721, 6169

cleaning up

thread state, 1894

clear command

mysql, 450

Clearing

thread state, 1905

clearing

caches, 3002

client, 6169

signal handling, 650

client connections, 1007

client libraries, 6169

client programs, 355

client tools, 5267

client-side prepared statement, 6169

clients

debugging, 1182

CLOB, 6169

CLONE, 2939

clone plugin, 1133

clone\_progress table, 1147

clone\_status table, 1147

cloning compressed data, 1143

cloning data locally, 1136

cloning encrypted data, 1143

cloning for replication, 1144

cloning remote data, 1137, 1140

cloning to a named directory, 1141

Com\_clone status variable, 1151

configuring an encrypted connection, 1141

directories and files, 1146

failure handling, 1146

installing, 1135

limitations, 1159

monitoring, 1147

monitoring stage events, 1148

new features, 32

performance schema instruments, 1150

remote cloning prerequisites, 1138

stopping a cloning operation, 1151

system variables, 1152

CLONE\_ADMIN privilege, 1220

clone\_autotune\_concurrency system variable, 1152

clone\_block\_ddl system variable, 1153

clone\_buffer\_size system variable, 1153

clone\_ddl\_timeout system variable, 1154

clone\_delay\_after\_data\_drop system variable, 1154

clone\_donor\_timeout\_after\_network\_failure variable, 1155

clone\_enable\_compression system variable, 1155

clone\_max\_concurrency system variable, 1156

clone\_max\_data\_bandwidth system variable, 1156

clone\_max\_network\_bandwidth system variable, 1157

clone\_progress table, 1147

performance\_schema, 5104

clone\_ssl\_ca system variable, 1157

clone\_ssl\_cert system variable, 1157

clone\_ssl\_key system variable, 1158

clone\_status table, 1147

performance\_schema, 5103

clone\_valid\_donor\_list system variable, 1158

cloning data, 1134

cloning tables, 2589

CLOSE, 2838

Close stmt

thread command, 1892

closing

tables, 1786

closing tables

thread state, 1894

cluster database (OBSOLETE) (see [NDB Cluster replication](#_bookmark2))

cluster logs, 4523, 4525

cluster-config-suffix option

ndb\_config, 4349

ndb\_mgmd, 4326

clustered index, 6169

InnoDB, 3074

Clustering (see [NDB Cluster](#_bookmark3))

CLUSTERLOG commands (NDB Cluster), 4525

CLUSTERLOG STATISTICS command (NDB Cluster), 4532

cluster\_locks

ndbinfo table, 4591

cluster\_operations

ndbinfo table, 4592

cluster\_replication database (OBSOLETE) (see [NDB Cluster replication](#_bookmark2))

cluster\_transactions

ndbinfo table, 4594

CMake

ADD\_GDB\_INDEX option, 247

BUILD\_CONFIG option, 242

BUNDLE\_RUNTIME\_LIBRARIES option, 242

CMAKE\_BUILD\_TYPE option, 242

CMAKE\_CXX\_FLAGS option, 260

CMAKE\_C\_FLAGS option, 260

CMAKE\_INSTALL\_PREFIX option, 243

COMPILATION\_COMMENT option, 247

COMPILATION\_COMMENT\_SERVER option, 247

COMPRESS\_DEBUG\_SECTIONS option, 247

CPACK\_MONOLITHIC\_INSTALL option, 243

DEFAULT\_CHARSET option, 247

DEFAULT\_COLLATION option, 247

DISABLE\_PSI\_COND option, 247

DISABLE\_PSI\_DATA\_LOCK option, 249

DISABLE\_PSI\_ERROR option, 249

DISABLE\_PSI\_FILE option, 248

DISABLE\_PSI\_IDLE option, 248

DISABLE\_PSI\_MEMORY option, 248

DISABLE\_PSI\_METADATA option, 248

DISABLE\_PSI\_MUTEX option, 248

DISABLE\_PSI\_PS option, 248

DISABLE\_PSI\_RWLOCK option, 248

DISABLE\_PSI\_SOCKET option, 248

DISABLE\_PSI\_SP option, 248

DISABLE\_PSI\_STAGE option, 248

DISABLE\_PSI\_STATEMENT option, 248

DISABLE\_PSI\_STATEMENT\_DIGEST option, 248

DISABLE\_PSI\_TABLE option, 248

DISABLE\_PSI\_THREAD option, 249

DISABLE\_PSI\_TRANSACTION option, 249

DISABLE\_SHARED option, 248

DOWNLOAD\_BOOST option, 249

DOWNLOAD\_BOOST\_TIMEOUT option, 249

ENABLED\_LOCAL\_INFILE option, 250, 1203

ENABLED\_PROFILING option, 250

ENABLE\_DOWNLOADS option, 249

ENABLE\_EXPERIMENTAL\_SYSVARS option, 249

ENABLE\_GCOV option, 249

ENABLE\_GPROF option, 249

FORCE\_COLORED\_OUTPUT option, 243

FORCE\_INSOURCE\_BUILD option, 243

FORCE\_UNSUPPORTED\_COMPILER option, 250

FPROFILE\_GENERATE option, 250

FPROFILE\_USE option, 250

HAVE\_PSI\_MEMORY\_INTERFACE option, 250

IGNORE\_AIO\_CHECK option, 251

INSTALL\_BINDIR option, 243

INSTALL\_DOCDIR option, 243

INSTALL\_DOCREADMEDIR option, 243

INSTALL\_INCLUDEDIR option, 243

INSTALL\_INFODIR option, 243

INSTALL\_LAYOUT option, 243

INSTALL\_LIBDIR option, 244

INSTALL\_MANDIR option, 244

INSTALL\_MYSQLKEYRINGDIR option, 244

INSTALL\_MYSQLSHAREDIR option, 244

INSTALL\_MYSQLTESTDIR option, 244

INSTALL\_PKGCONFIGDIR option, 244

INSTALL\_PLUGINDIR option, 244

INSTALL\_PRIV\_LIBDIR option, 244

INSTALL\_SBINDIR option, 245

INSTALL\_SECURE\_FILE\_PRIVDIR option, 245

INSTALL\_SHAREDIR option, 245

INSTALL\_STATIC\_LIBRARIES option, 245

INSTALL\_SUPPORTFILESDIR option, 245

LINK\_RANDOMIZE option, 245

LINK\_RANDOMIZE\_SEED option, 245

MAX\_INDEXES option, 251

MEMCACHED\_HOME option, 261

MSVC\_CPPCHECK option, 257

MUTEX\_TYPE option, 251

MYSQLX\_TCP\_PORT option, 251

MYSQLX\_UNIX\_ADDR option, 251

MYSQL\_DATADIR option, 245

MYSQL\_MAINTAINER\_MODE option, 251

MYSQL\_PROJECT\_NAME option, 251

MYSQL\_TCP\_PORT option, 251

MYSQL\_UNIX\_ADDR option, 251

NDB\_UTILS\_LINK\_DYNAMIC, 261

ODBC\_INCLUDES option, 245

ODBC\_LIB\_DIR option, 245

OPTIMIZER\_TRACE option, 252

options, 231

REPRODUCIBLE\_BUILD option, 252

running after prior invocation, 227, 262

SHOW\_SUPPRESSED\_COMPILER\_WARNINGS option, 250

SYSCONFDIR option, 245

SYSTEMD\_PID\_DIR option, 245

SYSTEMD\_SERVICE\_NAME option, 246

TMPDIR option, 246

USE\_LD\_GOLD option, 252

USE\_LD\_LLD option, 252

VERSION file, 264

WIN\_DEBUG\_NO\_INLINE option, 252

WITHOUT\_SERVER option, 249

WITH\_ANT option, 252

WITH\_ASAN option, 252

WITH\_ASAN\_SCOPE option, 252

WITH\_AUTHENTICATION\_CLIENT\_PLUGINS option, 252

WITH\_AUTHENTICATION\_LDAP option, 252

WITH\_AUTHENTICATION\_PAM option, 253

WITH\_AWS\_SDK option, 253

WITH\_BOOST option, 253

WITH\_BUILD\_ID option, 242

WITH\_BUNDLED\_LIBEVENT option, 261

WITH\_BUNDLED\_MEMCACHED option, 261

WITH\_CLASSPATH option, 261

WITH\_CLIENT\_PROTOCOL\_TRACING option, 253

WITH\_CURL option, 254

WITH\_DEBUG option, 254

WITH\_DEFAULT\_COMPILER\_OPTIONS option, 260

WITH\_DEFAULT\_FEATURE\_SET option, 254

WITH\_DEVELOPER\_ENTITLEMENTS option, 251

WITH\_EDITLINE option, 254

WITH\_ERROR\_INSERT option, 262

WITH\_FIDO option, 254

WITH\_GMOCK option, 254

WITH\_ICU option, 255

WITH\_INNODB\_EXTRA\_DEBUG option, 255

WITH\_INNODB\_MEMCACHED option, 255

WITH\_JEMALLOC option, 255

WITH\_KEYRING\_TEST option, 256

WITH\_LIBEVENT option, 256

WITH\_LIBWRAP option, 256

WITH\_LOCK\_ORDER option, 256

WITH\_LSAN option, 256

WITH\_LTO option, 256

WITH\_LZ4 option, 256

WITH\_LZMA option, 256

WITH\_MECAB option, 257

WITH\_MSAN option, 257

WITH\_MSCRT\_DEBUG option, 257

WITH\_MYSQLX option, 257

WITH\_NDB option, 262

WITH\_NDBAPI\_EXAMPLES option, 262

WITH\_NDBCLUSTER option, 262

WITH\_NDBCLUSTER\_STORAGE\_ENGINE option, 262

WITH\_NDBMTD option, 262

WITH\_NDB\_DEBUG option, 262

WITH\_NDB\_JAVA option, 262

WITH\_NDB\_PORT option, 262

WITH\_NDB\_TEST option, 262

WITH\_NUMA option, 257

WITH\_PACKAGE\_FLAGS option, 257

WITH\_PLUGIN\_NDBCLUSTER option, 262

WITH\_PROTOBUF option, 257

WITH\_RAPID option, 258

WITH\_RAPIDJSON option, 258

WITH\_RE2 option, 258

WITH\_ROUTER option, 258

WITH\_SSL option, 258

WITH\_SYSTEMD option, 259

WITH\_SYSTEMD\_DEBUG option, 259

WITH\_SYSTEM\_LIBS option, 259

WITH\_TCMALLOC option, 259

WITH\_TEST\_TRACE\_PLUGIN option, 259

WITH\_TSAN option, 260

WITH\_UBSAN option, 260

WITH\_UNIT\_TESTS option, 260

WITH\_UNIXODBC option, 260

WITH\_VALGRIND option, 260

WITH\_WIN\_JEMALLOC option, 255

WITH\_ZLIB option, 260

WITH\_ZSTD option, 260

CMakeCache.txt file, 262

CMAKE\_BUILD\_TYPE option

CMake, 242

CMAKE\_CXX\_FLAGS option

CMake, 260

CMAKE\_C\_FLAGS option

CMake, 260

CMAKE\_INSTALL\_PREFIX option

CMake, 243

COALESCE(), 2165

code injection

XPath, 2288

coercibility

collation, 2001

COERCIBILITY(), 2313

cold backup, 6170

collating

strings, 2037

collation

adding, 2037

coercibility, 2001

INFORMATION\_SCHEMA, 2006

modifying, 2038

COLLATION(), 2314

collations, 1974

Asian, 2027

Baltic, 2027

binary, 2002, 2032

Central European, 2025

Cyrillic, 2027

Middle East, 2026

naming conventions, 1980

NO PAD, 2004, 2018, 2081

PAD SPACE, 2004, 2018, 2081

South European, 2026

Unicode, 2016

West European, 2024

\_ai suffix, 1980

\_as suffix, 1980

\_bin suffix, 1980, 2002

\_ci suffix, 1980

\_ks suffix, 1980

\_ss suffix, 1980

COLLATIONS

INFORMATION\_SCHEMA table, 4850

collations table

data dictionary table, 1040

COLLATION\_CHARACTER\_SET\_APPLICABILITY

INFORMATION\_SCHEMA table, 4851

collation\_connection system variable, 794

collation\_database system variable, 795

collation\_server system variable, 795

color option

ndb\_top, 4482

column, 6170

changing, 2514

types, 2055

column alias

problems, 5360

quoting, 1920, 5360

column comment options (NDB), 2616

column comments, 2568

column format, 2568

column index, 6170

column index prefixes and partition by KEY

deprecated features, 49

column names

case sensitivity, 1923

column prefix, 6170

column storage, 2569

column-names option

mysql, 436

column-statistics option

mysqldump, 512

mysqlpump, 535

column-type-info option

mysql, 436

columns

displaying, 548

indexes, 1769

names, 1919

other types, 2130

selecting, 329

storage requirements, 2125

COLUMNS

INFORMATION\_SCHEMA table, 4851

columns option

mysqlimport, 521

columns partitioning, 4743

columns per table

maximum, 1793

columns table

data dictionary table, 1040

COLUMNS\_EXTENSIONS

INFORMATION\_SCHEMA table, 4854

columns\_priv table

system table, 1043, 1229

COLUMN\_PRIVILEGES

INFORMATION\_SCHEMA table, 4854

COLUMN\_STATISTICS

INFORMATION\_SCHEMA table, 4855

column\_statistics table

system table, 1040, 1860

column\_type\_elements table

data dictionary table, 1040

comma-separated values data, reading, 2671, 2698

command interceptor, 6170

command option precedence, 359

command options

mysql, 429

mysqladmin, 467

mysqld, 745

command options (NDB Cluster)

mysqld, 4226

ndbd, 4306

ndbinfo\_select\_all, 4318

ndb\_mgm, 4335

ndb\_mgmd, 4324

command syntax, 4

command-line history

mysql, 456

command-line tool, 153, 428

commands

for binary distribution, 127

commands out of sync, 5347

comment syntax, 1970

comments

adding, 1970

starting, 95

comments option

mysql, 436

mysqldump, 503

COMMIT, 2745

XA transactions, 2760

commit, 6170

commit option

mysqlslap, 562

committing alter table to storage engine

thread state, 1894

Committing events to binlog

thread state, 1904

common table expressions, 344, 2734

new features, 28

optimization, 1746, 1755

compact option

mysqldump, 508

compact row format, 3200, 6170

comparison operators, 2162

comparisons

access checking, 1237

account names, 1239

trailing spaces, 2004

compatibility

with ODBC, 901, 2059, 2157, 2167, 2568, 2701

with Oracle, 90, 2429, 2514, 3014

with PostgreSQL, 91

with standard SQL, 88

compatible option

mysqldump, 508

COMPILATION\_COMMENT option

CMake, 247

COMPILATION\_COMMENT\_SERVER option

CMake, 247

compiling MySQL server

problems, 262

complete-insert option

mysqldump, 508

mysqlpump, 535

completion\_type system variable, 795

component

log\_filter\_dragnet, 1095

log\_filter\_internal, 1095

log\_sink\_internal, 1096

log\_sink\_json, 1096

log\_sink\_syseventlog, 1096

log\_sink\_test, 1096

query\_attributes, 1097

component installing

component\_keyring\_encrypted\_file, 1443

component\_keyring\_file, 1443

validate\_password, 1431

component table

system table, 1043

component uninstalling

validate\_password, 1431

component-dir option

mysql\_migrate\_keyring, 609

components, 1093

installing, 1093, 2936

security, 1335

uninstalling, 1093, 2938

component\_keyring\_encrypted\_file component, 3230

installing, 1443

component\_keyring\_encrypted\_file keyring component, 1450

component\_keyring\_file component, 3230

installing, 1443

component\_keyring\_file keyring component, 1448

component\_keyring\_oci keyring component, 1470

composite index, 6171

composite partitioning, 4755

compound statements, 2830

compress option, 381

mysql, 436

mysqladmin, 470

mysqlbinlog, 620

mysqlcheck, 481

mysqldump, 497

mysqlimport, 521

mysqlpump, 536

mysqlshow, 551

mysqlslap, 562

mysql\_upgrade, 424

ndbxfrm, 4493

COMPRESS(), 2307

compress-output option

mysqlpump, 536

compressed backup, 6171

compressed row format, 3202, 6171

compressed table, 6171

compressed tables, 595, 3433

CompressedBackup, 4181

CompressedLCP, 4152

compression, 3181, 3195, 6171

algorithms, 3188

application and schema design, 3185

BLOBs, VARCHAR and TEXT, 3189

buffer pool considerations, 3190

compressed page size, 3187

configuration characteristics, 3186

connection, 393, 3953

data and indexes, 3188

data characteristics, 3184

enabling for a table, 3182

implementation, 3188

information schema, 3330

KEY\_BLOCK\_SIZE, 3187

log file format, 3191

modification log, 3189

monitoring, 3187

overflow pages, 3189

overview, 3181

tuning, 3183

workload characteristics, 3186

compression failure, 6171

Compression status variable, 970

compression-algorithms option, 381

mysql, 437

mysqladmin, 470

mysqlbinlog, 621

mysqlcheck, 481

mysqldump, 497

mysqlimport, 521

mysqlpump, 536

mysqlshow, 551

mysqlslap, 562

mysql\_upgrade, 424

Compression\_algorithm status variable, 970

Compression\_level status variable, 970

COMPRESS\_DEBUG\_SECTIONS option

CMake, 247

comp\_err, 354, 410

charset option, 411

debug option, 411

debug-info option, 411

errmsg-file option, 411

header-file option, 411

help option, 411

in-file option, 411

in-file-errlog option, 411

in-file-toclient option, 412

name-file option, 412

out-dir option, 412

out-file option, 412

version option, 412

Com\_alter\_db\_upgrade

removed features, 54

CONCAT(), 2213

concatenation

string, 1907, 2213

CONCAT\_WS(), 2214

concurrency, 3032, 6172

of commits, 3264

of threads, 3322

tickets, 3266

concurrency option

mysqlslap, 562

concurrent inserts, 1870, 1872

concurrent\_insert system variable, 796

condition handling

INOUT parameters, 2865

OUT parameters, 2865

Conditions, 2840

conditions, 2962, 2998

cond\_instances table

performance\_schema, 5010

config-binary-file option

ndb\_config, 4350

config-cache option

ndb\_mgmd, 4327

config-file option

my\_print\_defaults, 643

ndb\_config, 4351

ndb\_mgmd, 4327

config.ini (NDB Cluster), 4063, 4099, 4100, 4335

configdir option

ndb\_mgmd, 4328

ConfigGenerationNumber, 4225

configinfo option

ndb\_config, 4350

configuration

NDB Cluster, 4078

new features, 30

server, 653

configuration file, 6172

configuration files, 1301

configure action

MySQLInstallerConsole, 156

configuring backups

in NDB Cluster, 4554

configuring NDB Cluster, 4044, 4076, 4335, 4557

Configuring NDB Cluster (concepts), 3990

config\_from\_node option

ndb\_config, 4351

config\_nodes

ndbinfo table, 4595

config\_options table, 3408

config\_params

ndbinfo table, 4596

config\_values

ndbinfo table, 4596

conflict detection status variables

NDB Cluster Replication, 4722

conflict resolution

enabling, 4714

NDB Cluster Replication, 4713

ndb\_replication table, 4688

Connect

thread command, 1892

connect command

mysql, 450

CONNECT command (NDB Cluster), 4500

connect option

ndb\_restore, 4435

Connect Out

thread command, 1892

connect-delay option

ndbd, 4309

ndbmtd, 4309

connect-expired-password option

mysql, 437

connect-retries option

ndbd, 4309

ndbinfo\_select\_all, 4319

ndbmtd, 4309

ndb\_blob\_tool, 4343

ndb\_config, 4358

ndb\_delete\_all, 4361

ndb\_desc, 4371

ndb\_drop\_index, 4375

ndb\_drop\_table, 4380

ndb\_import, 4390

ndb\_index\_stat, 4404

ndb\_mgm, 4337

ndb\_mgmd, 4328

ndb\_move\_data, 4410

ndb\_restore, 4435

ndb\_select\_all, 4464

ndb\_select\_count, 4470

ndb\_show\_tables, 4474

ndb\_waiter, 4487

connect-retry-delay option

ndbd, 4310

ndbinfo\_select\_all, 4320

ndbmtd, 4310

ndb\_blob\_tool, 4343

ndb\_config, 4358

ndb\_delete\_all, 4361

ndb\_desc, 4371

ndb\_drop\_index, 4375

ndb\_drop\_table, 4380

ndb\_import, 4390

ndb\_index\_stat, 4404

ndb\_mgm, 4337

ndb\_mgmd, 4328

ndb\_move\_data, 4410

ndb\_restore, 4436

ndb\_select\_all, 4464

ndb\_select\_count, 4470

ndb\_show\_tables, 4474

ndb\_waiter, 4488

connect-string option

ndbd, 4310

ndbinfo\_select\_all, 4320

ndb\_blob\_tool, 4343

ndb\_config, 4357

ndb\_delete\_all, 4361

ndb\_desc, 4371

ndb\_drop\_index, 4375

ndb\_drop\_table, 4380

ndb\_import, 4390

ndb\_index\_stat, 4404

ndb\_mgm, 4338

ndb\_mgmd, 4328

ndb\_move\_data, 4411

ndb\_restore, 4436

ndb\_select\_all, 4464

ndb\_select\_count, 4470

ndb\_show\_tables, 4475

ndb\_waiter, 4488

connect-timeout option

mysql, 437

mysqladmin, 470

ConnectBackoffMaxTime, 4223

ConnectCheckIntervalDelay, 4162

connecting

parameters, 384

remotely with SSH, 1332

to the server, 319, 381

using a DNS SRV record, 391

using a URI-like connection string, 384, 388

using key-value pairs, 384, 390

verification, 1240

Connecting to master

thread state, 1901

Connecting to source

thread state, 1901

connection, 6172

aborted, 5345

connection compression

classic MySQL protocol, 393

X Protocol, 3953

CONNECTION Events (NDB Cluster), 4526

connection interface

administrative, 1007

main, 1007

connection management, 1007

new features, 30

connection pool, 6172

connection string, 6172 (see [NDB Cluster](#_bookmark3))

connection-control table reference

INFORMATION\_SCHEMA, 4949

connection-server-id option

mysqlbinlog, 621

connection-timeout option

ndb\_error\_reporter, 4383

ConnectionMap, 4215

connections option

ndb\_config, 4352

ndb\_import, 4390

Connections status variable, 971

CONNECTION\_ADMIN privilege, 1220

CONNECTION\_CONTROL plugin

installing, 1424

status variables, 1429

system variables, 1428

Connection\_control\_delay\_generated status variable, 1429

connection\_control\_failed\_connections\_threshold system variable, 1428

CONNECTION\_CONTROL\_FAILED\_LOGIN\_ATTEMPTS

INFORMATION\_SCHEMA table, 4949

CONNECTION\_CONTROL\_FAILED\_LOGIN\_ATTEMPTS plugin

installing, 1424

connection\_control\_max\_connection\_delay system variable, 1428

connection\_control\_min\_connection\_delay system variable, 1429

Connection\_errors\_accept status variable, 971

Connection\_errors\_internal status variable, 971

Connection\_errors\_max\_connections status variable, 971

Connection\_errors\_peer\_address status variable, 971

Connection\_errors\_select status variable, 971

Connection\_errors\_tcpwrap status variable, 971

CONNECTION\_ID(), 2314

connection\_memory\_chunk\_size system variable, 797

connection\_memory\_limit system variable, 798

connector, 6172

Connector/C++, 5267, 5270, 6173

Connector/J, 5267, 5270, 6173

Connector/NET, 5267, 5270, 6173

Connector/Node.js, 5267, 5270

Connector/ODBC, 5267, 5270, 6173

Connector/PHP, 6173

Connector/Python, 5267, 5270

Connectors, 5267

connect\_timeout system variable, 797

consistent read, 6173

consistent reads, 3122

console option

mysqld, 748

const table

optimizer, 1816, 2695

constant table, 1696

constraint, 6173

constraints, 95

foreign keys, 2594

containers table, 3408

Contains()

removed features, 53

context option

ndb\_desc, 4371

continue option

ndb\_import, 4391

contributing companies

list of, 104

contributors

list of, 97

Control+C

statement termination, 429, 446, 2740

control-directory-number option

ndb\_print\_backup\_file, 4419

CONV(), 2180

conventions

syntax, 2

typographical, 2

CONVERT, 2272

CONVERT TO, 2519

converting HEAP to ondisk

thread state, 1894

CONVERT\_TZ(), 2190

ConvexHull()

removed features, 53

copy to tmp table

thread state, 1894

copying databases, 313

copying tables, 2590

Copying to group table

thread state, 1894

Copying to tmp table

thread state, 1894

Copying to tmp table on disk

thread state, 1894

core-file option, 3158

mysqld, 748

ndbd, 4310

ndbinfo\_select\_all, 4319

ndb\_blob\_tool, 4343

ndb\_config, 4358

ndb\_delete\_all, 4362

ndb\_desc, 4371

ndb\_drop\_index, 4376

ndb\_drop\_table, 4380

ndb\_import, 4391

ndb\_index\_stat, 4404

ndb\_mgm, 4338

ndb\_mgmd, 4329

ndb\_move\_data, 4411

ndb\_restore, 4436

ndb\_select\_all, 4464

ndb\_select\_count, 4471

ndb\_show\_tables, 4475

ndb\_waiter, 4488

core-file-size option

mysqld\_safe, 400

core\_file system variable, 798, 3158

correct-checksum option

myisamchk, 585

correlated subqueries, 2715

corruption, 3416

InnoDB, 3377

COS(), 2180

cost model

optimizer, 1856

COT(), 2180

count option

innochecksum, 573

myisam\_ftdump, 578

mysqladmin, 470

mysqlshow, 551

COUNT(), 2423

COUNT(DISTINCT), 2424

counter, 6174

counters

ndbinfo table, 4599

counting

table rows, 336

covering index, 6174

CPACK\_MONOLITHIC\_INSTALL option

CMake, 243

CPU-bound, 6174

cpudata

ndbinfo table, 4600

cpudata\_1sec

ndbinfo table, 4601

cpudata\_20sec

ndbinfo table, 4602

cpudata\_50ms

ndbinfo table, 4603

cpuinfo

ndbinfo table, 4604

cpustat

ndbinfo table, 4604

cpustat\_1sec

ndbinfo table, 4606

cpustat\_20sec

ndbinfo table, 4607

cpustat\_50ms

ndbinfo table, 4605

crash, 1176, 6174

recovery, 1685

repeated, 5352

replication, 3721

crash recovery, 6174

InnoDB, 3377, 3378

crash-safe replication, 3552, 3681

CrashOnCorruptedTuple, 4152

CRC32(), 2181

CREATE ... IF NOT EXISTS

and replication, 3706

CREATE DATABASE, 2530

Create DB

thread command, 1892

CREATE EVENT, 2531

and replication, 3715

CREATE FUNCTION, 2551

CREATE FUNCTION statement, 2935

CREATE INDEX, 2536

CREATE LOGFILE GROUP, 2550

(see also [NDB Cluster Disk Data](#_bookmark1))

CREATE NODEGROUP command (NDB Cluster), 4500

create option

mysqlslap, 562

CREATE privilege, 1213

CREATE PROCEDURE, 2551

CREATE RESOURCE GROUP statement, 2918

CREATE ROLE privilege, 1213

CREATE ROLE statement, 2881

CREATE ROUTINE privilege, 1213

CREATE SCHEMA, 2530

CREATE SERVER, 2557

CREATE SPATIAL REFERENCE SYSTEM, 2558

CREATE TABLE, 2562

DIRECTORY options

and replication, 3711

KEY\_BLOCK\_SIZE, 3187

NDB\_COLUMN options, 2616

NDB\_TABLE options, 2620

options for table compression, 3182

ROW\_FORMAT, 3202

CREATE TABLE ... SELECT

and replication, 3706

CREATE TABLESPACE, 2622

general tablespace, 2622

undo tablespace, 2622

CREATE TABLESPACE privilege, 1213

CREATE TEMPORARY TABLE

deprecated features, 48

CREATE TEMPORARY TABLES privilege, 1213

CREATE TRIGGER, 2629

CREATE USER privilege, 1213

CREATE USER statement, 1246, 1267, 2882

CREATE VIEW, 2632

CREATE VIEW privilege, 1213

create-options option

mysqldump, 508

create-schema option

mysqlslap, 562

Created\_tmp\_disk\_tables status variable, 971

Created\_tmp\_files status variable, 971

Created\_tmp\_tables status variable, 972

create\_admin\_listener\_thread system variable, 799

create\_asymmetric\_priv\_key(), 1653

create\_asymmetric\_priv\_key() legacy function, 1658

create\_asymmetric\_pub\_key(), 1654

create\_asymmetric\_pub\_key() legacy function, 1658

create\_dh\_parameters() legacy function, 1658

create\_digest(), 1654

create\_digest() legacy function, 1659

create\_synonym\_db() procedure

sys schema, 5235

creating

bug reports, 84

database, 2530

databases, 323

default startup options, 360

loadable function, 2935

schema, 2530

tables, 325

Creating index

thread state, 1894

creating roles, 2881

Creating sort index

thread state, 1894

creating table

thread state, 1894

Creating tmp table

thread state, 1895

creating user accounts, 2882

CROSS JOIN, 2698

Crosses()

removed features, 53

CRUD, 6174

CR\_SERVER\_GONE\_ERROR, 5343

CR\_SERVER\_LOST\_ERROR, 5343

CSV data, reading, 2671, 2698

csv option

mysqlslap, 562

CSV storage engine, 3423, 3440

csvopt option

ndb\_import, 4391

cte\_max\_recursion\_depth system variable, 799

CUME\_DIST(), 2443

CURDATE(), 2190

current row

window functions, 2449

CURRENT\_DATE, 2190

CURRENT\_ROLE(), 2314

CURRENT\_TIME, 2190

CURRENT\_TIMESTAMP, 2190

Current\_tls\_ca status variable, 972

Current\_tls\_capath status variable, 972

Current\_tls\_cert status variable, 972

Current\_tls\_cipher status variable, 972

Current\_tls\_ciphersuites status variable, 972

Current\_tls\_crl status variable, 972

Current\_tls\_crlpath status variable, 973

Current\_tls\_key status variable, 973

Current\_tls\_version status variable, 973

CURRENT\_USER(), 2315

cursor, 6174

Cursors, 2837

CURTIME(), 2191

CXX environment variable, 263, 646

cxxflags option

mysql\_config, 642

**D**

Daemon

thread command, 1892

daemon option

ndb\_mgmd, 4329

daemonize option

mysqld, 748

daemon\_keyring\_proxy\_plugin plugin, 1159

daemon\_memcached\_enable\_binlog system variable, 3247

daemon\_memcached\_engine\_lib\_name system variable, 3247

daemon\_memcached\_engine\_lib\_path system variable, 3247

daemon\_memcached\_option system variable, 3248

daemon\_memcached\_r\_batch\_size system variable, 3248

daemon\_memcached\_w\_batch\_size system variable, 3248

data

importing, 459, 517

loading into tables, 326

retrieving, 327

size, 1783

data dictionary, 3023, 6175

benefits, 3023

dictionary object cache, 3025

INFORMATION\_SCHEMA integration, 3026

limitations, 3030

metadata file removal, 3024

new features, 9

operational implications, 3028

schema, 3023

transactional storage, 3025

data dictionary tables

catalogs table, 1040

character\_sets table, 1040

check\_constraints table, 1040

collations table, 1040

columns table, 1040

column\_type\_elements table, 1040

dd\_properties table, 1040

events table, 1040

foreign\_keys table, 1040

foreign\_key\_column\_usage table, 1040

indexes table, 1041

index\_column\_usage table, 1041

index\_partitions table, 1041

index\_stats table, 1041

innodb\_ddl\_log table, 1041

parameters table, 1041

parameter\_type\_elements table, 1041

resource\_groups table, 1041

routines table, 1041

schemata table, 1041

st\_spatial\_reference\_systems table, 1041

tables table, 1041

tablespaces table, 1041

tablespace\_files table, 1041

table\_partitions table, 1041

table\_partition\_values table, 1041

table\_stats table, 1041

triggers table, 1041

view\_routine\_usage table, 1041

view\_table\_usage table, 1041

data directory, 6175

mysql\_upgrade\_info file, 283, 420

DATA DIRECTORY

and replication, 3711

data encryption, 3230

data files, 6175

Data Masking plugin

installing, 1627

uninstalling, 1627

data node (NDB Cluster)

defined, 3990

data nodes

memory allocation, 4184

data nodes (NDB Cluster), 4306, 4322

Data on disk (NDB Cluster)

and INFORMATION\_SCHEMA.FILES table, 4860

Data truncation with CJK characters, 5312

data type

BIGINT, 2058

BINARY, 2078, 2081

BIT, 2057

BLOB, 2078, 2082

BOOL, 2057, 2130

BOOLEAN, 2057, 2130

CHAR, 2076, 2077

CHAR VARYING, 2078

CHARACTER, 2077

CHARACTER VARYING, 2078

DATE, 2066, 2067

DATETIME, 2066, 2067

DEC, 2059

DECIMAL, 2058, 2477

DOUBLE, 2059

DOUBLE PRECISION, 2060

ENUM, 2079, 2084

FIXED, 2059

FLOAT, 2059, 2059, 2059

GEOMETRY, 2090

GEOMETRYCOLLECTION, 2090

INT, 2058

INTEGER, 2058

LINESTRING, 2090

LONG, 2082

LONGBLOB, 2079

LONGTEXT, 2079

MEDIUMBLOB, 2079

MEDIUMINT, 2058

MEDIUMTEXT, 2079

MULTILINESTRING, 2090

MULTIPOINT, 2090

MULTIPOLYGON, 2090

NATIONAL CHAR, 2077

NATIONAL VARCHAR, 2078

NCHAR, 2077

NUMERIC, 2059

NVARCHAR, 2078

POINT, 2090

POLYGON, 2090

REAL, 2060

SET, 2079, 2087

SMALLINT, 2058

TEXT, 2078, 2082

TIME, 2067, 2069

TIMESTAMP, 2066, 2067

TINYBLOB, 2078

TINYINT, 2057

TINYTEXT, 2078

VARBINARY, 2078, 2081

VARCHAR, 2076, 2078

VARCHARACTER, 2078

YEAR, 2067, 2069

data types, 2055

date and time, 2064

deprecated features, 47, 47, 47

new features, 25

numeric, 2056

string, 2076

data warehouse, 6175

data-at-rest encryption, 3230

data-file-length option

myisamchk, 585

database, 6175

altering, 2494

creating, 2530

deleting, 2635

renaming, 2642

Database information

obtaining, 2945

database metadata, 4838

database names

case sensitivity, 90, 1923

database objects

metadata, 1979

database option

mysql, 437

mysqlbinlog, 621

ndb\_blob\_tool, 4344

ndb\_delete\_all, 4362

ndb\_desc, 4371

ndb\_drop\_index, 4376

ndb\_drop\_table, 4380

ndb\_index\_stat, 4404

ndb\_move\_data, 4411

ndb\_show\_tables, 4475

DATABASE(), 2316

databases

backups, 1667

copying, 313

creating, 323, 2530

defined, 4

displaying, 548

dumping, 487, 528

information about, 340

names, 1919

replicating, 3461

selecting, 324, 3021

symbolic links, 1879

using, 323

databases option

mysqlcheck, 481

mysqldump, 511

mysqlpump, 536

DataDir, 4114, 4122

datadir option

mysql.server, 406

mysqld, 749

mysqld\_safe, 400

mysql\_ssl\_rsa\_setup, 418

datadir system variable, 799

DataMemory, 4124

data\_locks table

performance\_schema, 5079, 5182

data\_lock\_waits table

performance\_schema, 5083

DATE, 5358

date and time data types, 2064

date and time functions, 2187

date calculations, 331

DATE columns

problems, 5358

DATE data type, 2066, 2067

date data types

storage requirements, 2127

date literals, 1910

date values

problems, 2068

DATE(), 2191

DATEDIFF(), 2191

dates

used with partitioning, 4735

used with partitioning (examples), 4738, 4750, 4755, 4779

DATETIME data type, 2066, 2067

datetime\_format

removed features, 53

DATE\_ADD(), 2191

date\_format

removed features, 53

DATE\_FORMAT(), 2193

DATE\_SUB(), 2191, 2194

DAY(), 2194

Daylight Saving Time, 1027, 1781, 2206

DAYNAME(), 2194

DAYOFMONTH(), 2195

DAYOFWEEK(), 2195

DAYOFYEAR(), 2195

db table

sorting, 1244

system table, 275, 1042, 1229

db-workers option

ndb\_import, 4391

DB2

removed features, 53

DBI interface, 5271

DBI->quote, 1909

DBI->trace, 1179

DBI/DBD interface, 5271

DBI\_TRACE environment variable, 646, 1179

DBI\_USER environment variable, 646

DBUG package, 1188

DCL, 2896, 2910, 6175

DDEX provider, 6176

DDL, 2488, 2488, 6176

ddl-rewriter option

mysqld, 1122

ddl\_rewriter plugin, 1120

installing, 1121

dd\_properties table

data dictionary table, 1040

deadlock, 1869, 2754, 3127, 3131, 3131, 3135, 3135, 3306, 5179, 6176

deadlock detection, 6176

DEALLOCATE PREPARE, 2824, 2830

deb file

MySQL APT Repository, 193

MySQL SLES Repository, 193

Debug

thread command, 1892

debug option

comp\_err, 411

ibd2sdi, 570

myisamchk, 582

myisampack, 596

mysql, 437

mysqladmin, 470

mysqlbinlog, 622

mysqlcheck, 481

mysqld, 749

mysqldump, 503

mysqldumpslow, 640

mysqlimport, 522

mysqlpump, 536

mysqlshow, 551

mysqlslap, 563

mysql\_config\_editor, 604

mysql\_upgrade, 424

my\_print\_defaults, 643

debug system variable, 800

debug-check option

mysql, 437

mysqladmin, 471

mysqlbinlog, 622

mysqlcheck, 482

mysqldump, 503

mysqlimport, 522

mysqlpump, 536

mysqlshow, 551

mysqlslap, 563

mysql\_upgrade, 424

debug-info option

comp\_err, 411

mysql, 437

mysqladmin, 471

mysqlbinlog, 622

mysqlcheck, 482

mysqldump, 503

mysqlimport, 522

mysqlpump, 536

mysqlshow, 551

mysqlslap, 563

mysql\_upgrade, 424

debug-sync-timeout option

mysqld, 749

debugging

client, 1182

MySQL, 1176

server, 1176

debugging support, 231

debug\_sync system variable, 800

dec

deprecated features, 46

DEC data type, 2059

decimal arithmetic, 2477

DECIMAL data type, 2058, 2477

decimal point, 2056

DECLARE, 2831

DECODE()

removed features, 53

decode\_bits myisamchk variable, 583

decrypt option

ndb\_restore, 4436

decrypt-key option

ndbxfrm, 4493

decrypt-key-from-stdin option

ndbxfrm, 4493

decrypt-password option

ndbxfrm, 4494

decrypt-password-from-stdin option

ndbxfrm, 4494

DedicatedNode

API node, 4217

data node, 4119

management server, 4111

default

privileges, 275

default account, 275

default authentication plugin, 1283

default host name, 381

default installation location, 125

default options, 360

default proxy user, 1294

default role

ALTER USER, 2874

CREATE USER statement, 2888

default roles, 2913

DEFAULT value clause, 2122, 2567

default values, 2122, 2567, 2657

BLOB and TEXT columns, 2083

explicit, 2122

implicit, 2122

DEFAULT(), 2464

default-auth option, 372

mysql, 437

mysqladmin, 471

mysqlbinlog, 622

mysqlcheck, 482

mysqldump, 497

mysqlimport, 522

mysqlpump, 537

mysqlshow, 552

mysqlslap, 563

mysql\_upgrade, 424

default-character-set option

mysql, 438

mysqladmin, 471

mysqlcheck, 482

mysqldump, 504

mysqlimport, 522

mysqlpump, 537

mysqlshow, 552

mysql\_upgrade, 424

default-parallelism option

mysqlpump, 537

default-time-zone option

mysqld, 750

DefaultHashMapSize, 4140, 4222

DefaultOperationRedoProblemAction

API and SQL nodes, 4221

defaults-extra-file option, 366

myisamchk, 582

mysql, 438

mysqladmin, 471

mysqlbinlog, 622

mysqlcheck, 482

mysqld, 750

mysqldump, 501

mysqld\_multi, 408

mysqld\_safe, 401

mysqlimport, 522

mysqlpump, 537

mysqlshow, 552

mysqlslap, 563

mysql\_migrate\_keyring, 609

mysql\_secure\_installation, 414

mysql\_upgrade, 424

my\_print\_defaults, 643

ndbd, 4310

ndbinfo\_select\_all, 4320

ndbxfrm, 4494

ndb\_blob\_tool, 4344

ndb\_config, 4357

ndb\_delete\_all, 4362

ndb\_desc, 4371

ndb\_drop\_index, 4376

ndb\_drop\_table, 4381

ndb\_import, 4392

ndb\_index\_stat, 4404

ndb\_mgm, 4338

ndb\_mgmd, 4329

ndb\_move\_data, 4411

ndb\_perror, 4415

ndb\_print\_backup\_file, 4419

ndb\_restore, 4436

ndb\_secretsfile\_reader, 4460

ndb\_select\_all, 4465

ndb\_select\_count, 4471

ndb\_show\_tables, 4475

ndb\_top, 4482

ndb\_waiter, 4488

defaults-file option, 366

myisamchk, 582

mysql, 438

mysqladmin, 471

mysqlbinlog, 623

mysqlcheck, 482

mysqld, 750

mysqldump, 501

mysqld\_multi, 408

mysqld\_safe, 401

mysqlimport, 522

mysqlpump, 537

mysqlshow, 552

mysqlslap, 563

mysql\_migrate\_keyring, 610

mysql\_secure\_installation, 414

mysql\_upgrade, 424

my\_print\_defaults, 643

ndbd, 4311

ndbinfo\_select\_all, 4320

ndbxfrm, 4494

ndb\_blob\_tool, 4344

ndb\_config, 4356

ndb\_delete\_all, 4362

ndb\_desc, 4372

ndb\_drop\_index, 4376

ndb\_drop\_table, 4381

ndb\_import, 4391

ndb\_index\_stat, 4405

ndb\_mgm, 4338

ndb\_mgmd, 4329

ndb\_move\_data, 4411

ndb\_perror, 4415

ndb\_print\_backup\_file, 4419

ndb\_restore, 4436

ndb\_secretsfile\_reader, 4460

ndb\_select\_all, 4465

ndb\_select\_count, 4471

ndb\_show\_tables, 4475

ndb\_top, 4482

ndb\_waiter, 4488

defaults-group-suffix option, 366

myisamchk, 582

mysql, 438

mysqladmin, 471

mysqlbinlog, 623

mysqlcheck, 482

mysqld, 750

mysqldump, 501

mysqlimport, 522

mysqlpump, 537

mysqlshow, 552

mysqlslap, 563

mysql\_migrate\_keyring, 610

mysql\_secure\_installation, 414

mysql\_upgrade, 425

my\_print\_defaults, 643

ndbd, 4311

ndbinfo\_select\_all, 4320

ndbxfrm, 4494

ndb\_blob\_tool, 4344

ndb\_config, 4357

ndb\_delete\_all, 4362

ndb\_desc, 4372

ndb\_drop\_index, 4376

ndb\_drop\_table, 4381

ndb\_import, 4392

ndb\_index\_stat, 4405

ndb\_mgm, 4338

ndb\_mgmd, 4329

ndb\_move\_data, 4411

ndb\_perror, 4415

ndb\_print\_backup\_file, 4419

ndb\_restore, 4436

ndb\_secretsfile\_reader, 4461

ndb\_select\_all, 4465

ndb\_select\_count, 4471

ndb\_show\_tables, 4475

ndb\_top, 4483

ndb\_waiter, 4488

default\_authentication\_plugin

deprecated features, 49

default\_authentication\_plugin system variable, 801, 1283

DEFAULT\_CHARSET option

CMake, 247

DEFAULT\_COLLATION option

CMake, 247

default\_collation\_for\_utf8mb4 system variable, 802

default\_password\_lifetime system variable, 803

default\_roles table

system table, 1043, 1229

default\_storage\_engine system variable, 803

default\_table\_encryption, 3232

default\_table\_encryption variable, 804

default\_tmp\_storage\_engine system variable, 804

default\_week\_format system variable, 805

defer-table-indexes option

mysqlpump, 537

DEFINER privileges, 2966, 4821

DEGREES(), 2181

delay option

ndbinfo\_select\_all, 4320

DELAYED, 2664

INSERT modifier, 2660

Delayed insert

thread command, 1892

delayed replication, 3701

Delayed\_errors status variable, 973

delayed\_insert\_limit system variable, 806

Delayed\_insert\_threads status variable, 973

delayed\_insert\_timeout system variable, 806

delayed\_queue\_size system variable, 807

Delayed\_writes status variable, 973

delay\_key\_write system variable, 805, 3430

DELETE, 2646

and NDB Cluster, 4036

delete, 6176

delete buffering, 6176

delete option

mysqlimport, 522

ndb\_index\_stat, 4405

DELETE privilege, 1214

delete-master-logs option

mysqldump, 505

delete-orphans option

ndb\_blob\_tool, 4344

delete-source-logs option

mysqldump, 504

deleting

accounts, 1249

database, 2635

foreign key, 2517, 2598

function, 2936

index, 2516, 2637

primary key, 2516

rows, 5361

schema, 2635

table, 2639

user, 2895

users, 2895

deleting from main table

thread state, 1895

deleting from reference tables

thread state, 1895

deletion

mysql.sock, 5356

delimiter command

mysql, 450

delimiter option

mysql, 438

mysqlslap, 563

ndb\_select\_all, 4465

demo\_test table, 3384

denormalized, 6176

DENSE\_RANK(), 2443

deprecated features, 46

!, 48

&&, 48

--abort-slave-event-count, 49

--compress, 48

--disconnect-slave-event-count, 49

--master-info-file, 48

--no-dd-upgrade, 48

--skip-host-cache, 50

ASCII, 47

BINARY, 47, 49

column index prefixes and partition by KEY, 49

CREATE TEMPORARY TABLE, 48

data types, 47, 47, 47

dec, 46

default\_authentication\_plugin, 49

ENGINE, 47

FOUND\_ROWS(), 48

hp8, 46

InnoDB memcached plugin, 49

INSERT ... ON DUPLICATE KEY UPDATE, 49

INTO, 48

JSON\_MERGE(), 48

JSON\_TABLE() syntax, 49

literal values, 50

macce, 46

macroman, 46

max\_length\_for\_sort\_data, 48

myisamchk --parallel-recover, 49

myisam\_repair\_threads, 49

MYSQL\_OPT\_COMPRESS, 48

MYSQL\_PWD, 48

mysql\_upgrade, 48

mysql\_upgrade\_info file, 48

PAD\_CHAR\_TO\_FULL\_LENGTH, 47

relay\_log\_info\_file, 48

replica\_parallel\_type, 50

replica\_parallel\_workers, 50

sha256\_password, 47

slave\_compressed\_protocol, 48

SQL\_CALC\_FOUND\_ROWS, 48

temporal values, 50

temptable\_use\_mmap, 49

ucs2, 46

UNICODE, 47

UNION, 48

utf8mb3, 46

validate\_password plugin, 47

VALUES(), 49

||, 48

derived condition pushdown, 1758

derived tables, 2716

lateral, 1820, 2719

materialization prevention, optimization, 1746, 1755

updatable views, 4817 DESC, 3013 descending index, 6177 descending indexes, 1780 descending option

1756

ndb\_select\_all, 4465

DESCRIBE, 340, 3013

description option

myisamchk, 587

design

issues, 5365

destination-keyring option

mysql\_migrate\_keyring, 610

destination-keyring-configuration-dir option

mysql\_migrate\_keyring, 610

destroy\_tickets parameter

Kerberos authentication, 1392

DES\_DECRYPT()

removed features, 53

DES\_ENCRYPT()

removed features, 53

DES\_KEY\_FILE

removed features, 53

detach option

mysqlslap, 564

detailed-info option

ndbxfrm, 4494

development of NDB Cluster, 3997

development source tree, 229

diagnostics() procedure

sys schema, 5236

dictionary collation, German, 2025, 2025

dictionary object cache, 3025, 6177

dictionary\_columns

ndbinfo table, 4607

dictionary\_tables

ndbinfo table, 4608

DictTrace, 4177

dict\_obj\_info

ndbinfo table, 4610, 4611

dict\_obj\_types

ndbinfo table, 4614

diff-default option

ndb\_config, 4352

digits, 2056

Dimension()

removed features, 53

directory structure

default, 125

dirty page, 3249, 6177

dirty read, 6177

disable named command

mysql, 438

--disable option prefix, 367

disable-indexes option

ndb\_restore, 4437

disable-keys option

mysqldump, 512

disable-log-bin option

mysqlbinlog, 623

disabled\_storage\_engines system variable, 807

DISABLE\_PSI\_COND option

CMake, 247

DISABLE\_PSI\_DATA\_LOCK option

CMake, 249

DISABLE\_PSI\_ERROR option

CMake, 249

DISABLE\_PSI\_FILE option

CMake, 248

DISABLE\_PSI\_IDLE option

CMake, 248

DISABLE\_PSI\_MEMORY option

CMake, 248

DISABLE\_PSI\_METADATA option

CMake, 248

DISABLE\_PSI\_MUTEX option

CMake, 248

DISABLE\_PSI\_PS option

CMake, 248

DISABLE\_PSI\_RWLOCK option

CMake, 248

DISABLE\_PSI\_SOCKET option

CMake, 248

DISABLE\_PSI\_SP option

CMake, 248

DISABLE\_PSI\_STAGE option

CMake, 248

DISABLE\_PSI\_STATEMENT option

CMake, 248

DISABLE\_PSI\_STATEMENT\_DIGEST option

CMake, 248

DISABLE\_PSI\_TABLE option

CMake, 248

DISABLE\_PSI\_THREAD option

CMake, 249

DISABLE\_PSI\_TRANSACTION option

CMake, 249

DISABLE\_SHARED

removed features, 59

DISABLE\_SHARED option

CMake, 248

DISCARD TABLESPACE, 2520, 3061

discard\_or\_import\_tablespace

thread state, 1895

disconnect-slave-event-count option

mysqld, 3546

disconnecting

from the server, 319

disconnect\_on\_expired\_password system variable, 808

Disjoint()

removed features, 53

Disk Data tables (NDB Cluster) (see [NDB Cluster Disk Data](#_bookmark1))

disk failure

InnoDB, 3377

disk full, 5354

disk I/O, 1801

disk option

ndb\_select\_all, 4465

disk performance, 1877

disk-based, 6177

disk-bound, 6177

DiskDataUsingSameDisk, 4208

DiskIOThreadPool, 4203, 4208

Diskless, 4152

diskpagebuffer

ndbinfo table, 4617

DiskPageBufferEntries, 4201

DiskPageBufferMemory, 4202, 4208

disks

splitting data across, 1880

diskscan option

ndb\_delete\_all, 4362

diskstat

ndbinfo table, 4618

diskstats\_1sec

ndbinfo table, 4619

DiskSyncSize, 4167

disk\_write\_speed\_aggregate

ndbinfo table, 4615

disk\_write\_speed\_aggregate\_node

ndbinfo table, 4616

disk\_write\_speed\_base

ndbinfo table, 4614

display size, 2056

display triggers, 2994

display width, 2056

displaying

database information, 548

information

Cardinality, 2969

Collation, 2969

SHOW, 2945, 2949, 2994

SHOW statement, 2968, 2970

table status, 2991

Distance()

removed features, 53

DISTINCT, 330, 1738

AVG(), 2421

COUNT(), 2424

MAX(), 2428

MIN(), 2428

SELECT modifier, 2695

SUM(), 2429

DISTINCTROW

SELECT modifier, 2695

distinguished name

LDAP authentication, 1364

DIV, 2178

division (/), 2177

div\_precision\_increment system variable, 808

DML, 2645, 6177

DELETE statement, 2646

INSERT statement, 2656

TABLE statement, 2724

UPDATE statement, 2727

VALUES statement, 2731

DMR

MySQL releases, 108

DN (see [distinguished name](#_bookmark6))

DNS, 1012

DNS SRV records, 391, 438, 1421

dns-srv-name option

mysql, 438

DO, 2650

DocBook XML

documentation source format, 4

Docker, 311

Docker images

on Windows, 212

document id, 6177

document store, 3909

MySQL as a, 3909

Documentation

in Chinese, 5312

in Japanese, 5312

in Korean, 5312

Documenters

list of, 101

dont-ignore-systab-0 option

ndb\_restore, 4437

DOUBLE data type, 2059

DOUBLE PRECISION data type, 2060

double quote (\"), 1908, 2399

doublewrite buffer, 979, 3205, 3272, 6178

downgrades

NDB Cluster, 4070, 4536

downgrading, 314

downloading, 109

DOWNLOAD\_BOOST option

CMake, 249

DOWNLOAD\_BOOST\_TIMEOUT option

CMake, 249

dragnet.log\_error\_filter\_rules system variable, 809

dragnet.Status status variable, 974, 974

drop, 6178

DROP ... IF EXISTS

and replication, 3712

DROP DATABASE, 2635

Drop DB

thread command, 1892

DROP EVENT, 2636

DROP FOREIGN KEY, 2517, 2598

DROP FUNCTION, 2637

DROP FUNCTION statement, 2936

DROP INDEX, 2516, 2637

DROP LOGFILE GROUP, 2637

(see also [NDB Cluster Disk Data](#_bookmark1))

DROP NODEGROUP command (NDB Cluster), 4500

DROP PREPARE, 2830

DROP PRIMARY KEY, 2516

DROP privilege, 1214

DROP PROCEDURE, 2637

DROP RESOURCE GROUP statement, 2919

DROP ROLE privilege, 1214

DROP ROLE statement, 2895

DROP SCHEMA, 2635

DROP SERVER, 2638

DROP SPATIAL REFERENCE SYSTEM, 2638

DROP TABLE, 2639

and NDB Cluster, 4036

DROP TABLESPACE

general tablespace, 2640

NDB Cluster Disk Data, 2640

undo tablespace, 2640

DROP TRIGGER, 2641

DROP USER statement, 1246, 2895

DROP VIEW, 2641

drop-source option

ndb\_move\_data, 4412

dropping

accounts, 1249

user, 2895

dropping roles, 2895

dry-scp option

ndb\_error\_reporter, 4383

DSN, 6178

DTrace

removed features, 58

DUAL, 2690

dual passwords, 1275

dump option

myisam\_ftdump, 578

ndb\_index\_stat, 4405

ndb\_redo\_log\_reader, 4426

dump-date option

mysqldump, 503

dump-file option

ibd2sdi, 570

ndb\_blob\_tool, 4344

dump-replica option

mysqldump, 505

dump-slave option

mysqldump, 505

DUMPFILE, 2698

dumping

databases and tables, 487, 528

Duplicate Weedout

semijoin strategy, 1748

duplicate-key error, 3074

dynamic cursor, 6178

dynamic privileges, 1226

dynamic row format, 3201, 6178

dynamic SQL, 6178

dynamic statement, 6178

dynamic table characteristics, 3433

**E**

early adopter, 6179

early-plugin-load option

mysqld, 751

edit command

mysql, 451

ego command

mysql, 451

Eiffel, 6179

Eiffel Wrapper, 5272

ELT(), 2214

embedded, 6179

embedded server library

removed features, 56

--enable option prefix, 367

enable-cleartext-plugin option

mysql, 439

mysqladmin, 471

mysqlcheck, 482

mysqldump, 497

mysqlimport, 523

mysqlshow, 552

mysqlslap, 564

EnableAdaptiveSpinning, 4186

ENABLED\_LOCAL\_INFILE option

CMake, 250, 1203

ENABLED\_PROFILING option

CMake, 250

ENABLED\_ROLES

INFORMATION\_SCHEMA table, 4855

EnableMultithreadedBackup

ndbmtd, 4189

EnablePartialLcp, 4142

EnableRedoControl, 4147

ENABLE\_DOWNLOADS option

CMake, 249

ENABLE\_EXPERIMENTAL\_SYSVARS option

CMake, 249

ENABLE\_GCOV option

CMake, 249

ENABLE\_GPROF option

CMake, 249

ENCODE()

removed features, 53

ENCRYPT()

removed features, 53

encrypt-backup option

ndb\_mgm, 4338

encrypt-block-size option

ndbxfrm, 4496

encrypt-cipher option

ndbxfrm, 4496

encrypt-kdf-iter-count option

ndbxfrm, 4496

encrypt-key option

ndbxfrm, 4496

encrypt-key-from-stdin option

ndbxfrm, 4496

encrypt-password option

ndbxfrm, 4497

encrypt-password-from-stdin option

ndbxfrm, 4497

encrypted connections, 1306

as mandatory, 1313

command options, 374

encryption, 1199, 1306, 3230

binary log files, 3666

encryption functions, 2301

ENCRYPTION\_KEY\_ADMIN privilege, 1220

end

thread state, 1895

END, 2830

end-page option

innochecksum, 573

EndPoint()

removed features, 53

end\_markers\_in\_json system variable, 811

enforce\_gtid\_consistency system variable, 3621

ENGINE

deprecated features, 47

engine condition pushdown, 1709

engine option

mysqlslap, 564

ENGINES

INFORMATION\_SCHEMA table, 4856

engine\_cost

system table, 1857

engine\_cost table

system table, 1044

ENTER SINGLE USER MODE command (NDB Cluster), 4500

entering

320

queries,

enterprise components

MySQL Enterprise Audit, 5276

MySQL Enterprise Backup, 5274

MySQL Enterprise Data Masking and De-Identification, 5276

MySQL Enterprise Encryption, 5275

MySQL Enterprise Firewall, 5276

MySQL Enterprise Monitor, 5273

MySQL Enterprise Security, 5275

MySQL Enterprise Thread Pool, 5276

enterprise extensions

MySQL Enterprise Audit, 1512

MySQL Enterprise Data Masking and De-Identification, 1626

MySQL Enterprise Encryption, 1643

MySQL Enterprise Firewall, 1598

MySQL Enterprise Security, 1286, 1346, 1357, 1361, 1381, 1397

MySQL Enterprise Thread Pool, 1103

enterprise\_encryption.maximum\_rsa\_key\_size system variable, 810

enterprise\_encryption.rsa\_support\_legacy\_padding system variable, 810

Entrust KeyControl

keyring\_okv keyring plugin, 1459

ENUM

size, 2129

ENUM data type, 2079, 2084

Envelope()

removed features, 53

environment variable

AUTHENTICATION\_KERBEROS\_CLIENT\_LOG, 646, 1392

AUTHENTICATION\_LDAP\_CLIENT\_LOG, 646, 1413

AUTHENTICATION\_PAM\_LOG, 646, 1356

CC, 263, 646

CXX, 263, 646

DBI\_TRACE, 646, 1179

DBI\_USER, 646

HOME, 456, 646

LDAPNOINIT, 1367

LD\_LIBRARY\_PATH, 316

LD\_PRELOAD, 217

LD\_RUN\_PATH, 316, 646

LIBMYSQL\_ENABLE\_CLEARTEXT\_PLUGIN, 646

LIBMYSQL\_PLUGINS, 646

LIBMYSQL\_PLUGIN\_DIR, 646

MYSQLD\_OPTS, 217

MYSQLX\_TCP\_PORT, 646

MYSQLX\_UNIX\_PORT, 646

MYSQL\_DEBUG, 357, 646, 1182

MYSQL\_GROUP\_SUFFIX, 646

MYSQL\_HISTFILE, 456, 646

MYSQL\_HISTIGNORE, 456, 646

MYSQL\_HOME, 646

MYSQL\_HOST, 384, 646

MYSQL\_OPENSSL\_UDF\_DH\_BITS\_THRESHOLD, 646, 1648

MYSQL\_OPENSSL\_UDF\_DSA\_BITS\_THRESHOLD, 646, 1648

MYSQL\_OPENSSL\_UDF\_RSA\_BITS\_THRESHOLD, 646, 1648

MYSQL\_PS1, 646

MYSQL\_PWD, 646

MYSQL\_TCP\_PORT, 357, 646, 1175, 1176

MYSQL\_TEST\_LOGIN\_FILE, 367, 602, 646

MYSQL\_TEST\_TRACE\_CRASH, 646

MYSQL\_TEST\_TRACE\_DEBUG, 646

MYSQL\_UNIX\_PORT, 357, 646, 1175, 1176

NOTIFY\_SOCKET, 217, 646

PATH, 166, 172, 273, 358, 646

PKG\_CONFIG\_PATH, 646

SUDO\_USER, 5050

TMPDIR, 357, 646, 5355

TZ, 217, 646, 1024, 5356

UMASK, 646, 5349

UMASK\_DIR, 646, 5349

USER, 384, 646

environment variables, 357, 397, 1301

list of, 645

epoch, 1068, 2066

equal (=), 2163

Equals()

removed features, 53

eq\_ref join type

optimizer, 1816

Errcode, 644

errins-delay option

ndb\_import, 4392

errins-type option

ndb\_import, 4392

errmsg-file option

comp\_err, 411

errno, 644

Error

thread command, 1892

error codes

removed features, 56

ERROR Events (NDB Cluster), 4531

error handling

application, 1207

error log, 6179

error logs (NDB Cluster), 4316

error messages

can't find file, 5349

Can't reopen table, 5364

displaying, 644

languages, 2033, 2033

Loading local data is disabled; this must be enabled on both the client and server side, 1203 error-insert option

ndb\_move\_data, 4412

errors

access denied, 5338

and replication, 3721

checking tables for, 1686

common, 5337

directory checksum, 220

in subqueries, 2722

known, 5365

list of, 5338

lost connection, 5342

reporting, 84, 84

sources of information, 5335

error\_count system variable, 812

ERROR\_FOR\_DIVISION\_BY\_ZERO SQL mode, 997

error\_log table

performance\_schema, 5133

Error\_log\_buffered\_bytes status variable, 974

Error\_log\_buffered\_events status variable, 974

Error\_log\_expired\_events status variable, 974

Error\_log\_latest\_write status variable, 974

error\_messages

ndbinfo table, 4620

escape (\\), 1909, 2399

escape sequences

option files, 363

strings, 1907

establishing encrypted connections, 1307

estimating

query performance, 1828

event field replacement

audit log filtering, 1566

event groups, 3632

event log format (NDB Cluster), 4526

event logs (NDB Cluster), 4523, 4525, 4525

EVENT privilege, 1214

event scheduler, 4799

thread states, 1905

Event Scheduler, 4808

altering events, 2499

and MySQL privileges, 4813

and mysqladmin debug, 4813

and replication, 3714, 3715

and SHOW PROCESSLIST, 4810

concepts, 4809

creating events, 2531

dropping events, 2636

enabling and disabling, 4810

event metadata, 4812

obtaining status information, 4813

SQL statements, 4812

starting and stopping, 4810

time representation, 4812

event severity levels (NDB Cluster), 4525

event types (NDB Cluster), 4523, 4526

EventLogBufferSize, 4173

events, 4799, 4808

altering, 2499

creating, 2531

dropping, 2636

metadata, 4812

ndbinfo table, 4622

restrictions, 4831

status variables, 4815

EVENTS

INFORMATION\_SCHEMA table, 4814, 4857

events option

mysqldump, 511

mysqlpump, 537

events table

data dictionary table, 1040

events\_errors\_summary\_by\_account\_by\_error table

performance\_schema, 5130

events\_errors\_summary\_by\_host\_by\_error table

performance\_schema, 5130

events\_errors\_summary\_by\_thread\_by\_error table

performance\_schema, 5130

events\_errors\_summary\_by\_user\_by\_error table

performance\_schema, 5130

events\_errors\_summary\_global\_by\_error table

performance\_schema, 5130

events\_stages\_current table

performance\_schema, 5024

events\_stages\_history table

performance\_schema, 5025

events\_stages\_history\_long table

performance\_schema, 5025

events\_stages\_summary\_by\_account\_by\_event\_name table

performance\_schema, 5109

events\_stages\_summary\_by\_host\_by\_event\_name table

performance\_schema, 5109

events\_stages\_summary\_by\_thread\_by\_event\_name table

performance\_schema, 5109

events\_stages\_summary\_by\_user\_by\_event\_name table

performance\_schema, 5109

events\_stages\_summary\_global\_by\_event\_name table

performance\_schema, 5109

events\_statements\_current table

performance\_schema, 5029

events\_statements\_histogram\_by\_digest table

performance\_schema, 5115

events\_statements\_histogram\_global table

performance\_schema, 5115

events\_statements\_history table

performance\_schema, 5033

events\_statements\_history\_long table

performance\_schema, 5034

events\_statements\_summary\_by\_account\_by\_event\_name table

performance\_schema, 5111

events\_statements\_summary\_by\_digest table

performance\_schema, 5111

events\_statements\_summary\_by\_host\_by\_event\_name table

performance\_schema, 5111

events\_statements\_summary\_by\_program table

performance\_schema, 5111

events\_statements\_summary\_by\_thread\_by\_event\_name table

performance\_schema, 5111

events\_statements\_summary\_by\_user\_by\_event\_name table

performance\_schema, 5111

events\_statements\_summary\_global\_by\_event\_name table

performance\_schema, 5111

events\_transactions\_current table

performance\_schema, 5041

events\_transactions\_history table

performance\_schema, 5043

events\_transactions\_history\_long table

performance\_schema, 5044

events\_transactions\_summary\_by\_account\_by\_event table

performance\_schema, 5117

events\_transactions\_summary\_by\_host\_by\_event\_name table

performance\_schema, 5117

events\_transactions\_summary\_by\_thread\_by\_event\_name table

performance\_schema, 5117

events\_transactions\_summary\_by\_user\_by\_event\_name table

performance\_schema, 5117

events\_transactions\_summary\_global\_by\_event\_name table

performance\_schema, 5117

events\_waits\_current table

performance\_schema, 5017

events\_waits\_history table

performance\_schema, 5020

events\_waits\_history\_long table

performance\_schema, 5020

events\_waits\_summary\_by\_account\_by\_event\_name table

performance\_schema, 5107

events\_waits\_summary\_by\_host\_by\_event\_name table

performance\_schema, 5107

events\_waits\_summary\_by\_instance table

performance\_schema, 5107

events\_waits\_summary\_by\_thread\_by\_event\_name table

performance\_schema, 5107

events\_waits\_summary\_by\_user\_by\_event\_name table

performance\_schema, 5107

events\_waits\_summary\_global\_by\_event\_name table

performance\_schema, 5107

event\_scheduler system variable, 812

eviction, 6179

exact-value literals, 2477

exact-value numeric literals, 1910, 2478

example option

mysqld\_multi, 408

EXAMPLE storage engine, 3423, 3456

examples

compressed tables, 597

myisamchk output, 588

queries, 342

EXCEPT, 2650

parenthesized query expressions, 2684

set operations, 2704

exception interceptor, 6179

exceptions table

NDB Cluster Replication, 4720

exclude-databases option

mysqlpump, 538

ndb\_restore, 4437

exclude-events option

mysqlpump, 538

exclude-gtids option

mysqlbinlog, 623

exclude-intermediate-sql-tables option

ndb\_restore, 4437

exclude-missing-columns option

ndb\_move\_data, 4412

ndb\_restore, 4438

exclude-missing-tables option

ndb\_restore, 4438

exclude-routines option

mysqlpump, 538

exclude-tables option

mysqlpump, 538

ndb\_restore, 4438

exclude-triggers option

mysqlpump, 538

exclude-users option

mysqlpump, 538

exclusive lock, 3114, 6179

Execute

thread command, 1892

EXECUTE, 2824, 2830

execute option

mysql, 439

ndb\_mgm, 4338

EXECUTE privilege, 1214

ExecuteOnComputer, 4110, 4118, 4216

execute\_prepared\_stmt() procedure

sys schema, 5238

executing

thread state, 1895

executing SQL statements from text files, 341, 459

Execution of init\_command

thread state, 1895

execution threads (NDB Cluster), 4189

EXISTS

with subqueries, 2714

exit command

mysql, 451

EXIT command (NDB Cluster), 4501

EXIT SINGLE USER MODE command (NDB Cluster), 4501

exit-info option

mysqld, 751

EXP(), 2181

experimental system variables, 249

expired password

resetting, 1271

expired passwords, 1279

expire\_logs\_days system variable, 3611

EXPLAIN, 1811, 3013, 4776, 4777

window functions, 1744

EXPLAIN ANALYZE

new features, 33

EXPLAIN EXTENDED

removed features, 53

EXPLAIN PARTITIONS

removed features, 53

EXPLAIN used with partitioned tables, 4776

explain\_format system variable, 812

explicit default values, 2122

explicit\_defaults\_for\_timestamp system variable, 813

EXPORT\_SET(), 2214

expression aliases, 2438, 2691

expression syntax, 1963

expressions

extended, 334

extend-check option

myisamchk, 584, 585

extended option

mysqlcheck, 482

extended-insert option

mysqldump, 513

mysqlpump, 538

extensions

to standard SQL, 88

extent, 6179

ExteriorRing()

removed features, 53

external locking, 752, 898, 1685, 1876, 1898

external-locking option

mysqld, 752

external\_user system variable, 815

extra-file option

my\_print\_defaults, 643

extra-node-info option

ndb\_desc, 4372

extra-partition-info option

ndb\_desc, 4372

EXTRACT(), 2195

extracting

dates, 331

ExtractValue(), 2282

extract\_schema\_from\_file\_name() function

sys schema, 5253

extract\_table\_from\_file\_name() function

sys schema, 5254

ExtraSendBufferMemory

API nodes, 4219

data nodes, 4209

management nodes, 4115

**F**

failover, 6180

in NDB Cluster replication, 4697

Java clients, 3991

failure detection

Group Replication, 3748

FALSE, 1910, 1919

testing for, 2167, 2167

false literal

JSON, 2108

FAQs

C API, 5322

Connectors and APIs, 5322

InnoDB Data-at-Rest Encryption, 5330

libmysql, 5322

NDB Cluster, 5299

replication, 5323

Virtualization Support, 5332

Fast Index Creation, 6180

fast option

myisamchk, 585

mysqlcheck, 483

fast shutdown, 6180

features of MySQL, 5

features, deprecated (see [deprecated features](#_bookmark5))

features, new (see [new features](#_bookmark7))

features, removed (see [removed features](#_bookmark8))

FEDERATED storage engine, 3423, 3450

Fetch

thread command, 1892

FETCH, 2838

FIDO

authentication, 1397

fido-register-factor option

mysql, 439

field

changing, 2514

Field List

thread command, 1892

FIELD(), 2214

fields option

ndb\_config, 4352

fields-enclosed-by option

mysqldump, 508, 523

ndb\_import, 4392

ndb\_restore, 4439

fields-escaped-by option

mysqldump, 508, 523

ndb\_import, 4393

fields-optionally-enclosed-by option

mysqldump, 508, 523

ndb\_import, 4393

ndb\_restore, 4439

fields-terminated-by option

mysqldump, 508, 523

ndb\_import, 4393

ndb\_restore, 4439

FILE, 2216

file descriptors

innodb\_open\_files, 3302

log tables, 1047

MERGE, 3448

open\_files\_limit, 625, 863, 1786

sockets, 788

table\_definition\_cache, 915

table\_open\_cache, 916, 1786

too many open files, 5348

file format, 6180

FILE privilege, 1214

file-key option

ndb\_print\_file, 4422

ndb\_redo\_log\_reader, 4426

file-key-from-stdin option

ndb\_print\_file, 4422

ndb\_redo\_log\_reader, 4426

file-per-table, 3054, 6180

files

binary log, 1071

created by CREATE TABLE, 2588

error messages, 2033

general query log, 1069

log, 1091

ndbinfo table, 4622

not found message, 5349

permissions, 5349

repairing, 585

script, 341

size limits, 1792

slow query log, 1087

text, 459, 517

FILES

INFORMATION\_SCHEMA table, 4860

filesort optimization, 1734, 1858

filesystem-password option

ndbd, 4311

ndb\_secretsfile\_reader, 4461

filesystem-password-from-stdin option

ndbd, 4311

ndb\_secretsfile\_reader, 4461

FileSystemPath, 4122

FileSystemPathDataFiles, 4204

FileSystemPathDD, 4204

FileSystemPathUndoFiles, 4205

FILE\_FORMAT

removed features, 58

file\_instances table

performance\_schema, 5011

file\_summary\_by\_event\_name table

performance\_schema, 5120

file\_summary\_by\_instance table

performance\_schema, 5120

fill factor, 3075, 6181

fill\_help\_tables.sql, 1033

FIND\_IN\_SET(), 2215

Finished reading one binlog; switching to next binlog

thread state, 1900

FIPS mode, 1664

firewall table reference

INFORMATION\_SCHEMA, 4950

firewalls (software)

and NDB Cluster, 4670, 4672

Firewall\_access\_denied status variable, 1625

Firewall\_access\_granted status variable, 1625

Firewall\_access\_suspicious status variable, 1625

FIREWALL\_ADMIN privilege, 1220

Firewall\_cached\_entries status variable, 1626

FIREWALL\_EXEMPT privilege, 1220

firewall\_groups MySQL Enterprise Firewall table, 1616

firewall\_groups table

performance\_schema, 5100

system table, 1045

firewall\_group\_allowlist MySQL Enterprise Firewall table, 1617

firewall\_group\_allowlist table

performance\_schema, 5100

system table, 1045

firewall\_group\_delist() MySQL Enterprise Firewall function, 1622

firewall\_group\_enlist() MySQL Enterprise Firewall function, 1622

firewall\_membership MySQL Enterprise Firewall table, 1617

firewall\_membership table

performance\_schema, 5101

system table, 1045

FIREWALL\_USER privilege, 1220

firewall\_users MySQL Enterprise Firewall table, 1617

firewall\_users table

system table, 1045

firewall\_whitelist MySQL Enterprise Firewall table, 1618

firewall\_whitelist table

system table, 1045

FirstMatch

semijoin strategy, 1748

FIRST\_VALUE(), 2443

FIXED data type, 2059

fixed row format, 6181

fixed-point arithmetic, 2477

FLOAT data type, 2059, 2059, 2059

floating-point number, 2059

floating-point values

and replication, 3712

floats, 1910

FLOOR(), 2181

flow control functions, 2171

FLUSH

and replication, 3712

flush, 6181

flush list, 6181

flush option

mysqld, 752

FLUSH QUERY CACHE

removed features, 52

FLUSH statement, 3002

flush system variable, 815

flush tables, 466

flush-logs option

mysqldump, 514

flush-privileges option

mysqldump, 514

flushing, 3153

Flush\_commands status variable, 974

FLUSH\_OPTIMIZER\_COSTS privilege, 1220

FLUSH\_STATUS privilege, 1220

FLUSH\_TABLES privilege, 1221

flush\_time system variable, 816

FLUSH\_USER\_RESOURCES privilege, 1221

FOR SHARE, 2694

FOR UPDATE, 2694

FORCE

plugin activation option, 1101

FORCE INDEX, 1854, 5364

FORCE KEY, 1854

force option

myisamchk, 585, 586

myisampack, 596

mysql, 440

mysqladmin, 471

mysqlcheck, 483

mysqldump, 503

mysqlimport, 523

mysql\_upgrade, 425

force-if-open option

mysqlbinlog, 623

force-read option

mysqlbinlog, 623

FORCE\_COLORED\_OUTPUT option

CMake, 243

FORCE\_INSOURCE\_BUILD option

CMake, 243

FORCE\_PLUS\_PERMANENT

plugin activation option, 1101

FORCE\_UNSUPPORTED\_COMPILER option

CMake, 250

foreign key, 6181

constraint, 95, 96

deleting, 2517, 2598

FOREIGN KEY constraint, 6182

foreign key constraints, 2594

FOREIGN KEY constraints

and online DDL, 3230

foreign keys, 92, 345, 2517

metadata locking, 1875

foreign\_keys

ndbinfo table, 4623

foreign\_keys table

data dictionary table, 1040

foreign\_key\_checks system variable, 816

foreign\_key\_column\_usage table

data dictionary table, 1040

FORMAT(), 2215

FORMAT\_BYTES() function, 2457

format\_bytes() function

sys schema, 5254

format\_path() function

sys schema, 5255

FORMAT\_PICO\_TIME() function, 2458

format\_statement() function

sys schema, 5255

format\_time() function

sys schema, 5256

formfeed (\f), 2399

FOUND\_ROWS(), 2317

deprecated features, 48

FPROFILE\_GENERATE option

CMake, 250

FPROFILE\_USE option

CMake, 250

fractional seconds

and replication, 3714

fractional seconds precision, 2056, 2066

fragment replicas (NDB Cluster), 3993

fragment-id option

ndb\_print\_backup\_file, 4419

FragmentLogFileSize, 4141

FRAGMENT\_COUNT\_TYPE (NDB\_TABLE) (OBSOLETE)

NDB Cluster, 2620

frame

window functions, 2452, 2452

FreeBSD troubleshooting, 263

freeing items

thread state, 1895

.frm file, 6180

FROM, 2691

FROM\_BASE64(), 2215

FROM\_DAYS(), 2195

FROM\_UNIXTIME(), 2195

fs option

ndb\_error\_reporter, 4383

FTS, 6182

ft\_boolean\_syntax system variable, 817

ft\_max\_word\_len myisamchk variable, 583

ft\_max\_word\_len system variable, 817

ft\_min\_word\_len myisamchk variable, 583

ft\_min\_word\_len system variable, 818

ft\_query\_expansion\_limit system variable, 818

ft\_stopword\_file myisamchk variable, 583

ft\_stopword\_file system variable, 818

full backup, 6182

full disk, 5354

full table scan, 6182

full table scans

avoiding, 1745

full-text index

InnoDB, 3076

monitoring, 3081

full-text queries

optimization, 1769

full-text search, 2239, 6182

FULLTEXT, 2239

fulltext

stopword list, 2253

FULLTEXT index, 6182

FULLTEXT initialization

thread state, 1895

fulltext join type

optimizer, 1817

FULLY\_REPLICATED (NDB\_TABLE)

NDB Cluster, 2621

func table

system table, 1043, 1169

function

creating, 2935

deleting, 2936

function installation

keyring, 1485

function names

parsing, 1927

resolving ambiguity, 1927

functional dependence, 1001, 2435, 2439

functions, 2132

aggregate, 2420

and replication, 3712

arithmetic, 2290

bit, 2290

cast, 2266

date and time, 2187

encryption, 2302

flow control, 2171

for SELECT and WHERE clauses, 2132

GROUP BY, 2420

grouping, 2162

GTIDs, 2418

information, 2312

internal, 2460

loadable, 2935, 2936

locking, 2310

mathematical, 2179

miscellaneous, 2461

Performance Schema, 2457

stored, 4801

string, 2209

string comparison, 2225

fuzzy checkpointing, 6182

**G**

GA, 6182

MySQL releases, 108

GAC, 6182

gap, 6183

gap event, 4679

gap lock, 3114, 6183

InnoDB, 3130

gb2312, gbk, 5312

gci option

ndb\_select\_all, 4465

gci64 option

ndb\_select\_all, 4465

GCP Stop errors (NDB Cluster), 4208

gdb

using, 1178

gdb option

mysqld, 752

Gemalto SafeNet KeySecure Applicance

keyring\_okv keyring plugin, 1458

general information, 1

General Public License, 5

general query log, 1069, 6183

general table reference

INFORMATION\_SCHEMA, 4846

general tablespace, 6183

general\_log system variable, 819

general\_log table

system table, 1043

general\_log\_file system variable, 819

generated column, 6183

generated columns

ALTER TABLE, 2525

CREATE TABLE, 2603

CREATE TRIGGER, 2631

CREATE VIEW, 2635

INFORMATION\_SCHEMA.COLUMNS table, 4853

INSERT, 2658

REPLACE, 2687

secondary indexes, 2606

SHOW COLUMNS statement, 2951, 4853

UPDATE, 2729

views, 4818

generated\_random\_password\_length system variable, 819

gen\_blacklist() MySQL Enterprise Data Masking and De-Identification function, 1641 gen\_blocklist() MySQL Enterprise Data Masking and De-Identification function, 1641 gen\_dictionary() MySQL Enterprise Data Masking and De-Identification function, 1641 gen\_dictionary\_drop() MySQL Enterprise Data Masking and De-Identification function, 1642 gen\_dictionary\_load() MySQL Enterprise Data Masking and De-Identification function, 1643 gen\_range() MySQL Enterprise Data Masking and De-Identification function, 1638 gen\_rnd\_email() MySQL Enterprise Data Masking and De-Identification function, 1639 gen\_rnd\_pan() MySQL Enterprise Data Masking and De-Identification function, 1639 gen\_rnd\_ssn() MySQL Enterprise Data Masking and De-Identification function, 1640 gen\_rnd\_us\_phone() MySQL Enterprise Data Masking and De-Identification function, 1640 geographic feature, 2089

GeomCollection(), 2332

GeomCollFromText()

removed features, 53

GeomCollFromWKB()

removed features, 53

geometrically valid

GIS values, 2100

spatial values, 2100

geometry, 2089

GEOMETRY data type, 2090

geometry values

internal storage format, 2099

WKB format, 2098

WKT format, 2097

GEOMETRYCOLLECTION data type, 2090

GeometryCollection(), 2332

GeometryCollectionFromText()

removed features, 53

GeometryCollectionFromWKB()

removed features, 53

GeometryFromText()

removed features, 53

GeometryFromWKB()

removed features, 53

GeometryN()

removed features, 53

GeometryType()

removed features, 53

GeomFromText()

removed features, 53

GeomFromWKB()

removed features, 53

geospatial feature, 2089

German dictionary collation, 2025, 2025

German phone book collation, 2025, 2025

GET DIAGNOSTICS, 2844

get-server-public-key option, 375

mysql, 440

mysqladmin, 471

mysqlbinlog, 623

mysqlcheck, 483

mysqldump, 497

mysqlimport, 523

mysqlpump, 538

mysqlshow, 552

mysqlslap, 564

mysql\_migrate\_keyring, 610

mysql\_upgrade, 425

getting MySQL, 109

GET\_DD\_COLUMN\_PRIVILEGES(), 2461

GET\_DD\_CREATE\_OPTIONS(), 2461

GET\_DD\_INDEX\_SUB\_PART\_LENGTH(), 2461

GET\_FORMAT(), 2196

GET\_LOCK(), 2310

GIS, 2089

GIS data types

storage requirements, 2129

GIS values

geometrically valid, 2100

Git tree, 229

Glassfish, 6183

GLength()

removed features, 53

GLOBAL

SET statement, 2940

global privileges, 2896, 2910

global temporary tablespace, 6184

global transaction, 6184

Global\_connection\_memory status variable, 974

global\_connection\_memory\_limit system variable, 820

global\_connection\_memory\_tracking system variable, 820

global\_grants table

system table, 1042, 1227, 1229

GLOBAL\_STATUS

removed features, 55

GLOBAL\_VARIABLES

removed features, 55

go command

mysql, 451

Google Test, 249

GRANT

removed features, 51

GRANT OPTION privilege, 1214

GRANT statement, 1246, 2896

privilege restrictions, 2907

grant tables

columns\_priv table, 1043, 1229

db table, 275, 1042, 1229

default\_roles table, 1043, 1229

global\_grants table, 1042, 1227, 1229

password\_history table, 1043, 1229

procs\_priv table, 1043, 1229

proxies\_priv, 1293

proxies\_priv table, 275, 1043, 1229

role\_edges table, 1043, 1229

sorting, 1243, 1244

structure, 1228

tables\_priv table, 1042, 1229

user table, 275, 1042, 1229

granting

privileges, 2896

granting roles, 2896

grants

display, 2965

graph option

ndb\_top, 4483

greater than (>), 2165

greater than or equal (>=), 2164

greatest timestamp wins (conflict resolution), 4715

greatest timestamp, delete wins (conflict resolution), 4715

GREATEST(), 2165

Group (NDB Cluster), 4296

GROUP BY

aliases in, 2438

extensions to standard SQL, 2435, 2692

implicit sorting, 1734

maximum sort length, 2692

WITH ROLLUP, 2430

GROUP BY functions, 2420

GROUP BY optimizing, 1736

GROUP BY sorting

removed features, 53

group commit, 6184

group preferences

LDAP authentication, 1373

Group Replication, 3737

adding a second instance, 3760

adding additional instances, 3762

adding instances, 3760

allowlist, 3821

asynchronous replication, 3739

background, 3738

change to multi-primary mode, 3778

change to single-primary mode, 3777

change which member is primary, 3776

changing group mode, 3777

changing primary member, 3776

choosing mode, 3743

combining versions, 3851

communication protocol, 3779

configuring a group's write concurrency, 3778

configuring consistency guarantees, 3785

configuring distributed recovery, 3797

configuring instances, 3752

configuring online group, 3775

consistency guarantees, 3783

consistency guarantees and data flow, 3784

consistency guarantees choose a level, 3786

consistency guarantees impact on primary election, 3788

consistency guarantees impacts, 3787

consistency guarantees synchronization points, 3784

data definition language statements, 3746

deploying in single primary mode, 3751

deploying instances, 3752

details, 3747

distributed recovery, 3789

election process, 3743

examples use case scenarios, 3742

failure detection, 3748, 3832

find primary, 3745

fine tuning the group communication thread, 3824

flow control, 3825

frequently asked questions, 3901

functions, 3775, 3776, 3777, 3778, 3778, 3778

getting started, 3751

Group Communication System, 3750

group communication thread (GCT), 3824

group membership, 3747

group write consensus, 3778

group\_replication\_get\_write\_concurrency() function, 3778

group\_replication\_ip\_allowlist, 3821

group\_replication\_ip\_whitelist, 3821

group\_replication\_set\_as\_primary() function, 3776

group\_replication\_set\_write\_concurrency() function, 3778

group\_replication\_switch\_to\_multi\_primary\_mode() function, 3778

group\_replication\_switch\_to\_single\_primary\_mode() function, 3777

GTIDs, 3772

inspecting a group's write concurrency, 3778

ip address permissions, 3821

ipv6, 3804

launching, 3758

limitations, 3768

member actions configuration, 3780

message compression, 3827

mixed ipv4 and ipv6, 3804

modes, 3743

monitoring, 3771

multi-primary and single-primary modes, 3743

multi-primary mode, 3745

MySQL Enterprise Backup, 3806

network partition, 3832

network partitioning, 3838

observability, 3749

offline upgrade, 3853

online upgrade, 3854

online upgrade considerations, 3854

online upgrade methods, 3855

operations, 3775

Paxos, 3750

performance, 3824

performance message fragmentation, 3829

performance xcom cache, 3830

plugin architecture, 3750

primary failover, 3783

primary secondary replication, 3739

probes and statistics, 3825

recovering from a point in time, 3799

replication group member stats, 3774

replication technologies, 3739

replication\_group\_members table, 3774

requirements, 3765

requirements and limitations, 3765

responses to failure detection, 3832

restarting, 3781

secure socket layer support, 3815

security, 3812

server states, 3773

single-primary mode, 3743

ssl support, 3815

summary, 3740

system variables, 3857

the group, 3747

throttling, 3826

transaction consistency guarantees, 3783

troubleshooting, 3824

understanding transaction consistency guarantees, 3783

upgrading, 3851

upgrading member, 3854

use cases, 3742

user credentials, 3756

view, 3747

view changes, 3799

group replication

performance schema instruments, 3842

group replication functions

asynchronous\_connection\_failover\_reset(), 2815

group\_replication\_disable\_member\_action(), 2823

group\_replication\_enable\_member\_action(), 2823

group\_replication\_get\_communication\_protocol(), 2820

group\_replication\_get\_write\_concurrency(), 2819

group\_replication\_reset\_member\_actions(), 2823

group\_replication\_set\_as\_primary(), 2818

group\_replication\_set\_communication\_protocol(), 2821

group\_replication\_set\_write\_concurrency(), 2820

group\_replication\_switch\_to\_multi\_primary\_mode(), 2819

group\_replication\_switch\_to\_single\_primary\_mode(), 2818

group write consensus, 3778

grouping

expressions, 2162

GROUPING(), 2430, 2464

GROUP\_CONCAT(), 2424

group\_concat\_max\_len system variable, 820

GROUP\_INDEX, 1846

GROUP\_REPLICATION\_ADMIN privilege, 1221

group\_replication\_advertise\_recovery\_endpoints, 3860

group\_replication\_allow\_local\_lower\_version\_join system variable, 3861

group\_replication\_autorejoin\_tries system variable, 3863

group\_replication\_auto\_increment\_increment system variable, 3862

group\_replication\_bootstrap\_group system variable, 3863

group\_replication\_clone\_threshold system variable, 3864

group\_replication\_communication\_debug\_options system variable, 3865

group\_replication\_communication\_max\_message\_size system variable, 3866

group\_replication\_communication\_stack system variable, 3866

group\_replication\_components\_stop\_timeout system variable, 3867

group\_replication\_compression\_threshold system variable, 3868

group\_replication\_consistency system variable, 3869

group\_replication\_disable\_member\_action() function, 2823

group\_replication\_enable\_member\_action() function, 2823

group\_replication\_enforce\_update\_everywhere\_checks system variable, 3870

group\_replication\_exit\_state\_action system variable, 3871

group\_replication\_flow\_control\_applier\_threshold system variable, 3872

group\_replication\_flow\_control\_certifier\_threshold system variable, 3873

group\_replication\_flow\_control\_hold\_percent system variable, 3873

group\_replication\_flow\_control\_max\_quota system variable, 3874

group\_replication\_flow\_control\_member\_quota\_percent system variable, 3874

group\_replication\_flow\_control\_min\_quota system variable, 3875

group\_replication\_flow\_control\_min\_recovery\_quota system variable, 3875

group\_replication\_flow\_control\_mode system variable, 3875

group\_replication\_flow\_control\_period system variable, 3876

group\_replication\_flow\_control\_release\_percent system variable, 3876

group\_replication\_force\_members system variable, 3877

group\_replication\_get\_communication\_protocol() function, 2820

group\_replication\_get\_write\_concurrency() function, 2819, 3778

group\_replication\_group\_name system variable, 3877

group\_replication\_group\_seeds system variable, 3878

group\_replication\_gtid\_assignment\_block\_size system variable, 3879

group\_replication\_ip\_allowlist, 3879

group\_replication\_ip\_whitelist, 3881

group\_replication\_local\_address system variable, 3881

group\_replication\_member\_expel\_timeout system variable, 3883

group\_replication\_member\_weight system variable, 3884

group\_replication\_message\_cache\_size system variable, 3885

group\_replication\_paxos\_single\_leader system variable, 3886

group\_replication\_poll\_spin\_loops system variable, 3887

group\_replication\_primary\_member status variable, 974

group\_replication\_recovery\_complete\_at system variable, 3887

group\_replication\_recovery\_compression\_algorithms system variable, 3887

group\_replication\_recovery\_get\_public\_key system variable, 3888

group\_replication\_recovery\_public\_key\_path system variable, 3888

group\_replication\_recovery\_reconnect\_interval system variable, 3889

group\_replication\_recovery\_retry\_count system variable, 3889

group\_replication\_recovery\_ssl\_ca system variable, 3890

group\_replication\_recovery\_ssl\_capath system variable, 3890

group\_replication\_recovery\_ssl\_cert system variable, 3891

group\_replication\_recovery\_ssl\_cipher system variable, 3891

group\_replication\_recovery\_ssl\_crl system variable, 3891

group\_replication\_recovery\_ssl\_crlpath system variable, 3892

group\_replication\_recovery\_ssl\_key system variable, 3892

group\_replication\_recovery\_ssl\_verify\_server\_cert system variable, 3893

group\_replication\_recovery\_tls\_ciphersuites system variable, 3893

group\_replication\_recovery\_tls\_version system variable, 3894

group\_replication\_recovery\_use\_ssl system variable, 3895

group\_replication\_recovery\_zstd\_compression\_level system variable, 3895

group\_replication\_reset\_member\_actions() function, 2823

group\_replication\_set\_as\_primary() function, 2818, 3776

group\_replication\_set\_communication\_protocol() function, 2821

group\_replication\_set\_write\_concurrency() function, 2820, 3778

group\_replication\_single\_primary\_mode system variable, 3896

group\_replication\_ssl\_mode system variable, 3897

group\_replication\_start\_on\_boot system variable, 3897

GROUP\_REPLICATION\_STREAM privilege, 1221

group\_replication\_switch\_to\_multi\_primary\_mode() function, 2819, 3778

group\_replication\_switch\_to\_single\_primary\_mode() function, 2818, 3777

group\_replication\_tls\_source system variable, 3898

group\_replication\_transaction\_size\_limit system variable, 3898

group\_replication\_unreachable\_majority\_timeout, 3899

group\_replication\_view\_change\_uuid system variable, 3900

GSSAPI authentication method

LDAP authentication, 1375, 1375

GSSAPI mode on Windows clients

Kerberos authentication, 1391

GTID functions, 2418

GTID sets

representation, 3477

GTIDs, 3475

and failover, 3488

and scaleout, 3488

assigning to transactions, 3491

auto-positioning, 3485

concepts, 3476

gtid\_purged, 3483

life cycle, 3480

logging, 3478

replication with, 3486

restrictions, 3493

gtid\_executed system variable, 3622

gtid\_executed table

system table, 1044, 3478

gtid\_executed\_compression\_period, 3623

gtid\_executed\_compression\_period system variable

mysql.gtid\_executed table, 3479

gtid\_mode system variable, 3623

gtid\_next system variable, 3624

gtid\_owned system variable, 3625

gtid\_purged, 3483

gtid\_purged system variable, 3625

GTID\_SUBSET(), 2418

GTID\_SUBTRACT(), 2419

GUID, 6184

**H**

HANDLER, 2652

Handlers, 2840

Handler\_commit status variable, 975

Handler\_delete status variable, 975

Handler\_discover status variable, 4265

Handler\_external\_lock status variable, 975

Handler\_mrr\_init status variable, 975

Handler\_prepare status variable, 975

Handler\_read\_first status variable, 975

Handler\_read\_key status variable, 975

Handler\_read\_last status variable, 975

Handler\_read\_next status variable, 975

Handler\_read\_prev status variable, 975

Handler\_read\_rnd status variable, 975

Handler\_read\_rnd\_next status variable, 976

Handler\_rollback status variable, 976

Handler\_savepoint status variable, 976

Handler\_savepoint\_rollback status variable, 976

Handler\_update status variable, 976

Handler\_write status variable, 976

hash index, 6184

hash indexes, 1773

hash join

new features, 32

hash partitioning, 4750

hash partitions

managing, 4767

splitting and merging, 4767

HashiCorp Vault

configuring, 1465

HashiCorp Vault certificate and key files

configuring, 1464

hash\_maps

ndbinfo table, 4624

have\_compress system variable, 821

have\_crypt

removed features, 53

HAVE\_CRYPT

removed features, 53

have\_dynamic\_loading system variable, 821

have\_geometry system variable, 821

have\_openssl system variable, 821

have\_profiling system variable, 821

HAVE\_PSI\_MEMORY\_INTERFACE option

CMake, 250

have\_query\_cache system variable, 821

have\_rtree\_keys system variable, 821

have\_ssl system variable, 821

have\_statement\_timeout system variable, 822

have\_symlink system variable, 822

HAVING clause, 2692

HDD, 6184

header file

keyword\_list.h, 4869

header option

ndb\_select\_all, 4466

header-file option

comp\_err, 411

HEAP storage engine, 3423, 3435

heartbeat, 6184

HeartbeatIntervalDbApi, 4160

HeartbeatIntervalDbDb, 4160

HeartbeatIntervalMgmdMgmd

management nodes, 4116

HeartbeatOrder, 4161

HeartbeatThreadPriority, 4115, 4220

help action

MySQLInstallerConsole, 156

help command

mysql, 450

HELP command (NDB Cluster), 4501

help option

comp\_err, 411

ibd2sdi, 569

innochecksum, 572

myisamchk, 582

myisampack, 596

myisam\_ftdump, 578

mysql, 435

mysqladmin, 470

mysqlbinlog, 619

mysqlcheck, 480

mysqld, 746

mysqldump, 504

mysqldumpslow, 640

mysqld\_multi, 408

mysqld\_safe, 400

mysqlimport, 521

mysqlpump, 534

mysqlshow, 551

mysqlslap, 561

mysql\_config\_editor, 604

mysql\_migrate\_keyring, 609

mysql\_secure\_installation, 414

mysql\_ssl\_rsa\_setup, 418

mysql\_upgrade, 423

my\_print\_defaults, 643

ndbd, 4312

ndbinfo\_select\_all, 4321

ndbxfrm, 4497

ndb\_blob\_tool, 4344

ndb\_config, 4357

ndb\_delete\_all, 4362

ndb\_desc, 4372

ndb\_drop\_index, 4376

ndb\_drop\_table, 4381

ndb\_error\_reporter, 4383

ndb\_import, 4393

ndb\_index\_stat, 4405

ndb\_mgm, 4339

ndb\_mgmd, 4329

ndb\_move\_data, 4412

ndb\_perror, 4415

ndb\_print\_backup\_file, 4419

ndb\_print\_file, 4423

ndb\_restore, 4440

ndb\_secretsfile\_reader, 4461

ndb\_select\_all, 4465

ndb\_select\_count, 4471

ndb\_show\_tables, 4475

ndb\_top, 4483

ndb\_waiter, 4489

perror, 645

HELP option

myisamchk, 582

HELP statement, 3019

help tables

system tables, 1043

help\_category table

system table, 1044

help\_keyword table

system table, 1044

help\_relation table

system table, 1044

help\_topic table

system table, 1044

hex option

ndb\_restore, 4440

HEX(), 2181, 2215

hex-blob option

mysqldump, 508

mysqlpump, 539

hexadecimal literal introducer, 1916

hexadecimal literals, 1915

bit operations, 1917

hexdump option

mysqlbinlog, 624

high-water mark, 6184

HIGH\_NOT\_PRECEDENCE SQL mode, 998

HIGH\_PRIORITY

INSERT modifier, 2660

SELECT modifier, 2695

hintable

system variable, 1851

hints, 89

index, 1854, 2691

optimizer, 1839

histignore option

mysql, 440

histogram\_generation\_max\_mem\_size system variable, 822

history list, 6184

history of MySQL, 8

hole punching, 6185

HOME environment variable, 456, 646

host, 6185

host cache, 1012

host name

default, 381

host name caching, 1012

host name resolution, 1012

host names, 381

in account names, 1238

in default account, 275

in role names, 1240

maximum length, 30

host option, 372

mysql, 441

mysqladmin, 472

mysqlbinlog, 624

mysqlcheck, 483

mysqldump, 498

mysqlimport, 523

mysqlpump, 539

mysqlshow, 553

mysqlslap, 564

mysql\_migrate\_keyring, 610

mysql\_secure\_installation, 414

mysql\_upgrade, 425

ndb\_config, 4352

ndb\_top, 4483

HostName, 4111, 4119, 4217

HostName (NDB Cluster), 4669

hostname system variable, 824

HostName1, 4287, 4297

HostName2, 4288, 4297

hosts table

performance\_schema, 5047

host\_cache table

performance\_schema, 1012, 5136

host\_summary view

sys schema, 5196

host\_summary\_by\_file\_io view

sys schema, 5197

host\_summary\_by\_file\_io\_type view

sys schema, 5197

host\_summary\_by\_stages view

sys schema, 5197

host\_summary\_by\_statement\_latency view

sys schema, 5198

host\_summary\_by\_statement\_type view

sys schema, 5199

hot, 6185

hot backup, 6185

HOUR(), 2197

hp8

deprecated features, 46

html option

mysql, 441

hwinfo

ndbinfo table, 4624

**I**

i-am-a-dummy option

mysql, 445

ib-file set, 6186

ibbackup\_logfile, 6186

.ibd file, 6185

ibd2sdi, 568

count option, 570

debug option, 570

help option, 569

id option, 570

no-check option, 571

pretty option, 571

skip-data option, 570

strict-check option, 571

type option, 571

version option, 569

ibdata file, 2588, 6186

ibtmp file, 6186

.ibz file, 6185

ib\_logfile, 6186

icc

MySQL builds, 125

ICU\_VERSION(), 2318

Id, 4108, 4215

id option

ibd2sdi, 570

idempotent option

mysqlbinlog, 624

IDENTIFIED BY PASSWORD

removed features, 52

identifiers, 1919

case sensitivity, 1923

quoting, 1919

identity system variable, 824

idlesleep option

ndb\_import, 4393

idlespin option

ndb\_import, 4393

IF, 2834

IF(), 2174

IFNULL(), 2174

IGNORE

DELETE modifier, 2648

INSERT modifier, 2660

LOAD DATA modifier, 2669

UPDATE modifier, 2728

with partitioned tables, 1006, 2660

IGNORE INDEX, 1854

IGNORE KEY, 1854

ignore option

mysqlimport, 523

ignore-error option

mysqldump, 511

ignore-extended-pk-updates option

ndb\_restore, 4440

ignore-lines option

mysqlimport, 523

ndb\_import, 4394

ignore-spaces option

mysql, 441

ignore-table option

mysqldump, 511

IGNORE\_AIO\_CHECK option

CMake, 251

ignore\_builtin\_innodb

removed features, 54

ignore\_db\_dirs

removed features, 52

IGNORE\_SPACE SQL mode, 998

ilist, 6186

immediate\_commit\_timestamp, 3701

immediate\_server\_version system variable, 3525

implicit default values, 2122

implicit GROUP BY sorting, 1734

implicit row lock, 6186

IMPORT TABLE, 2653

IMPORT TABLESPACE, 2520, 3061

importing

data, 459, 517

importing data

NDB Cluster, 4556

IN, 2711

IN(), 2166

in-file option

comp\_err, 411

in-file-errlog option

comp\_err, 411

in-file-toclient option

comp\_err, 412

in-memory database, 6187

include option

mysql\_config, 642

include-databases option

mysqlpump, 539

ndb\_restore, 4440

include-events option

mysqlpump, 539

include-gtids option

mysqlbinlog, 624

include-master-host-port option

mysqldump, 506

include-routines option

mysqlpump, 539

include-source-host-port option

mysqldump, 505

include-stored-grants option

ndb\_restore, 4440

include-tables option

mysqlpump, 539

ndb\_restore, 4441

include-triggers option

mysqlpump, 539

include-users option

mysqlpump, 539

increasing with replication

speed, 3461

incremental backup, 6187

incremental recovery, 1682

using NDB Cluster replication, 4704

index, 6187

deleting, 2516, 2637

rebuilding, 312

sorted index builds, 3075

INDEX, 1847

index cache, 6187

index condition pushdown, 6187

INDEX DIRECTORY

and replication, 3711

index dives

range optimization, 1700

index dives (for statistics estimation), 3173

index extensions, 1774

index hint, 6188

index hints, 1854, 2691

index join type

optimizer, 1817

index prefix, 6188

index prefixes

partitioning, 4790

INDEX privilege, 1214

index statistics

NDB, 4211

index-record lock

InnoDB, 3130

indexed temporary table

semijoin strategy, 1748

indexes, 2536

and BLOB columns, 1769, 2566

and IS NULL, 1774

and LIKE, 1773

and ndb\_restore, 4448

and NULL values, 2567

and TEXT columns, 1769, 2566

assigning to key cache, 3000

BLOB columns, 2537

block size, 829

column prefixes, 1769

columns, 1769

descending, 1780

leftmost prefix of, 1767, 1771

multi-column, 1770

multiple-part, 2536

names, 1919

TEXT columns, 2537

TIMESTAMP lookups, 1781

use of, 1766

indexes table

data dictionary table, 1041

IndexMemory, 4125

IndexStatAutoCreate

data nodes, 4211

IndexStatAutoUpdate

data nodes, 4211

IndexStatSaveScale

data nodes, 4212

IndexStatSaveSize

data nodes, 4212

IndexStatTriggerPct

data nodes, 4213

IndexStatTriggerScale

data nodes, 4213

IndexStatUpdateDelay

data nodes, 4214

index\_columns

ndbinfo table, 4625

index\_column\_usage table

data dictionary table, 1041

INDEX\_MERGE, 1847

index\_merge join type

optimizer, 1817

index\_partitions table

data dictionary table, 1041

index\_stats

ndbinfo table, 4626

index\_stats table

data dictionary table, 1041

index\_subquery join type

optimizer, 1817

indirect indexes

NDB Cluster, 2608

INET6\_ATON(), 2468

INET6\_NTOA(), 2469

INET\_ATON(), 2467

INET\_NTOA(), 2468

infimum record, 6188

INFO Events (NDB Cluster), 4531

info option

innochecksum, 572

ndbxfrm, 4497

information functions, 2312

information option

myisamchk, 585

INFORMATION SCHEMA

InnoDB tables, 3329

INFORMATION\_SCHEMA, 4838, 6188

and security issues, 4674

collation and searching, 2006

connection-control table reference, 4949

connection-control tables, 4949

firewall table reference, 4949

general table reference, 4846

general tables, 4846

InnoDB table reference, 4905

InnoDB tables, 4905

INNODB\_CMP table, 3330

INNODB\_CMPMEM table, 3330

INNODB\_CMPMEM\_RESET table, 3330

INNODB\_CMP\_RESET table, 3330

INNODB\_TRX table, 3332

MySQL Enterprise Firewall tables, 4949

table reference, 4841

thread pool table reference, 4947

Thread pool tables, 4947

INFORMATION\_SCHEMA queries

optimization, 1760

INFORMATION\_SCHEMA.ENGINES table

and NDB Cluster, 4662

INFORMATION\_SCHEMA.PLUGINS table

and NDB Cluster, 4668

information\_schema\_stats

removed features, 51

information\_schema\_stats\_expiry system variable, 824

INFO\_BIN file

binary distribution configuration options, 86, 222

init

thread state, 1895

Init DB

thread command, 1892

init-command option

mysql, 441

InitFragmentLogFiles, 4142

initial option

ndbd, 4312

ndbmtd, 4312

ndb\_mgmd, 4329

initial-start option

ndbd, 4313

ndbmtd, 4313

initialize option

mysqld, 752

initialize-insecure option

mysqld, 753

Initialized

thread state, 1905

InitialLogFileGroup, 4205

InitialNoOfOpenFiles, 4141

InitialTablespace, 4206

init\_connect system variable, 824

init\_file system variable, 826

init\_replica system variable, 3546

init\_slave system variable, 3546

injection

SQL, 1205, 1598, 2289, 2824

XPath code, 2288

INNER JOIN, 2698

innochecksum, 356, 571

allow-mismatches option, 574

count option, 573

end-page option, 573

help option, 572

info option, 572

log option, 575

no-check option, 574

page option, 573

page-type-dump option, 575

page-type-summary option, 575

read from standard in option, 576

start-page option, 573

strict-check option, 574

verbose option, 572

version option, 572

write option, 574

InnoDB, 3032, 6188

adaptive hash index, 3049

and application feature requirements, 4032

application performance, 3066

applications supported, 4032

architecture, 3039

asynchronous I/O, 3161

auto-inc lock, 3114

auto-increment columns, 3067

autocommit mode, 3121, 3121

availability, 4030

backups, 3375

buffer pool, 3158

change buffer, 3045

checkpoints, 3207

clustered index, 3074

COMPACT row format, 3200

compared to NDB Cluster, 4030, 4031, 4032, 4032

configuration parameters, 3239

consistent reads, 3122

corruption, 3377

crash recovery, 3377, 3377, 3378

creating tables, 3050

data files, 3082

deadlock detection, 3135

deadlock example, 3131

deadlocks, 3064, 3131, 3135

disk failure, 3377

disk I/O, 3205

disk I/O optimization, 1801

DYNAMIC row format, 3202, 3202

exclusive lock, 3114

file space management, 3205

file-per-table tablespace, 3084

files, 3067

full-text indexes, 3077

gap lock, 3114, 3130

in-memory structures, 3039

index-record lock, 3130

insert-intention lock, 3114

intention lock, 3114

limitations, 3420

limits, 3419

Linux, 3161

lock modes, 3114

locking, 3113, 3114, 3127

locking reads, 3124

memory usage, 3063

migrating tables, 3060

Monitors, 3415

multi-versioning, 3037

new features, 12

next-key lock, 3114, 3130

NFS, 3138

on-disk structures, 3050

online DDL, 3208

page size, 3075

physical index structure, 3075

point-in-time recovery, 3376

primary keys, 3050, 3066

raw partitions, 3083

record-level locks, 3130

recovery, 3376

redo log, 3105, 3106, 3108

REDUNDANT row format, 3199

replication, 3378

restrictions, 3420

row format, 3050, 3204

secondary index, 3074

shared lock, 3114

Solaris issues, 220

sorted index builds, 3075

storage, 3065

storage layout, 3064

system variables, 3239

table properties, 3051

tables, 3050

converting from other storage engines, 3062

transaction model, 3113, 3118

transactions, 3063

transferring data, 3065

troubleshooting, 3414

cannot open datafile, 3417

data dictionary problems, 3417

deadlocks, 3131, 3135

defragmenting tables, 3207

I/O problems, 3415

online DDL, 3230

performance problems, 1795

recovery problems, 3416

restoring orphan ibd files, 3417

SQL errors, 3418

InnoDB buffer pool, 1863, 3043, 3145, 3150, 3151, 3152, 3155

InnoDB Cluster

introduction, 3979

InnoDB compressed temporary tables

removed features, 58

InnoDB memcached plugin

deprecated features, 49

InnoDB Monitors, 3369

enabling, 3369

output, 3371

innodb option

mysqld, 3246

InnoDB predicate locks, 3118

InnoDB remote tablespaces

removed features, 58

InnoDB ReplicaSet

introduction, 3983

InnoDB shared tablespaces

removed features, 58

InnoDB storage engine, 3032, 3423

InnoDB table reference

INFORMATION\_SCHEMA, 4905

InnoDB tables

storage requirements, 2125

innodb-status-file option

mysqld, 3246

innodb\_adaptive\_flushing system variable, 3249

innodb\_adaptive\_flushing\_lwm system variable, 3249

innodb\_adaptive\_hash\_index

and innodb\_thread\_concurrency, 3159

innodb\_adaptive\_hash\_index system variable, 3250

innodb\_adaptive\_hash\_index\_parts variable, 3250

innodb\_adaptive\_max\_sleep\_delay system variable, 3250

innodb\_api\_bk\_commit\_interval system variable, 3251

innodb\_api\_disable\_rowlock system variable, 3251

innodb\_api\_enable\_binlog system variable, 3252

innodb\_api\_enable\_mdl system variable, 3252

innodb\_api\_trx\_level system variable, 3252

innodb\_autoextend\_increment system variable, 3253

innodb\_autoinc\_lock\_mode, 6188

innodb\_autoinc\_lock\_mode system variable, 3253

Innodb\_available\_undo\_logs

removed features, 58

innodb\_background\_drop\_list\_empty system variable, 3254

INNODB\_BUFFER\_PAGE

INFORMATION\_SCHEMA table, 4906

INNODB\_BUFFER\_PAGE\_LRU

INFORMATION\_SCHEMA table, 4910

Innodb\_buffer\_pool\_bytes\_data status variable, 976

Innodb\_buffer\_pool\_bytes\_dirty status variable, 976

innodb\_buffer\_pool\_chunk\_size system variable, 3254

innodb\_buffer\_pool\_debug, 3255

innodb\_buffer\_pool\_dump\_at\_shutdown system variable, 3255

innodb\_buffer\_pool\_dump\_now system variable, 3256

innodb\_buffer\_pool\_dump\_pct system variable, 3256

Innodb\_buffer\_pool\_dump\_status status variable, 976

innodb\_buffer\_pool\_filename system variable, 3257

innodb\_buffer\_pool\_instances system variable, 3258

innodb\_buffer\_pool\_in\_core\_file option, 3158

innodb\_buffer\_pool\_in\_core\_file system variable, 3257

innodb\_buffer\_pool\_load\_abort system variable, 3258

innodb\_buffer\_pool\_load\_at\_startup system variable, 3259

innodb\_buffer\_pool\_load\_now system variable, 3259

Innodb\_buffer\_pool\_load\_status status variable, 976

Innodb\_buffer\_pool\_pages\_data status variable, 976

Innodb\_buffer\_pool\_pages\_dirty status variable, 977

Innodb\_buffer\_pool\_pages\_flushed status variable, 977

Innodb\_buffer\_pool\_pages\_free status variable, 977

Innodb\_buffer\_pool\_pages\_latched status variable, 977

Innodb\_buffer\_pool\_pages\_misc status variable, 977

Innodb\_buffer\_pool\_pages\_total status variable, 977

Innodb\_buffer\_pool\_reads status variable, 977

Innodb\_buffer\_pool\_read\_ahead status variable, 977

Innodb\_buffer\_pool\_read\_ahead\_evicted status variable, 977

Innodb\_buffer\_pool\_read\_ahead\_rnd status variable, 977

Innodb\_buffer\_pool\_read\_requests status variable, 977

Innodb\_buffer\_pool\_resize\_status status variable, 977

Innodb\_buffer\_pool\_resize\_status\_code variable, 977

Innodb\_buffer\_pool\_resize\_status\_progress variable, 978

innodb\_buffer\_pool\_size system variable, 3259

INNODB\_BUFFER\_POOL\_STATS

INFORMATION\_SCHEMA table, 4913

Innodb\_buffer\_pool\_wait\_free status variable, 978

Innodb\_buffer\_pool\_write\_requests status variable, 978

innodb\_buffer\_stats\_by\_schema view

sys schema, 5200

innodb\_buffer\_stats\_by\_table view

sys schema, 5200

INNODB\_CACHED\_INDEXES

INFORMATION\_SCHEMA table, 4916

innodb\_change\_buffering, 3046

innodb\_change\_buffering system variable, 3261

innodb\_change\_buffering\_debug, 3262

innodb\_change\_buffer\_max\_size system variable, 3261

innodb\_checkpoint\_disabled system variable, 3262

innodb\_checksum\_algorithm system variable, 3262

INNODB\_CMP

INFORMATION\_SCHEMA table, 4917

INNODB\_CMPMEM

INFORMATION\_SCHEMA table, 4918

INNODB\_CMPMEM\_RESET

INFORMATION\_SCHEMA table, 4918

INNODB\_CMP\_PER\_INDEX

INFORMATION\_SCHEMA table, 4920

innodb\_cmp\_per\_index\_enabled system variable, 3264

INNODB\_CMP\_PER\_INDEX\_RESET

INFORMATION\_SCHEMA table, 4920

INNODB\_CMP\_RESET

INFORMATION\_SCHEMA table, 4917

INNODB\_COLUMNS

INFORMATION\_SCHEMA table, 4921

innodb\_commit\_concurrency system variable, 3264

innodb\_compression\_failure\_threshold\_pct system variable, 3265

innodb\_compression\_level system variable, 3266

innodb\_compression\_pad\_pct\_max system variable, 3266

innodb\_compress\_debug, 3265

innodb\_concurrency\_tickets, 3159

innodb\_concurrency\_tickets system variable, 3266

INNODB\_DATAFILES

INFORMATION\_SCHEMA table, 4923

innodb\_data\_file\_path system variable, 3267

Innodb\_data\_fsyncs status variable, 978

innodb\_data\_home\_dir system variable, 3268

Innodb\_data\_pending\_fsyncs status variable, 978

Innodb\_data\_pending\_reads status variable, 979

Innodb\_data\_pending\_writes status variable, 979

Innodb\_data\_read status variable, 979

Innodb\_data\_reads status variable, 979

Innodb\_data\_writes status variable, 979

Innodb\_data\_written status variable, 979

Innodb\_dblwr\_pages\_written status variable, 979

Innodb\_dblwr\_writes status variable, 979

innodb\_ddl\_buffer\_size system variable, 3268

innodb\_ddl\_log table

data dictionary table, 1041

innodb\_ddl\_log\_crash\_reset\_debug system variable, 3268

innodb\_ddl\_threads system variable, 3269

innodb\_deadlock\_detect

new features, 12

innodb\_deadlock\_detect system variable, 3269

innodb\_dedicated\_server system variable, 3269

innodb\_default\_row\_format, 3202

innodb\_default\_row\_format system variable, 3270

innodb\_directories system variable, 3271

innodb\_disable\_sort\_file\_cache system variable, 3272

innodb\_doublewrite system variable, 3272

innodb\_doublewrite\_batch\_size, 3273

innodb\_doublewrite\_dir, 3273

innodb\_doublewrite\_files, 3273

innodb\_doublewrite\_pages, 3274

innodb\_dynamic\_metadata table

system table, 1045

innodb\_extend\_and\_initialize, 3102

innodb\_extend\_and\_initialize system variable, 3274

innodb\_fast\_shutdown system variable, 3275

INNODB\_FIELDS

INFORMATION\_SCHEMA table, 4923

innodb\_file\_format

removed features, 58

innodb\_file\_format\_check

removed features, 58

innodb\_file\_format\_max

removed features, 58

innodb\_file\_per\_table, 3182, 6189

innodb\_file\_per\_table system variable, 3275

innodb\_fill\_factor system variable, 3276

innodb\_fil\_make\_page\_dirty\_debug, 3275

innodb\_flushing\_avg\_loops system variable, 3281

innodb\_flush\_log\_at\_timeout system variable, 3277

innodb\_flush\_log\_at\_trx\_commit system variable, 3277

innodb\_flush\_method system variable, 3278

innodb\_flush\_neighbors system variable, 3280

innodb\_flush\_sync system variable, 3280

innodb\_force\_load\_corrupted system variable, 3281

innodb\_force\_recovery system variable, 3281

DROP TABLE, 2640

INNODB\_FOREIGN

INFORMATION\_SCHEMA table, 4924

INNODB\_FOREIGN\_COLS

INFORMATION\_SCHEMA table, 4925

innodb\_fsync\_threshold system variable, 3282

innodb\_ft\_aux\_table system variable, 3282

INNODB\_FT\_BEING\_DELETED

INFORMATION\_SCHEMA table, 4925

innodb\_ft\_cache\_size system variable, 3283

INNODB\_FT\_CONFIG

INFORMATION\_SCHEMA table, 4926

INNODB\_FT\_DEFAULT\_STOPWORD

INFORMATION\_SCHEMA table, 4927

INNODB\_FT\_DELETED

INFORMATION\_SCHEMA table, 4928

innodb\_ft\_enable\_diag\_print system variable, 3283

innodb\_ft\_enable\_stopword system variable, 3284

INNODB\_FT\_INDEX\_CACHE

INFORMATION\_SCHEMA table, 4929

INNODB\_FT\_INDEX\_TABLE

INFORMATION\_SCHEMA table, 4930

innodb\_ft\_max\_token\_size system variable, 3284

innodb\_ft\_min\_token\_size system variable, 3285

innodb\_ft\_num\_word\_optimize system variable, 3285

innodb\_ft\_result\_cache\_limit system variable, 3285

innodb\_ft\_server\_stopword\_table system variable, 3286

innodb\_ft\_sort\_pll\_degree system variable, 3286

innodb\_ft\_total\_cache\_size system variable, 3287

innodb\_ft\_user\_stopword\_table system variable, 3287

Innodb\_have\_atomic\_builtins status variable, 979

innodb\_idle\_flush\_pct system variable, 3288

INNODB\_INDEXES

INFORMATION\_SCHEMA table, 4932

innodb\_index\_stats table

system table, 1044, 3166

innodb\_io\_capacity, 3161

innodb\_io\_capacity system variable, 3288

innodb\_io\_capacity\_max system variable, 3289

innodb\_large\_prefix

removed features, 58

innodb\_limit\_optimistic\_insert\_debug, 3289

INNODB\_LOCKS

INFORMATION\_SCHEMA table, 5082

removed features, 57

innodb\_locks\_unsafe\_for\_binlog

removed features, 51

INNODB\_LOCK\_WAITS

INFORMATION\_SCHEMA table, 5084

removed features, 57

innodb\_lock\_waits view

sys schema, 5201

innodb\_lock\_wait\_timeout, 6189

innodb\_lock\_wait\_timeout system variable, 3289

innodb\_log\_buffer\_size system variable, 3290

innodb\_log\_checkpoint\_fuzzy\_now system variable, 3291

innodb\_log\_checkpoint\_now system variable, 3291

innodb\_log\_checksums system variable, 3291

innodb\_log\_compressed\_pages system variable, 3292

innodb\_log\_files\_in\_group system variable, 3293

innodb\_log\_file\_size system variable, 3292

innodb\_log\_group\_home\_dir system variable, 3294

innodb\_log\_spin\_cpu\_abs\_lwm system variable, 3294

innodb\_log\_spin\_cpu\_pct\_hwm system variable, 3294

Innodb\_log\_waits status variable, 979

innodb\_log\_wait\_for\_flush\_spin\_hwm system variable, 3295

innodb\_log\_writer\_threads system variable, 3296

Innodb\_log\_writes status variable, 979

innodb\_log\_write\_ahead\_size system variable, 3295

Innodb\_log\_write\_requests status variable, 979

innodb\_lru\_scan\_depth system variable, 3296

innodb\_max\_dirty\_pages\_pct system variable, 3297

innodb\_max\_dirty\_pages\_pct\_lwm system variable, 3297

innodb\_max\_purge\_lag system variable, 3298

innodb\_max\_purge\_lag\_delay system variable, 3298

innodb\_max\_undo\_log\_size system variable, 3298

innodb\_memcache database, 3384, 3408

innodb\_memcached\_config.sql script, 3384

innodb\_merge\_threshold\_set\_all\_debug, 3299

INNODB\_METRICS

INFORMATION\_SCHEMA table, 4933

innodb\_monitor\_disable system variable, 3299

innodb\_monitor\_enable system variable, 3299

innodb\_monitor\_reset system variable, 3300

innodb\_monitor\_reset\_all system variable, 3300

innodb\_numa\_interleave variable, 3301

Innodb\_num\_open\_files status variable, 979

innodb\_old\_blocks\_pct, 3151

innodb\_old\_blocks\_pct system variable, 3301

innodb\_old\_blocks\_time, 3151

innodb\_old\_blocks\_time system variable, 3301

innodb\_online\_alter\_log\_max\_size system variable, 3302

innodb\_open\_files system variable, 3302

innodb\_optimize\_fulltext\_only system variable, 3303

Innodb\_os\_log\_fsyncs status variable, 979

Innodb\_os\_log\_pending\_fsyncs status variable, 979

Innodb\_os\_log\_pending\_writes status variable, 980

Innodb\_os\_log\_written status variable, 980

Innodb\_pages\_created status variable, 980

Innodb\_pages\_read status variable, 980

Innodb\_pages\_written status variable, 980

innodb\_page\_cleaners system variable, 3304

Innodb\_page\_size status variable, 980

innodb\_page\_size system variable, 3305

innodb\_parallel\_read\_threads system variable, 3306

innodb\_print\_all\_deadlocks system variable, 3306

innodb\_print\_all\_deadlocks, 3306

innodb\_print\_ddl\_logs system variable, 3307

innodb\_purge\_batch\_size system variable, 3307

innodb\_purge\_rseg\_truncate\_frequency system variable, 3308

innodb\_purge\_threads system variable, 3307

innodb\_random\_read\_ahead system variable, 3308

innodb\_read\_ahead\_threshold, 3152

innodb\_read\_ahead\_threshold system variable, 3308

innodb\_read\_io\_threads, 3160

innodb\_read\_io\_threads system variable, 3309

innodb\_read\_only system variable, 3310

INNODB\_REDO\_LOG\_ARCHIVE privilege, 1221

innodb\_redo\_log\_archive\_dirs system variable, 3310

innodb\_redo\_log\_capacity system variable, 3311

Innodb\_redo\_log\_capacity\_resized status variable, 980

Innodb\_redo\_log\_checkpoint\_lsn status variable, 980

Innodb\_redo\_log\_current\_lsn status variable, 980

INNODB\_REDO\_LOG\_ENABLE privilege, 1221

Innodb\_redo\_log\_enabled status variable, 980

innodb\_redo\_log\_encrypt system variable, 3311

innodb\_redo\_log\_files table

performance\_schema, 5139

Innodb\_redo\_log\_flushed\_to\_disk\_lsn status variable, 980

Innodb\_redo\_log\_logical\_size status variable, 981

Innodb\_redo\_log\_physical\_size status variable, 981

Innodb\_redo\_log\_read\_only status variable, 981

Innodb\_redo\_log\_resize\_status status variable, 981

Innodb\_redo\_log\_uuid status variable, 981

innodb\_replication\_delay system variable, 3312

innodb\_rollback\_on\_timeout system variable, 3312

innodb\_rollback\_segments system variable, 3312

Innodb\_rows\_deleted status variable, 981

Innodb\_rows\_inserted status variable, 982

Innodb\_rows\_read status variable, 982

Innodb\_rows\_updated status variable, 982

Innodb\_row\_lock\_current\_waits status variable, 981

Innodb\_row\_lock\_time status variable, 981

Innodb\_row\_lock\_time\_avg status variable, 981

Innodb\_row\_lock\_time\_max status variable, 981

Innodb\_row\_lock\_waits status variable, 981

innodb\_saved\_page\_number\_debug, 3313

innodb\_segment\_reserve\_factor system variable, 3313

INNODB\_SESSION\_TEMP\_TABLESPACES

INFORMATION\_SCHEMA table, 4935

innodb\_sort\_buffer\_size system variable, 3313

innodb\_spin\_wait\_delay, 3163

innodb\_spin\_wait\_delay system variable, 3314

innodb\_spin\_wait\_pause\_multiplier, 3163

innodb\_spin\_wait\_pause\_multiplier system variable, 3314

innodb\_stats\_auto\_recalc system variable, 3315

innodb\_stats\_include\_delete\_marked system variable, 3168, 3315

innodb\_stats\_method system variable, 3316

innodb\_stats\_on\_metadata system variable, 3316

innodb\_stats\_persistent system variable

innodb\_stats\_persistent, 3317

innodb\_stats\_persistent\_sample\_pages system variable, 3317

innodb\_stats\_transient\_sample\_pages, 3173

innodb\_stats\_transient\_sample\_pages system variable, 3318

innodb\_status\_output system variable, 3318

innodb\_status\_output\_locks system variable, 3318

innodb\_stat\_persistent system variable, 3317

innodb\_strict\_mode, 6189

innodb\_strict\_mode system variable, 3319

innodb\_support\_xa

removed features, 58

innodb\_sync\_array\_size system variable, 3319

innodb\_sync\_debug, 3320

innodb\_sync\_spin\_loops system variable, 3320

Innodb\_system\_rows\_deleted status variable, 982

Innodb\_system\_rows\_inserted status variable, 982

Innodb\_system\_rows\_read status variable, 982

INNODB\_SYS\_COLUMNS

removed features, 51

INNODB\_SYS\_DATAFILES

removed features, 51

INNODB\_SYS\_FIELDS

removed features, 51

INNODB\_SYS\_FOREIGN

removed features, 51

INNODB\_SYS\_FOREIGN\_COLS

removed features, 51

INNODB\_SYS\_INDEXES

removed features, 51

INNODB\_SYS\_TABLES

removed features, 51

INNODB\_SYS\_TABLESPACES

removed features, 51

INNODB\_SYS\_TABLESTATS

removed features, 51

INNODB\_SYS\_VIRTUAL

removed features, 51

INNODB\_TABLES

INFORMATION\_SCHEMA table, 4936

INNODB\_TABLESPACES

INFORMATION\_SCHEMA table, 4937

INNODB\_TABLESPACES\_BRIEF

INFORMATION\_SCHEMA table, 4940

INNODB\_TABLESTATS

INFORMATION\_SCHEMA table, 4940

innodb\_table\_locks system variable, 3320

innodb\_table\_stats table

system table, 1044, 3166

innodb\_temp\_data\_file\_path system variable, 3321

innodb\_temp\_tablespaces\_dir system variable, 3322

INNODB\_TEMP\_TABLE\_INFO

INFORMATION\_SCHEMA table, 4942

innodb\_thread\_concurrency, 3159

innodb\_thread\_concurrency system variable, 3322

innodb\_thread\_sleep\_delay, 3159

innodb\_thread\_sleep\_delay system variable, 3324

innodb\_tmpdir system variable, 3324

Innodb\_truncated\_status\_writes status variable, 982

INNODB\_TRX

INFORMATION\_SCHEMA table, 4943

innodb\_trx\_purge\_view\_update\_only\_debug, 3325

innodb\_trx\_rseg\_n\_slots\_debug, 3325

innodb\_undo\_directory system variable, 3325

innodb\_undo\_logs

removed features, 58

innodb\_undo\_log\_encrypt system variable, 3326

innodb\_undo\_log\_truncate system variable, 3326

innodb\_undo\_tablespaces

removed features, 58

innodb\_undo\_tablespaces system variable, 3327

Innodb\_undo\_tablespaces\_active status variable, 982

Innodb\_undo\_tablespaces\_explicit status variable, 982

Innodb\_undo\_tablespaces\_implicit status variable, 982

Innodb\_undo\_tablespaces\_total status variable, 982

innodb\_use\_fdatasync system variable, 3327

innodb\_use\_native\_aio, 3161

innodb\_use\_native\_aio system variable, 3327

innodb\_validate\_tablespace\_paths system variable, 3328

innodb\_version system variable, 3329

INNODB\_VIRTUAL

INFORMATION\_SCHEMA table, 4945

innodb\_write\_io\_threads, 3160

innodb\_write\_io\_threads system variable, 3329

INOUT parameter

condition handling, 2865

input-type option

ndb\_import, 4394

input-workers option

ndb\_import, 4394

INSERT, 1764, 2656

insert, 6189

INSERT ... ON DUPLICATE KEY UPDATE

deprecated features, 49

INSERT ... SELECT, 2660

INSERT ... TABLE, 2660

insert buffer, 6189

insert buffering, 6189

disabling, 3047

INSERT DELAYED, 2664, 2664

insert intention lock, 6189

INSERT privilege, 1215

INSERT(), 2216

insert-ignore option

mysqldump, 513

mysqlpump, 539

insert-intention lock, 3114

insertable views

insertable, 4817

inserting

speed of, 1764

InsertRecoveryWork, 4146

inserts

concurrent, 1870, 1872

insert\_id system variable, 826

install action

MySQLInstallerConsole, 156

INSTALL COMPONENT statement, 2936

install option

mysqld, 753

ndbd, 4313

ndbmtd, 4313

ndb\_mgmd, 4330

INSTALL PLUGIN statement, 2937

install-manual option

mysqld, 753

Installation, 153

installation layouts, 125

installation overview, 222

installing

binary distribution, 126

Linux RPM packages, 194

macOS DMG packages, 175

overview, 106

Perl, 315

Perl on Windows, 316

Solaris PKG packages, 220

source distribution, 222

installing components, 1093, 2936

installing loadable functions, 1168

installing NDB Cluster, 4044

Debian Linux, 4053

Linux, 4047

Linux binary release, 4047

Linux RPM, 4049

Linux source release, 4054

Ubuntu Linux, 4053

Windows, 4055

Windows binary release, 4055

Windows source, 4058

installing plugins, 1098, 2937

INSTALL\_BINDIR option

CMake, 243

INSTALL\_DOCDIR option

CMake, 243

INSTALL\_DOCREADMEDIR option

CMake, 243

INSTALL\_INCLUDEDIR option

CMake, 243

INSTALL\_INFODIR option

CMake, 243

INSTALL\_LAYOUT option

CMake, 243

INSTALL\_LIBDIR option

CMake, 244

INSTALL\_MANDIR option

CMake, 244

INSTALL\_MYSQLKEYRINGDIR option

CMake, 244

INSTALL\_MYSQLSHAREDIR option

CMake, 244

INSTALL\_MYSQLTESTDIR option

CMake, 244

INSTALL\_PKGCONFIGDIR option

CMake, 244

INSTALL\_PLUGINDIR option

CMake, 244

INSTALL\_PRIV\_LIBDIR option

CMake, 244

INSTALL\_SBINDIR option

CMake, 245

INSTALL\_SCRIPTDIR

removed features, 54

INSTALL\_SECURE\_FILE\_PRIVDIR option

CMake, 245

INSTALL\_SHAREDIR option

CMake, 245

INSTALL\_STATIC\_LIBRARIES option

CMake, 245

INSTALL\_SUPPORTFILESDIR option

CMake, 245

instance, 6190

INSTR(), 2216

instrumentation, 6190

INT data type, 2058

integer arithmetic, 2477

INTEGER data type, 2058

integers, 1910

intention lock, 3114, 6190

interactive option

ndb\_mgmd, 4330

interactive\_timeout system variable, 827

interceptor, 6190

InteriorRingN()

removed features, 53

internal functions, 2460

internal locking, 1869

internal storage format

geometry values, 2099

internal temporary tables

new features, 29

INTERNAL\_AUTO\_INCREMENT(), 2461

INTERNAL\_AVG\_ROW\_LENGTH(), 2461

INTERNAL\_CHECKSUM(), 2461

INTERNAL\_CHECK\_TIME(), 2461

INTERNAL\_DATA\_FREE(), 2461

INTERNAL\_DATA\_LENGTH(), 2461

INTERNAL\_DD\_CHAR\_LENGTH(), 2461

INTERNAL\_GET\_COMMENT\_OR\_ERROR(), 2461

INTERNAL\_GET\_ENABLED\_ROLE\_JSON() function, 2461

INTERNAL\_GET\_HOSTNAME() function, 2461

INTERNAL\_GET\_USERNAME() function, 2461

INTERNAL\_GET\_VIEW\_WARNING\_OR\_ERROR(), 2461

INTERNAL\_INDEX\_COLUMN\_CARDINALITY(), 2461

INTERNAL\_INDEX\_LENGTH(), 2461

INTERNAL\_IS\_ENABLED\_ROLE() function, 2461

INTERNAL\_IS\_MANDATORY\_ROLE() function, 2461

INTERNAL\_KEYS\_DISABLED(), 2461

INTERNAL\_MAX\_DATA\_LENGTH(), 2461

INTERNAL\_TABLE\_ROWS(), 2461

internal\_tmp\_disk\_storage\_engine

removed features, 58

internal\_tmp\_disk\_storage\_engine system variable, 827

internal\_tmp\_mem\_storage\_engine system variable, 827

INTERNAL\_UPDATE\_TIME(), 2461

INTERSECT, 2665

parenthesized query expressions, 2684

set operations, 2704

Intersects()

removed features, 53

INTERVAL

temporal interval syntax, 1965

interval syntax, 1965

INTERVAL(), 2166

INTO

deprecated features, 48

parenthesized query expressions, 2684

SELECT, 2695

TABLE statement, 2696

VALUES statement, 2696

INTO OUTFILE

with TABLE statement, 2697

intrinsic temporary table, 6190

introducer

binary character set, 2033

bit-value literal, 1918

character set, 1987

hexadecimal literal, 1916

string literal, 1908, 1985

invalid data

constraint, 96

inverted index, 6190

invisible columns, 2567, 2609

binary log, 2612

metadata, 2612

invisible indexes, 1778, 2517, 2549, 2572

metadata, 1778

INVOKER privileges, 2966, 4821

IOPS, 6190

io\_by\_thread\_by\_latency view

sys schema, 5203

io\_global\_by\_file\_by\_bytes view

sys schema, 5204

io\_global\_by\_file\_by\_latency view

sys schema, 5204

io\_global\_by\_wait\_by\_bytes view

sys schema, 5205

io\_global\_by\_wait\_by\_latency view

sys schema, 5206

IP addresses

in account names, 1238

IPv6 addresses

in account names, 1238

IPv6 connections, 898

IS boolean\_value, 2167

IS NOT boolean\_value, 2167

IS NOT DISTINCT FROM operator, 2164

IS NOT NULL, 2167

IS NULL, 1731, 2167

and indexes, 1774

IsClosed()

removed features, 53

IsEmpty()

removed features, 53

ISNULL(), 2168

ISOLATION LEVEL, 2756

isolation level, 3118, 6190

IsSimple()

removed features, 53

IS\_FREE\_LOCK(), 2311

IS\_IPV4(), 2469

IS\_IPV4\_COMPAT(), 2469

IS\_IPV4\_MAPPED(), 2470

IS\_IPV6(), 2470

IS\_USED\_LOCK(), 2312

IS\_UUID(), 2471

IS\_VISIBLE\_DD\_OBJECT(), 2461

ITERATE, 2835

iterations option

mysqlslap, 564

**J**

J2EE, 6191

Japanese character sets

conversion, 5312

Japanese, Korean, Chinese character sets

frequently asked questions, 5312

Java, 5270, 6191

JBoss, 6191

JDBC, 5267, 6191

jdbc:mysql:loadbalance://, 3991

JNDI, 6191

join, 6191

nested-loop algorithm, 1717

JOIN, 2698

join algorithm

Block Nested-Loop, 1713

Nested-Loop, 1713

join option

myisampack, 597

join type

ALL, 1818

const, 1816

eq\_ref, 1816

fulltext, 1817

index, 1817

index\_merge, 1817

index\_subquery, 1817

range, 1817

ref, 1816

ref\_or\_null, 1817

system, 1816

unique\_subquery, 1817

joins

USING versus ON, 2702

join\_buffer\_size system variable, 828

JOIN\_INDEX, 1847

JSON

array, 2108

autowrapped values, 2112

false literal, 2108

NDB Cluster, 2608

new features, 23

normalized values, 2112

null literal, 2108

null, true, and false literals, 2110

object, 2108

quote mark handling, 2111

scalar, 2108

sensible values, 2112

string, 2108

temporal values, 2108

true literal, 2108

valid values, 2109

JSON data type, 2106

JSON functions, 2373, 2373

JSON pointer URI fragment identifiers, 2411

JSON schema CHECK constraints

new features, 34

JSON schema validation, 2407

new features, 31

JSON\_APPEND()

removed features, 58

JSON\_ARRAY(), 2375

JSON\_ARRAYAGG(), 2425

JSON\_ARRAY\_APPEND(), 2391

JSON\_ARRAY\_INSERT(), 2392

JSON\_CONTAINS(), 2376

JSON\_CONTAINS\_PATH(), 2377

JSON\_DEPTH(), 2400

JSON\_EXTRACT(), 2378

JSON\_INSERT(), 2393

JSON\_KEYS(), 2382

JSON\_LENGTH(), 2400

JSON\_MERGE(), 2393

deprecated features, 48

JSON\_MERGE() (deprecated), 2113

JSON\_MERGE\_PATCH(), 2113, 2394

JSON\_MERGE\_PRESERVE(), 2113, 2396

JSON\_OBJECT(), 2375

JSON\_OBJECTAGG(), 2425

JSON\_OVERLAPS(), 2382

JSON\_PRETTY(), 2413

JSON\_QUOTE(), 2376

JSON\_REMOVE(), 2397

JSON\_REPLACE(), 2397

JSON\_SCHEMA\_VALID(), 2408

and CHECK constraints, 2409

JSON\_SCHEMA\_VALIDATION\_REPORT(), 2410

JSON\_SEARCH(), 2384

JSON\_SET(), 2397

JSON\_STORAGE\_FREE(), 2414

JSON\_STORAGE\_SIZE(), 2416

JSON\_TABLE(), 2402

JSON\_TABLE() syntax

deprecated features, 49

JSON\_TYPE(), 2401

JSON\_UNQUOTE(), 2398

JSON\_VALID(), 2402

JSON\_VALUE(), 2387

**K**

keep-state option

ndb\_import, 4394

KeepAliveSendInterval, 4171

keep\_files\_on\_create system variable, 829

Kerberos

authentication, 1381

Kerberos authentication

destroy\_tickets parameter, 1392

GSSAPI mode on Windows clients, 1391

krb5.conf file, 1386, 1392

Key cache

MyISAM, 1863

key cache

assigning indexes to, 3000

key distribution center, 6191

key management

keyring, 1485

key migration

keyring, 1478

key partitioning, 4753

key partitions

managing, 4767

splitting and merging, 4767

key space

MyISAM, 3431

key-value store, 1774

KeyControl (Entrust)

keyring\_okv keyring plugin, 1459

keyring, 1441

key management, 1485

keyring components

component\_keyring\_encrypted\_file, 1450

component\_keyring\_file, 1448

component\_keyring\_oci, 1470

keyring functions

general purpose, 1485

installing, 1485

keyring\_key\_fetch(), 1489

keyring\_key\_generate(), 1490

keyring\_key\_length\_fetch(), 1490

keyring\_key\_remove(), 1491

keyring\_key\_store(), 1491

keyring\_key\_type\_fetch(), 1492

plugin specific, 1492

uninstalling, 1485

using, 1486

keyring key migration, 1478

keyring plugins

keyring\_aws, 1460

keyring\_encrypted\_file, 1453

keyring\_file, 1452

keyring\_hashicorp, 1463

keyring\_oci, 1474

keyring\_okv, 1454

keyring service functions

my\_key\_fetch(), 1165

my\_key\_generate(), 1166

my\_key\_remove(), 1166

my\_key\_store(), 1166

keyring system variables, 1496

keyring-migration-destination option

mysqld, 1494

keyring-migration-host option

mysqld, 1494

keyring-migration-password option

mysqld, 1494

keyring-migration-port option

mysqld, 1495

keyring-migration-socket option

mysqld, 1495

keyring-migration-source option

mysqld, 1495

keyring-migration-to-component option

mysqld, 1495

keyring-migration-user option

mysqld, 1496

keyring\_aws functions

keyring\_aws\_rotate\_cmk(), 1492

keyring\_aws\_rotate\_keys(), 1492

keyring\_aws keyring plugin, 1460

keyring\_aws plugin, 3230

installing, 1446

keyring\_aws\_cmk\_id system variable, 1496

keyring\_aws\_conf\_file system variable, 1496

keyring\_aws\_data\_file system variable, 1497

keyring\_aws\_region system variable, 1497

keyring\_aws\_rotate\_cmk() keyring\_aws function, 1492

keyring\_aws\_rotate\_keys() keyring\_aws function, 1492

keyring\_component\_status table

performance\_schema, 1442, 5101

keyring\_encrypted\_file keyring plugin, 1453

keyring\_encrypted\_file plugin, 3230

installing, 1446

keyring\_encrypted\_file\_data system variable, 1499

keyring\_encrypted\_file\_password system variable, 1500

keyring\_file keyring plugin, 1452

keyring\_file plugin, 3230

installing, 1446

keyring\_file\_data system variable, 1501

keyring\_hashicorp functions

keyring\_hashicorp\_update\_config(), 1493

keyring\_hashicorp keyring plugin, 1463

configuring, 1468

keyring\_hashicorp plugin, 3230

installing, 1446

keyring\_hashicorp\_auth\_path system variable, 1502

keyring\_hashicorp\_caching system variable, 1503

keyring\_hashicorp\_ca\_path system variable, 1502

keyring\_hashicorp\_commit\_auth\_path system variable, 1503

keyring\_hashicorp\_commit\_caching system variable, 1504

keyring\_hashicorp\_commit\_ca\_path system variable, 1503

keyring\_hashicorp\_commit\_role\_id system variable, 1504

keyring\_hashicorp\_commit\_server\_url system variable, 1504

keyring\_hashicorp\_commit\_store\_path system variable, 1505

keyring\_hashicorp\_role\_id system variable, 1505

keyring\_hashicorp\_secret\_id system variable, 1505

keyring\_hashicorp\_server\_url system variable, 1506

keyring\_hashicorp\_store\_path system variable, 1506

keyring\_hashicorp\_update\_config() keyring\_hashicorp function, 1493

keyring\_keys table

performance\_schema, 1442, 1539, 1575, 5102

keyring\_key\_fetch() keyring function, 1489

keyring\_key\_generate() keyring function, 1490

keyring\_key\_length\_fetch() keyring function, 1490

keyring\_key\_remove() keyring function, 1491

keyring\_key\_store() keyring function, 1491

keyring\_key\_type\_fetch() keyring function, 1492

keyring\_oci keyring component

configuring, 1471

keyring\_oci keyring plugin, 1474

configuring, 1475

keyring\_oci plugin

installing, 1446

keyring\_oci\_ca\_certificate system variable, 1506

keyring\_oci\_compartment system variable, 1507

keyring\_oci\_encryption\_endpoint system variable, 1507

keyring\_oci\_key\_file system variable, 1507

keyring\_oci\_key\_fingerprint system variable, 1508

keyring\_oci\_management\_endpoint system variable, 1508

keyring\_oci\_master\_key system variable, 1509

keyring\_oci\_secrets\_endpoint system variable, 1509

keyring\_oci\_tenancy system variable, 1509

keyring\_oci\_user system variable, 1510

keyring\_oci\_vaults\_endpoint system variable, 1510

keyring\_oci\_virtual\_vault system variable, 1511

keyring\_okv keyring plugin, 1454

configuring, 1455

Entrust KeyControl, 1459

Gemalto SafeNet KeySecure Applicance, 1458

Oracle Key Vault, 1456

Townsend Alliance Key Manager, 1459

keyring\_okv plugin, 3230

installing, 1446

keyring\_okv\_conf\_dir system variable, 1511

keyring\_operations system variable, 1512

keyring\_udf plugin

installing, 1485

uninstalling, 1485

keys, 1769

foreign, 92, 345

multi-column, 1770

searching on two, 347

keys option

mysqlshow, 553

keys-used option

myisamchk, 586

keystore, 6192

keytab file

Kerberos authentication, 1384, 1385, 1392, 1406

keywords, 1930

KEYWORDS

INFORMATION\_SCHEMA table, 4869

keyword\_list.h header file, 4869

Key\_blocks\_not\_flushed status variable, 982

Key\_blocks\_unused status variable, 982

Key\_blocks\_used status variable, 983

KEY\_BLOCK\_SIZE, 3182, 3187, 6192

key\_buffer\_size myisamchk variable, 583

key\_buffer\_size system variable, 829

key\_cache\_age\_threshold system variable, 831

key\_cache\_block\_size system variable, 831

key\_cache\_division\_limit system variable, 831

KEY\_COLUMN\_USAGE

INFORMATION\_SCHEMA table, 4868

Key\_reads status variable, 983

Key\_read\_requests status variable, 983

Key\_writes status variable, 983

Key\_write\_requests status variable, 983

Kill

thread command, 1892

KILL statement, 3008

Killed

thread state, 1895

Killing slave

thread state, 1904

known errors, 5365

Korean, 5312

krb5.conf file

Kerberos authentication, 1386, 1392

LDAP authentication, 1376, 1381

**L**

labels

stored program block, 2831

LAG(), 2444

language option

mysqld, 754

language support

error messages, 2033

lap option

ndb\_redo\_log\_reader, 4426

large page support, 1886

large tables

NDB Cluster, 2578

large-pages option

mysqld, 754

large\_files\_support system variable, 832

large\_pages system variable, 832

large\_page\_size system variable, 832

LAST\_DAY(), 2197

last\_insert\_id system variable, 833

LAST\_INSERT\_ID(), 2318, 2659

and replication, 3704

and stored routines, 4803

and triggers, 4803

Last\_query\_cost status variable, 983

Last\_query\_partial\_plans status variable, 983

LAST\_VALUE(), 2445

latch, 6192

LateAlloc, 4154

lateral derived tables, 1820, 2719

new features, 28

latest\_file\_io view

sys schema, 5207

layout of installation, 125

lc-messages option

mysqld, 754

lc-messages-dir option

mysqld, 755

LCASE(), 2216

LcpScanProgressTimeout, 4143

lcp\_simulator.cc (test program), 4146

lc\_messages system variable, 833

lc\_messages\_dir system variable, 833

lc\_time\_names system variable, 833

LDAP

authentication, 1361

LDAP authentication

client-side logging, 1413

GSSAPI authentication method, 1375

Kerberos authentication method, 1375

krb5.conf file, 1376, 1381

ldap\_destroy\_tgt parameter, 1381

ldap\_server\_host parameter, 1381

server-side logging, 1412, 1420

WITH\_AUTHENTICATION\_LDAP CMake option, 252

ldap.conf configuration file, 1367

LDAPNOINIT environment variable, 1367

ldap\_destroy\_tgt parameter

LDAP authentication, 1381

ldap\_server\_host parameter

LDAP authentication, 1381

LDML syntax, 2045

LD\_LIBRARY\_PATH environment variable, 316

LD\_PRELOAD environment variable, 217

LD\_RUN\_PATH environment variable, 316, 646

LEAD(), 2446

LEAST(), 2168

LEAVE, 2836

ledir option

mysqld\_safe, 401

LEFT JOIN, 1720, 2698

LEFT OUTER JOIN, 2698

LEFT(), 2216

leftmost prefix of indexes, 1767, 1771

legal names, 1919

length option

myisam\_ftdump, 578

LENGTH(), 2216

less than (<), 2164

less than or equal (<=), 2164

libaio, 126, 199, 251

libmysql, 6192

FAQ, 5322

libmysqlclient, 6192

libmysqlclient library, 5267

libmysqld, 6192

removed features, 56

LIBMYSQL\_ENABLE\_CLEARTEXT\_PLUGIN environment variable, 646

LIBMYSQL\_PLUGINS environment variable, 646

LIBMYSQL\_PLUGIN\_DIR environment variable, 646

library

libmysqlclient, 5267

libs option

mysql\_config, 642

libs\_r option

mysql\_config, 642

license system variable, 833

lifecycle interceptor, 6192

LIKE, 2225

and indexes, 1773

and wildcards, 1773

LIMIT, 2317, 2693

and replication, 3716

optimizations, 1739

parenthesized query expressions, 2684

limitations

InnoDB, 3420

replication, 3704

resource groups, 1032

limitations of NDB Cluster, 4033

limits

file-size, 1792

InnoDB, 3419

maximum columns per table, 1793

maximum number of databases, 1792, 2531

maximum number of tables, 1792, 2565

maximum row size, 1793

maximum tables per join, 2700

maximum tables per view, 4834

table size, 1792

line-numbers option

mysql, 441

linear hash partitioning, 4752

linear key partitioning, 4754

linefeed (\n), 1908, 2399, 2672

LineFromText()

removed features, 53

LineFromWKB()

removed features, 53

lines-terminated-by option

mysqldump, 508, 523

ndb\_import, 4394

ndb\_restore, 4442

LINESTRING data type, 2090

LineString(), 2332

LineStringFromText()

removed features, 53

LineStringFromWKB()

removed features, 53

links

symbolic, 1878

LINK\_RANDOMIZE option

CMake, 245

LINK\_RANDOMIZE\_SEED option

CMake, 245

list, 6192

list action

MySQLInstallerConsole, 159

list partitioning, 4740, 4743

list partitions

adding and dropping, 4761

managing, 4761

list\_add() function

sys schema, 5256

list\_drop() function

sys schema, 5257

literal values

deprecated features, 50

literals, 1907

bit value, 1917

boolean, 1919

date, 1910

hexadecimal, 1915

numeric, 1910

string, 1907

time, 1910

LN(), 2181

load balancing, 6192

LOAD DATA, 2666, 5360

and replication, 3716

LOCAL loading, 1202

load emulation, 556

LOAD XML, 2677

load-data-local-dir option

mysql, 441, 1204

loadable function

creating, 2935

deleting, 2936

loadable functions, 1167

API, 1168

installing, 1168

reference, 2153

uninstalling, 1168

loading

tables, 326

Loading local data is disabled; this must be enabled on both the client and server side

error message, 1203

LOAD\_FILE(), 2216

load\_rewrite\_rules() Rewriter function, 1119

local option

mysqlimport, 523, 1203

local-infile option

mysql, 441, 1203

local-load option

mysqlbinlog, 624, 1204

local-service option

mysqld, 755

localhost, 6193

special treatment of, 382

LOCALTIME, 2197

LOCALTIMESTAMP, 2197

local\_infile system variable, 834, 1203

LOCATE(), 2217

LocationDomainId (API nodes), 4217

LocationDomainId (data nodes), 4120

LocationDomainId (management nodes), 4111

lock, 6193

lock escalation, 6193

LOCK IN SHARE MODE, 2694

LOCK INSTANCE FOR BACKUP, 2750

lock mode, 6193

Lock Monitor, 3369, 3371

lock option

ndb\_select\_all, 4466

LOCK TABLES, 2751

LOCK TABLES privilege, 1215

lock-all-tables option

mysqldump, 514

lock-tables option

mysqldump, 514

mysqlimport, 523

Locked\_connects status variable, 983

locked\_in\_memory system variable, 835

LockExecuteThreadToCPU, 4183

locking, 3113, 6193

external, 752, 898, 1685, 1876, 1898

information schema, 3331

InnoDB, 3114

internal, 1869

metadata, 1873

Performance Schema, 3331

row-level, 1869

table-level, 1869

locking functions, 2310

locking methods, 1869

locking read, 3125, 6193

NOWAIT, 3125

SKIP LOCKED, 3125

locking service

installing, 1161

mysql\_acquire\_locking\_service\_locks() C function, 1161

mysql\_release\_locking\_service\_locks() C function, 1161

service\_get\_read\_locks() function, 1164

service\_get\_write\_locks() function, 1164

service\_release\_locks() function, 1164

uninstalling, 1161

Locking system tables

thread state, 1895

locking\_service service, 1159

LockMaintThreadsToCPU, 4184

LockPagesInMainMemory, 4154

locks\_per\_fragment

ndbinfo table, 4626

lock\_order system variable, 1184

LOCK\_ORDER tool, 1182

lock\_order\_debug\_loop system variable, 1184

lock\_order\_debug\_missing\_arc system variable, 1184

lock\_order\_debug\_missing\_key system variable, 1185

lock\_order\_debug\_missing\_unlock system variable, 1185

lock\_order\_dependencies system variable, 1185

lock\_order\_extra\_dependencies system variable, 1186

lock\_order\_output\_directory system variable, 1186

lock\_order\_print\_txt system variable, 1186

lock\_order\_trace\_loop system variable, 1187

lock\_order\_trace\_missing\_arc system variable, 1187

lock\_order\_trace\_missing\_key system variable, 1187

lock\_order\_trace\_missing\_unlock system variable, 1187

lock\_wait\_timeout system variable, 834

log, 6193

log buffer, 6194

log component

log\_filter\_dragnet, 1095

log\_filter\_internal, 1095

log\_sink\_internal, 1096

log\_sink\_json, 1096

log\_sink\_syseventlog, 1096

log\_sink\_test, 1096

log file, 6194

log files

maintaining, 1091

log files (NDB Cluster), 4316

ndbmtd, 4323

log group, 6194

log option

innochecksum, 575

mysqld\_multi, 408

LOG(), 2182

log-bin option

mysqld, 3588

log-bin-index option

mysqld, 3590

log-error option

mysqld, 755

mysqldump, 503

mysqld\_safe, 401

log-error-file option

mysqlpump, 539

log-isam option

mysqld, 756

log-level option

ndb\_import, 4395

log-name option

ndb\_mgmd, 4330

log-raw option

mysqld, 756

log-short-format option

mysqld, 756

log-tc option

mysqld, 756

log-tc-size option

mysqld, 757

LOG10(), 2182

LOG2(), 2182

logbuffer-size option

ndbd, 4313

ndbmtd, 4313

logbuffers

ndbinfo table, 4628

LogDestination, 4112

logging

new features, 29

passwords, 1198

logging commands (NDB Cluster), 4525

logging slow query

thread state, 1896

logical, 6194

logical backup, 6194

logical operators, 2168

login

thread state, 1896

login-path option, 366

mysql, 442

mysqladmin, 472

mysqlbinlog, 624

mysqlcheck, 483

mysqldump, 498

mysqlimport, 524

mysqlpump, 539

mysqlshow, 553

mysqlslap, 564

mysql\_migrate\_keyring, 611

mysql\_upgrade, 425

my\_print\_defaults, 643

ndbd, 4314

ndbinfo\_select\_all, 4321

ndbxfrm, 4498

ndb\_blob\_tool, 4344

ndb\_config, 4357

ndb\_delete\_all, 4362

ndb\_desc, 4372

ndb\_drop\_index, 4376

ndb\_drop\_table, 4381

ndb\_import, 4395

ndb\_index\_stat, 4405

ndb\_mgm, 4339

ndb\_mgmd, 4330

ndb\_move\_data, 4412

ndb\_perror, 4415

ndb\_print\_backup\_file, 4420

ndb\_restore, 4442

ndb\_secretsfile\_reader, 4461

ndb\_select\_all, 4466

ndb\_select\_count, 4471

ndb\_show\_tables, 4476

ndb\_top, 4483

ndb\_waiter, 4489

LogLevelCheckpoint, 4174

LogLevelCongestion, 4176

LogLevelConnection, 4175

LogLevelError, 4175

LogLevelInfo, 4176

LogLevelNodeRestart, 4175

LogLevelShutdown, 4174

LogLevelStartup, 4173

LogLevelStatistic, 4174

logs

flushing, 1045

server, 1045

logspaces

ndbinfo table, 4629

log\_bin system variable, 3611

log\_bin\_basename system variable, 3612

log\_bin\_index system variable, 3612

log\_bin\_trust\_function\_creators system variable, 3612

log\_bin\_use\_v1\_row\_events system variable, 3613

log\_builtin\_as\_identified\_by\_password

removed features, 52

log\_error system variable, 835

log\_error\_services system variable, 835

log\_error\_suppression\_list system variable, 836

log\_error\_verbosity system variable, 836

log\_filter\_dragnet log component, 1095

log\_filter\_internal log component, 1095

log\_output system variable, 837

log\_queries\_not\_using\_indexes system variable, 837

log\_raw system variable, 838

log\_replica\_updates system variable, 3613

log\_sink\_internal log component, 1096

log\_sink\_json log component, 1096

log\_sink\_syseventlog log component, 1096

log\_sink\_test log component, 1096

log\_slave\_updates system variable, 3614

log\_slow\_admin\_statements system variable

mysqld, 838

log\_slow\_extra system variable, 838

log\_slow\_replica\_statements system variable, 3547

log\_slow\_slave\_statements system variable, 3548

log\_statements\_unsafe\_for\_binlog system variable, 3614

log\_status table

performance\_schema, 5139

log\_syslog system variable, 839

log\_syslog\_facility system variable, 839

log\_syslog\_include\_pid system variable, 839

log\_syslog\_tag system variable, 840

log\_throttle\_queries\_not\_using\_indexes system variable, 840

log\_timestamps system variable, 840

log\_warnings

removed features, 52

Long Data

thread command, 1892

LONG data type, 2082

LONGBLOB data type, 2079

LongMessageBuffer, 4137

LONGTEXT data type, 2079

long\_query\_time system variable, 841

LOOP, 2836

labels, 2831

loops option

ndbinfo\_select\_all, 4321

ndb\_index\_stat, 4405

ndb\_show\_tables, 4476

Loose Index Scan

GROUP BY optimizing, 1736

--loose option prefix, 367

LooseScan

semijoin strategy, 1748

loose\_, 6194

lossy-conversions option

ndb\_move\_data, 4412

ndb\_restore, 4442

lost connection errors, 5342

low-priority option

mysqlimport, 524

low-water mark, 6194

LOWER(), 2217

lower\_case\_file\_system system variable, 842

GRANT, 2904

lower\_case\_table\_names system variable, 842

LOW\_PRIORITY

DELETE modifier, 2648

INSERT modifier, 2660

UPDATE modifier, 2728

low\_priority\_updates system variable, 841

LPAD(), 2217

LRU, 6194

LRU page replacement, 3151

LSN, 6194

LTRIM(), 2218

lz4\_decompress, 357, 644

**M**

macce

deprecated features, 46

macOS

installation, 175

macroman

deprecated features, 46

main connection interface, 1007

main features of MySQL, 5

maintaining

log files, 1091

tables, 1689

maintenance

tables, 476

MAKEDATE(), 2197

MAKETIME(), 2197

MAKE\_SET(), 2218

Making temporary file (append) before replaying LOAD DATA INFILE

thread state, 1902

Making temporary file (create) before replaying LOAD DATA INFILE

thread state, 1902

malicious SQL statements

and NDB Cluster, 4673

manage keys

thread state, 1896

management

resource groups, 1030

management client (NDB Cluster), 4335

(see also mgm)

management node (NDB Cluster)

defined, 3990

management nodes (NDB Cluster), 4323

(see also mgmd)

managing NDB Cluster, 4498

managing NDB Cluster processes, 4306

mandatory\_roles system variable, 843

manual

available formats, 2

online location, 2

syntax conventions, 2

typographical conventions, 2

mask\_inner() MySQL Enterprise Data Masking and De-Identification function, 1635

mask\_outer() MySQL Enterprise Data Masking and De-Identification function, 1636

mask\_pan() MySQL Enterprise Data Masking and De-Identification function, 1637

mask\_pan\_relaxed() MySQL Enterprise Data Masking and De-Identification function, 1637

mask\_ssn() MySQL Enterprise Data Masking and De-Identification function, 1638

Master has sent all binlog to slave; waiting for more updates

thread state, 1900

master thread, 6195

master-data option

mysqldump, 506

master-info-file option

mysqld, 3534

master-retry-count option

mysqld, 3534

master\_info\_repository system variable, 3548, 3648

MASTER\_POS\_WAIT(), 2471, 2803

master\_verify\_checksum system variable, 3615

MATCH ... AGAINST(), 2239

matching

patterns, 334

materialization

common table expressions, 1755, 1845

derived tables, 1755, 1845

subqueries, 1749

view references, 1755, 1845

math, 2477

mathematical functions, 2179

MAX(), 2428

MAX(DISTINCT), 2428

max-allowed-packet option

mysql, 442

mysqldump, 513

mysqlpump, 540

mysql\_upgrade, 425

max-binlog-dump-events option

mysqld, 3593

max-join-size option

mysql, 442

max-record-length option

myisamchk, 586

max-relay-log-size option

mysqld, 3534

max-rows option

ndb\_import, 4395

MaxAllocate, 4140

MaxBufferedEpochBytes, 4165

MaxBufferedEpochs, 4165

MAXDB

removed features, 53

MaxDiskDataLatency, 4207

MaxDiskWriteSpeed, 4168

MaxDiskWriteSpeedOtherNodeRestart, 4168

MaxDiskWriteSpeedOwnRestart, 4168

MaxDMLOperationsPerTransaction, 4131

MaxFKBuildBatchSize, 4137

--maximum option prefix, 367

maximums

maximum columns per table, 1793

maximum number of databases, 1792, 2531

maximum number of tables, 1792, 2565

maximum row size, 1793

maximum tables per join, 2700

maximum tables per view, 4834

table size, 1792

MaxLCPStartDelay, 4144

MaxNoOfAttributes, 4148

MaxNoOfConcurrentIndexOperations, 4131

MaxNoOfConcurrentOperations, 4129

MaxNoOfConcurrentScans, 4137

MaxNoOfConcurrentSubOperations, 4151

MaxNoOfConcurrentTransactions, 4128

MaxNoOfExecutionThreads

ndbmtd, 4189

MaxNoOfFiredTriggers, 4132

MaxNoOfLocalOperations, 4130

MaxNoOfLocalScans, 4138

MaxNoOfOpenFiles, 4143

MaxNoOfOrderedIndexes, 4149

MaxNoOfSavedMessages, 4144

MaxNoOfSubscribers, 4151

MaxNoOfSubscriptions, 4150

MaxNoOfTables, 4148

MaxNoOfTriggers, 4150

MaxNoOfUniqueHashIndexes, 4149

MaxParallelCopyInstances, 4138

MaxParallelScansPerFragment, 4139

MaxReorgBuildBatchSize, 4139

MaxScanBatchSize, 4220

MaxStartFailRetries, 4211

MaxUIBuildBatchSize, 4139

max\_allowed\_packet

and replication, 3717

max\_allowed\_packet system variable, 844

max\_binlog\_cache\_size system variable, 3615

max\_binlog\_size system variable, 3616

max\_binlog\_stmt\_cache\_size system variable, 3616

MAX\_BLOB\_PART\_SIZE, 2616

max\_connections system variable, 845

MAX\_CONNECTIONS\_PER\_HOUR, 1298

max\_connect\_errors system variable, 845

max\_delayed\_threads system variable, 846

max\_digest\_length system variable, 846

max\_error\_count system variable, 847

max\_execution\_time system variable, 847

Max\_execution\_time\_exceeded status variable, 983

Max\_execution\_time\_set status variable, 983

Max\_execution\_time\_set\_failed status variable, 983

max\_heap\_table\_size system variable, 848

MAX\_INDEXES option

CMake, 251

max\_insert\_delayed\_threads system variable, 849

max\_join\_size system variable, 461, 849

max\_length\_for\_sort\_data

deprecated features, 48

max\_length\_for\_sort\_data system variable, 849

max\_points\_in\_geometry system variable, 850

max\_prepared\_stmt\_count system variable, 850

MAX\_QUERIES\_PER\_HOUR, 1298

max\_relay\_log\_size system variable, 3549

MAX\_ROWS

and NDB Cluster, 4734

NDB Cluster, 2578

max\_seeks\_for\_key system variable, 851

max\_sort\_length system variable, 851

max\_sp\_recursion\_depth system variable, 851

max\_tmp\_tables

removed features, 53

MAX\_UPDATES\_PER\_HOUR, 1298

Max\_used\_connections status variable, 984

Max\_used\_connections\_time status variable, 984

MAX\_USER\_CONNECTIONS, 1298

max\_user\_connections system variable, 852

max\_write\_lock\_count system variable, 852

MBR, 2360

MBRContains(), 2360

MBRCoveredBy(), 2361

MBRCovers(), 2361

MBRDisjoint(), 2361

MBREquals(), 2361

MBRIntersects(), 2361

MBROverlaps(), 2361

MBRTouches(), 2362

MBRWithin(), 2362

MD5(), 2307

MDL, 6195

measured-load option

ndb\_top, 4483

mecab\_charset status variable, 984

mecab\_rc\_file system variable, 853

medium trust, 6195

medium-check option

myisamchk, 585

mysqlcheck, 483

MEDIUMBLOB data type, 2079

MEDIUMINT data type, 2058

MEDIUMTEXT data type, 2079

MEMBER OF(), 2390

membership

ndbinfo table, 4629

memcached, 3380, 6195

MEMCACHED\_HOME option

CMake, 261

MEMCACHED\_SASL\_PWDB environment variable, 3391

memcapable command, 3382

memlock option

mysqld, 757

memory allocation library, 217, 401

MEMORY storage engine, 3423, 3435

and replication, 3717

optimization, 1770

memory usage

myisamchk, 594

memory use, 1881

in NDB Cluster, 4036

monitoring, 1884

Performance Schema, 4962

memoryusage

ndbinfo table, 4631

memory\_by\_host\_by\_current\_bytes view

sys schema, 5207

memory\_by\_thread\_by\_current\_bytes view

sys schema, 5208

memory\_by\_user\_by\_current\_bytes view

sys schema, 5208

memory\_global\_by\_current\_bytes view

sys schema, 5209

memory\_global\_total view

sys schema, 5210

memory\_per\_fragment

ndbinfo table, 4632

memory\_summary\_by\_account\_by\_event\_name table

performance\_schema, 5126

memory\_summary\_by\_host\_by\_event\_name table

performance\_schema, 5126

memory\_summary\_by\_thread\_by\_event\_name table

performance\_schema, 5126

memory\_summary\_by\_user\_by\_event\_name table

performance\_schema, 5126

memory\_summary\_global\_by\_event\_name table

performance\_schema, 5126

MemReportFrequency, 4176

merge, 6196

MERGE storage engine, 3423, 3445

MERGE tables

defined, 3445

merging

common table expressions, 1755

derived tables, 1755

view references, 1755

merging JSON values, 2113

metadata

database, 4838

database object, 1979

InnoDB, 4905

invisible columns, 2612

invisible indexes, 1778

stored routines, 4803

triggers, 4808

views, 4821

metadata lock, 6196

metadata locking, 1873, 5085

metadata\_locks table

performance\_schema, 5085

metadata\_locks\_cache\_size

removed features, 53

metadata\_locks\_cache\_size system variable, 853

metadata\_locks\_hash\_instances

removed features, 53

metadata\_locks\_hash\_instances system variable, 854

methods

locking, 1869

metrics counter, 6196

metrics view

sys schema, 5210

MFA (see [multifactor authentication](#_bookmark10))

mgmd (NDB Cluster)

defined, 3990

(see also [management node (NDB Cluster)](#_bookmark9))

MICROSECOND(), 2198

MID(), 2218

midpoint insertion, 3151

midpoint insertion strategy, 6196

MIN(), 2428

MIN(DISTINCT), 2428

MinDiskWriteSpeed, 4169

MinFreePct, 4127

mini-transaction, 6196

minimum bounding rectangle, 2360

minus

unary (-), 2177

MINUS (EXCEPT)

set operations, 2704

MINUTE(), 2198

min\_examined\_row\_limit system variable, 854

mirror sites, 109

miscellaneous functions, 2461

missing-ai-column option

ndb\_import, 4395

mixed statements (Replication), 3727

mixed-mode insert, 6196

MLineFromText()

removed features, 53

MLineFromWKB()

removed features, 53

MM.MySQL, 6196

MOD (modulo), 2182

MOD(), 2182

modes

batch, 341

modify action

MySQLInstallerConsole, 159

modulo (%), 2182

modulo (MOD), 2182

monitor

terminal, 319

monitor option

ndb\_import, 4395

monitoring, 1147, 1884, 3043, 3048, 3081, 3148, 3157, 3187, 3237, 3363, 3365, 5273

multi-source replication, 3509

threads, 1889

Monitors, 3369

enabling, 3369

InnoDB, 3415

output, 3371

Mono, 6196

MONTH(), 2198

MONTHNAME(), 2198

MPointFromText()

removed features, 53

MPointFromWKB()

removed features, 53

MPolyFromText()

removed features, 53

MPolyFromWKB()

removed features, 53

.MRG file, 6195

MRR, 1847

MSSQL

removed features, 53

MSVC\_CPPCHECK option

CMake, 257

multi mysqld, 407

multi-column indexes, 1770

multi-core, 6197

Multi-Range Read

optimization, 1723

multi-source replication, 3504

adding binary log source, 3508

adding GTID source, 3507

configuring, 3505

error messages, 3504

in NDB Cluster, 4713

monitoring, 3509

overview, 3504

performance schema, 3510

provisioning, 3506

resetting replica, 3509

starting replica, 3508

stopping replica, 3509

tutorials, 3504

multi-valued indexes, 2541

new features, 31

multibyte character sets, 5347

multibyte characters, 2037

multifactor authentication, 1286

MULTILINESTRING data type, 2090

MultiLineString(), 2333

MultiLineStringFromText()

removed features, 53

MultiLineStringFromWKB()

removed features, 53

multiple buffer pools, 3150

multiple servers, 1169

multiple-part index, 2536

multiplication (\*), 2177

MULTIPOINT data type, 2090

MultiPoint(), 2333

MultiPointFromText()

removed features, 53

MultiPointFromWKB()

removed features, 53

MULTIPOLYGON data type, 2090

MultiPolygon(), 2333

MultiPolygonFromText()

removed features, 53

MultiPolygonFromWKB()

removed features, 53

multi\_range\_count

removed features, 52

mutex, 6197

mutex wait

monitoring, 3365

mutex\_instances table

performance\_schema, 5011

MUTEX\_TYPE option

CMake, 251

MVCC, 6197

MVCC (multi-version concurrency control), 3038

My

derivation, 8

my.cnf, 6197

and NDB Cluster, 4063, 4099, 4100

in NDB Cluster, 4557

my.cnf option file, 3704

my.ini, 6197

mycnf option

ndb\_config, 4353

ndb\_mgmd, 4331

.MYD file, 6195

.MYI file, 6195

MyISAM

compressed tables, 595, 3433

converting tables to InnoDB, 3062

MyISAM key cache, 1863

MyISAM storage engine, 3423, 3427

myisam-block-size option

mysqld, 757

myisamchk, 356, 578

analyze option, 587

backup option, 585

block-search option, 587

character-sets-dir option, 585

check option, 584

check-only-changed option, 584

correct-checksum option, 585

data-file-length option, 585

debug option, 582

defaults-extra-file option, 582

defaults-file option, 582

defaults-group-suffix option, 582

description option, 587

example output, 588

extend-check option, 584, 585

fast option, 585

force option, 585, 586

help option, 582

HELP option, 582

information option, 585

keys-used option, 586

max-record-length option, 586

medium-check option, 585

no-defaults option, 582

no-symlinks option, 586

options, 581

parallel-recover option, 586

print-defaults option, 582

quick option, 586

read-only option, 585

recover option, 586

safe-recover option, 586

set-auto-increment[ option, 587

set-collation option, 586

silent option, 583

sort-index option, 587

sort-records option, 587

sort-recover option, 587

tmpdir option, 587

unpack option, 587

update-state option, 585

verbose option, 583

version option, 583

wait option, 583

myisamchk --parallel-recover

deprecated features, 49

myisamlog, 356, 594

myisampack, 356, 595, 2603, 3433

backup option, 596

character-sets-dir option, 596

debug option, 596

force option, 596

help option, 596

join option, 597

silent option, 597

test option, 597

tmpdir option, 597

verbose option, 597

version option, 597

wait option, 597

myisam\_block\_size myisamchk variable, 583

myisam\_data\_pointer\_size system variable, 854

myisam\_ftdump, 356, 577

count option, 578

dump option, 578

help option, 578

length option, 578

stats option, 578

verbose option, 578

myisam\_max\_sort\_file\_size system variable, 855, 3430

myisam\_mmap\_size system variable, 855

myisam\_recover\_options system variable, 856, 3431

myisam\_repair\_threads

deprecated features, 49

myisam\_repair\_threads system variable, 857

myisam\_sort\_buffer\_size myisamchk variable, 583

myisam\_sort\_buffer\_size system variable, 857, 3431

myisam\_stats\_method system variable, 857

myisam\_use\_mmap system variable, 858

MyODBC drivers, 6197

MySQL

debugging, 1176

defined, 4

introduction, 4

pronunciation, 5

upgrading, 419

mysql, 355, 428, 6197

auto-rehash option, 435

auto-vertical-output option, 435

batch option, 435

binary-as-hex option, 435

binary-mode option, 436

bind-address option, 436

character-sets-dir option, 436

charset command, 450

clear command, 450

column-names option, 436

column-type-info option, 436

comments option, 436

compress option, 436

compression-algorithms option, 437

connect command, 450

connect-expired-password option, 437

connect-timeout option, 437

database option, 437

debug option, 437

debug-check option, 437

debug-info option, 437

default-auth option, 437

default-character-set option, 438

defaults-extra-file option, 438

defaults-file option, 438

defaults-group-suffix option, 438

delimiter command, 450

delimiter option, 438

disable named commands, 438

dns-srv-name option, 438

edit command, 451

ego command, 451

enable-cleartext-plugin option, 439

execute option, 439

exit command, 451

fido-register-factor option, 439

force option, 440

get-server-public-key option, 440

go command, 451

help command, 450

help option, 435

histignore option, 440

host option, 441

html option, 441

i-am-a-dummy option, 445

ignore-spaces option, 441

init-command option, 441

line-numbers option, 441

load-data-local-dir option, 441, 1204

local-infile option, 441, 1203

login-path option, 442

max-allowed-packet option, 442

max-join-size option, 442

named-commands option, 442

net-buffer-length option, 442

network-namespace option, 442

no-auto-rehash option, 442

no-beep option, 442

no-defaults option, 442

nopager command, 451

notee command, 451

nowarning command, 451

one-database option, 443

pager command, 451

pager option, 443

password option, 443

pipe option, 444

plugin-authentication-kerberos-client-mode option, 444

plugin-dir option, 444

port option, 444

print command, 451

print-defaults option, 444

prompt command, 451

prompt option, 445

protocol option, 445

query\_attributes command, 452

quick option, 445

quit command, 452

raw option, 445

reconnect option, 445

rehash command, 452

resetconnection command, 452

safe-updates option, 445

select-limit option, 446

server-public-key-path option, 446

shared-memory-base-name option, 446

show-warnings option, 446

sigint-ignore option, 446

silent option, 446

skip-column-names option, 446

skip-line-numbers option, 446

socket option, 446

source command, 453

SSL options, 447

ssl-fips-mode option, 447

ssl\_session\_data\_print command, 453

status command, 453

syslog option, 447

system command, 453

table option, 447

tee command, 453

tee option, 447

tls-ciphersuites option, 447

tls-version option, 448

unbuffered option, 448

use command, 453

user option, 448

verbose option, 448

version option, 448

vertical option, 448

wait option, 448

warnings command, 453

xml option, 448

zstd-compression-level option, 449

MySQL APT Repository, 193, 309

MySQL binary distribution, 108

MySQL C API, 5270

mysql client parser

versus mysqld parser, 463

MySQL Cluster Manager

and ndb\_mgm, 4499

mysql command options, 429

mysql commands

list of, 449

MySQL Data Dictionary, 3023

mysql database

gtid\_executed table, 3478

MySQL Dolphin name, 8

MySQL Enterprise Audit, 1512, 5276

MySQL Enterprise Backup, 5274, 6197

Group Replication, 3806

MySQL Enterprise Data Masking and De-Identification, 1626, 5276

MySQL Enterprise Data Masking and De-Identification functions

gen\_blacklist(), 1641

gen\_blocklist(), 1641

gen\_dictionary(), 1641

gen\_dictionary\_drop(), 1642

gen\_dictionary\_load(), 1643

gen\_range(), 1638

gen\_rnd\_email(), 1639

gen\_rnd\_pan(), 1639

gen\_rnd\_ssn(), 1640

gen\_rnd\_us\_phone(), 1640

mask\_inner(), 1635

mask\_outer(), 1636

mask\_pan(), 1637

mask\_pan\_relaxed(), 1637

mask\_ssn(), 1638

MySQL Enterprise Data Masking and De-Identification plugin

elements, 1627

MySQL Enterprise Encryption, 1643, 5275

MySQL Enterprise Firewall, 1598, 5276

installing, 1600

using, 1603

MySQL Enterprise Firewall functions

firewall\_group\_delist(), 1622

firewall\_group\_enlist(), 1622

mysql\_firewall\_flush\_status(), 1624

normalize\_statement(), 1624

read\_firewall\_groups(), 1623

read\_firewall\_group\_allowlist(), 1622

read\_firewall\_users(), 1623

read\_firewall\_whitelist(), 1624

set\_firewall\_group\_mode(), 1623

set\_firewall\_mode(), 1624

MySQL Enterprise Firewall stored procedures

sp\_firewall\_group\_delist(), 1618

sp\_firewall\_group\_enlist(), 1618

sp\_migrate\_firewall\_user\_to\_group(), 1621

sp\_reload\_firewall\_group\_rules(), 1619

sp\_reload\_firewall\_rules(), 1620

sp\_set\_firewall\_group\_mode(), 1619

sp\_set\_firewall\_group\_mode\_and\_user(), 1620

sp\_set\_firewall\_mode(), 1621

MySQL Enterprise Firewall tables

firewall\_groups, 1616

firewall\_group\_allowlist, 1617

firewall\_membership, 1617

firewall\_users, 1617

firewall\_whitelist, 1618

MySQL Enterprise Monitor, 5273

MySQL Enterprise Security, 1286, 1346, 1357, 1361, 1381, 1397, 5275

MySQL Enterprise Thread Pool, 1103, 5276

elements, 1103

installing, 1104

MySQL Enterprise Transparent Data Encryption, 3230

MySQL history, 8

mysql history file, 456

MySQL Installer, 133

MySQL name, 8

MySQL privileges

and NDB Cluster, 4673

mysql prompt command, 454

MySQL server

mysqld, 398, 652

MySQL Shell, 3907

NoSQL, 3907

MySQL Shell JavaScript tutorial, 3911

add documents, 3916

append insert delete, 3922

collection operations, 3915

confirm schema, 3915

create collections, 3915

delete all records, 3930

delete first record, 3929

delete records using conditions, 3929

documents and collections, 3914

documents in tables, 3930

drop collections, 3916

drop index, 3924

drop table, 3930

filter searches, 3926

find all documents, 3917

find documents, 3917

find documents with filter search, 3918

get collections, 3916

help in MySQL Shell, 3913

index documents, 3924

insert complete record, 3925

insert partial record, 3926

insert record, 3930

limit, order, offset results, 3928

limit, sort, and skip results, 3920

modify documents, 3921

nonunique index, 3924

project results, 3920, 3927

quit MySQL Shell, 3913

relational tables, 3924

remove all documents, 3923

remove documents, 3923

remove documents by condition, 3923

remove first document, 3923

remove last document, 3923

select all records, 3926

select records, 3930

select tables, 3926

set and unset fields, 3921

table insert records, 3925

unique index, 3924

update table records, 3929

using MySQL Shell, 3912

world x, 3913

MySQL Shell Python tutorial, 3931

add documents, 3936

append insert delete, 3942

collection operations, 3935

collections create, 3935

collections drop, 3935

collections get, 3935

confirm schema, 3935

delete all records, 3949

delete first record, 3949

delete records using conditions, 3949

documents and collections, 3933

documents in tables, 3950

documents index, 3943

documents remove, 3943

drop index, 3944

drop table, 3950

filter searches, 3946

find all documents, 3937

find documents, 3937

find documents with filter search, 3937

help in MySQL Shell, 3932

insert complete record, 3945

insert partial record, 3945

insert record, 3950

limit order offset results, 3948

limit, sort, and skip results, 3940

modify documents, 3941

nonunique index, 3944

project results, 3940, 3947

quit MySQL Shell, 3933

relational tables, 3944

remove all documents, 3943

remove documents by condition, 3943

remove first document, 3943

remove last document, 3943

select all records, 3946

select records, 3950

set and unset fields, 3941

table insert, 3945

table select, 3946

unique index, 3944

update table records, 3949

using MySQL Shell, 3931

world x, 3933

MySQL SLES Repository, 193, 310

mysql source (command for reading from text files), 342, 459

MySQL source distribution, 108

MySQL storage engines, 3423

MySQL system tables

and NDB Cluster, 4673

and replication, 3718

MySQL version, 109

MySQL Yum Repository, 189, 308

mysql \. (command for reading from text files), 342, 459

mysql.gtid\_executed table, 3478, 3478

compression, 3479

thread/sql/compress\_gtid\_table, 3479

mysql.server, 354, 405

basedir option, 406

datadir option, 406

pid-file option, 406

service-startup-timeout option, 407

mysql.slave\_master\_info table, 3648

mysql.slave\_relay\_log\_info table, 3648

mysql.sock

protection, 5356

MYSQL323

removed features, 53

MYSQL40

removed features, 53

mysqladmin, 355, 463, 2531, 2636, 2990, 2996, 3002, 3008

bind-address option, 470

character-sets-dir option, 470

compress option, 470

compression-algorithms option, 470

connect-timeout option, 470

count option, 470

debug option, 470

debug-check option, 471

debug-info option, 471

default-auth option, 471

default-character-set option, 471

defaults-extra-file option, 471

defaults-file option, 471

defaults-group-suffix option, 471

enable-cleartext-plugin option, 471

force option, 471

get-server-public-key option, 471

help option, 470

host option, 472

login-path option, 472

no-beep option, 472

no-defaults option, 472

password option, 472

pipe option, 473

plugin-dir option, 473

port option, 473

print-defaults option, 473

protocol option, 473

relative option, 474

server-public-key-path option, 474

shared-memory-base-name option, 474

show-warnings option, 474

shutdown-timeout option, 474

silent option, 474

sleep option, 474

socket option, 474

SSL options, 474

ssl-fips-mode option, 475

tls-ciphersuites option, 475

tls-version option, 475

user option, 475

verbose option, 475

version option, 475

vertical option, 475

wait option, 475

zstd-compression-level option, 476

mysqladmin command options, 467

mysqladmin option

mysqld\_multi, 408

mysqlbackup command, 6197

mysqlbinlog, 356, 613

base64-output option, 620

bind-address option, 620

binlog-row-event-max-size option, 620

character-sets-dir option, 620

compress option, 620

compression-algorithms option, 621

connection-server-id option, 621

database option, 621

debug option, 622

debug-check option, 622

debug-info option, 622

default-auth option, 622

defaults-extra-file option, 622

defaults-file option, 623

defaults-group-suffix option, 623

disable-log-bin option, 623

exclude-gtids option, 623

force-if-open option, 623

force-read option, 623

get-server-public-key option, 623

help option, 619

hexdump option, 624

host option, 624

idempotent option, 624

include-gtids option, 624

local-load option, 624, 1204

login-path option, 624

no-defaults option, 624

offset option, 625

open-files-limit option, 625

password option, 625

plugin-dir option, 625

port option, 625

print-defaults option, 625

print-table-metadata option, 625

protocol option, 625

raw option, 625

read-from-remote-master option, 626

read-from-remote-server option, 626

read-from-remote-source option, 626

require-row-format option, 626

result-file option, 626

rewrite-db option, 627

server-id option, 627

server-id-bits option, 627

server-public-key-path option, 627

set-charset option, 628

shared-memory-base-name option, 628

short-form option, 628

skip-gtids option, 628

socket option, 628

SSL options, 628

ssl-fips-mode option, 629

start-datetime option, 629

start-position option, 629

stop-datetime option, 629

stop-never option, 629

stop-never-slave-server-id option, 630

stop-position option, 630

tls-ciphersuites option, 630

tls-version option, 630

to-last-log option, 630

user option, 630

verbose option, 630

verify-binlog-checksum option, 631

version option, 631

zstd-compression-level option, 631

mysqlcheck, 355, 476

all-databases option, 480

all-in- 1 option, 480

analyze option, 481

auto-repair option, 481

bind-address option, 481

character-sets-dir option, 481

check option, 481

check-only-changed option, 481

check-upgrade option, 481

compress option, 481

compression-algorithms option, 481

databases option, 481

debug option, 481

debug-check option, 482

debug-info option, 482

default-auth option, 482

default-character-set option, 482

defaults-extra-file option, 482

defaults-file option, 482

defaults-group-suffix option, 482

enable-cleartext-plugin option, 482

extended option, 482

fast option, 483

force option, 483

get-server-public-key option, 483

help option, 480

host option, 483

login-path option, 483

medium-check option, 483

no-defaults option, 483

optimize option, 483

password option, 483

pipe option, 484

plugin-dir option, 484

port option, 484

print-defaults option, 484

protocol option, 485

quick option, 485

repair option, 485

server-public-key-path option, 485

shared-memory-base-name option, 485

silent option, 485

skip-database option, 485

socket option, 485

SSL options, 485

ssl-fips-mode option, 486

tables option, 486

tls-ciphersuites option, 486

tls-version option, 486

use-frm option, 486

user option, 486

verbose option, 486

version option, 486

write-binlog option, 487

zstd-compression-level option, 487

mysqlclient, 6197

mysqld, 354, 6198

abort-slave-event-count option, 3545

admin-ssl option, 746

allow-suspicious-udfs option, 747

ansi option, 747

as NDB Cluster process, 4226, 4557

audit-log option, 1582

basedir option, 747

binlog-checksum option, 3592

binlog-do-db option, 3590

binlog-ignore-db option, 3591

binlog-row-event-max-size option, 3588

character-set-client-handshake option, 747

chroot option, 747

command options, 745

console option, 748

core-file option, 748

daemonize option, 748

datadir option, 749

ddl-rewriter option, 1122

debug option, 749

debug-sync-timeout option, 749

default-time-zone option, 750

defaults-extra-file option, 750

defaults-file option, 750

defaults-group-suffix option, 750

disconnect-slave-event-count option, 3546

early-plugin-load option, 751

exit codes, 1038

exit-info option, 751

external-locking option, 752

flush option, 752

gdb option, 752

help option, 746

initialize option, 752

initialize-insecure option, 753

innodb option, 3246

innodb-status-file option, 3246

install option, 753

install-manual option, 753

keyring-migration-destination option, 1494

keyring-migration-host option, 1494

keyring-migration-password option, 1494

keyring-migration-port option, 1495

keyring-migration-socket option, 1495

keyring-migration-source option, 1495

keyring-migration-to-component option, 1495

keyring-migration-user option, 1496

language option, 754

large-pages option, 754

lc-messages option, 754

lc-messages-dir option, 755

local-service option, 755

log-bin option, 3588

log-bin-index option, 3590

log-error option, 755

log-isam option, 756

log-raw option, 756

log-short-format option, 756

log-tc option, 756

log-tc-size option, 757

log\_slow\_admin\_statements system variable, 838

master-info-file option, 3534

master-retry-count option, 3534

max-binlog-dump-events option, 3593

max-relay-log-size option, 3534

memlock option, 757

myisam-block-size option, 757

MySQL server, 398, 652

ndb-allow-copying-alter-table option, 4227

ndb-applier-allow-skip-epoch option, 4227

ndb-batch-size option, 4227

ndb-blob-read-batch-bytes option, 4229

ndb-blob-write-batch-bytes option, 4229

ndb-cluster-connection-pool option, 4228

ndb-cluster-connection-pool-nodeids option, 4228

ndb-connectstring option, 4230

ndb-log-apply-status, 4231

ndb-log-empty-epochs, 4232

ndb-log-empty-update, 4232

ndb-log-exclusive-reads, 4232

ndb-log-fail-terminate, 4233

ndb-log-orig, 4233

ndb-log-transaction-dependency, 4233

ndb-log-transaction-id, 4234

ndb-nodeid, 4236

ndb-optimization-delay option, 4237

ndb-optimized-node-selection option, 4237

ndb-schema-dist-timeout option, 4231

ndb-transid-mysql-connection-map option, 4237

ndb-wait-connected option, 4238

ndb-wait-setup option, 4238

ndbcluster option, 4226

ndbinfo option, 4237

no-dd-upgrade option, 758

no-defaults option, 758

no-monitor option, 758

old-style-user-limits option, 759

performance-schema-consumer-events-stages-current option, 5155

performance-schema-consumer-events-stages-history option, 5155

performance-schema-consumer-events-stages-history-long option, 5155

performance-schema-consumer-events-statements-cpu option, 5155

performance-schema-consumer-events-statements-current option, 5155

performance-schema-consumer-events-statements-history option, 5155

performance-schema-consumer-events-statements-history-long option, 5155

performance-schema-consumer-events-transactions-current option, 5155

performance-schema-consumer-events-transactions-history option, 5155

performance-schema-consumer-events-transactions-history-long option, 5156

performance-schema-consumer-events-waits-current option, 5156

performance-schema-consumer-events-waits-history option, 5156

performance-schema-consumer-events-waits-history-long option, 5156

performance-schema-consumer-global-instrumentation option, 5156

performance-schema-consumer-statements-digest option, 5156

performance-schema-consumer-thread-instrumentation option, 5156

performance-schema-consumer-xxx option, 5155

performance-schema-instrument option, 5155

plugin option prefix, 760

plugin-load option, 759

plugin-load-add option, 760

port option, 761

port-open-timeout option, 761

print-defaults option, 761

relay-log-purge option, 3535

relay-log-space-limit option, 3535

remove option, 761

replicate-do-db option, 3535

replicate-do-table option, 3538

replicate-ignore-db option, 3537

replicate-ignore-table option, 3539

replicate-rewrite-db option, 3540

replicate-same-server-id option, 3541

replicate-wild-do-table option, 3541

replicate-wild-ignore-table option, 3542

role in NDB Cluster (see SQL Node (NDB Cluster))

safe-user-create option, 762

server\_uuid variable, 3511

show-replica-auth-info option, 3521

show-slave-auth-info option, 3521

skip-admin-ssl option, 746

skip-grant-tables option, 762

skip-host-cache option, 763

skip-innodb option, 763, 3247

skip-ndbcluster option, 4239

skip-new option, 763

skip-replica-start option, 3543

skip-show-database option, 763

skip-slave-start option, 3544

skip-ssl option, 765

skip-stack-trace option, 764

skip-symbolic-links option, 766

slave-skip-errors option, 3544

slave-sql-verify-checksum option, 3545

slow-start-timeout option, 764

socket option, 764

sporadic-binlog-dump-fail option, 3593

sql-mode option, 764

ssl option, 765

standalone option, 766

starting, 1201

super-large-pages option, 766

symbolic-links option, 766

sysdate-is-now option, 767

tc-heuristic-recover option, 767

tmpdir option, 768

transaction-isolation option, 767

transaction-read-only option, 768

upgrade option, 769

user option, 771

validate-config option, 771

validate-password option, 1437

validate-user-plugins option, 771

verbose option, 772

version option, 772

mysqld (NDB Cluster), 4306

mysqld option

malloc-lib, 401

mysqld\_multi, 408

mysqld\_safe, 402

mysqld options, 653

mysqld options and variables

NDB Cluster, 4226

mysqld parser

versus mysql client parser, 463

mysqld system variables, 653

mysqld threads

observability, 5006

mysqld-auto.cnf option file, 359, 360, 874, 936, 939, 958, 963, 1590, 2940, 3011, 5089

mysqld-long-query-time option

mysqldump, 513

mysqld-safe-log-timestamps option

mysqld\_safe, 401

mysqld-version option

mysqld\_safe, 402

MySQLdb, 6198

mysqldump, 314, 355, 487, 6198

add-drop-database option, 502

add-drop-table option, 502

add-drop-trigger option, 502

add-locks option, 514

all-databases option, 511

all-tablespaces option, 502

allow-keywords option, 502

apply-replica-statements option, 504

apply-slave-statements option, 504

bind-address option, 497

character-sets-dir option, 504

column-statistics option, 512

comments option, 503

compact option, 508

compatible option, 508

complete-insert option, 508

compress option, 497

compression-algorithms option, 497

create-options option, 508

databases option, 511

debug option, 503

debug-check option, 503

debug-info option, 503

default-auth option, 497

default-character-set option, 504

defaults-extra-file option, 501

defaults-file option, 501

defaults-group-suffix option, 501

delete-master-logs option, 505

delete-source-logs option, 504

disable-keys option, 512

dump-date option, 503

dump-replica option, 505

dump-slave option, 505

enable-cleartext-plugin option, 497

events option, 511

extended-insert option, 513

fields-enclosed-by option, 508, 523

fields-escaped-by option, 508, 523

fields-optionally-enclosed-by option, 508, 523

fields-terminated-by option, 508, 523

flush-logs option, 514

flush-privileges option, 514

force option, 503

get-server-public-key option, 497

help option, 504

hex-blob option, 508

host option, 498

ignore-error option, 511

ignore-table option, 511

include-master-host-port option, 506

include-source-host-port option, 505

insert-ignore option, 513

lines-terminated-by option, 508, 523

lock-all-tables option, 514

lock-tables option, 514

log-error option, 503

login-path option, 498

master-data option, 506

max-allowed-packet option, 513

mysqld-long-query-time option, 513

net-buffer-length option, 513

network-timeout option, 513

no-autocommit option, 515

no-create-db option, 502

no-create-info option, 502

no-data option, 511

no-defaults option, 501

no-set-names option, 504

no-tablespaces option, 502

opt option, 513

order-by-primary option, 515

password option, 498

pipe option, 499

plugin-authentication-kerberos-client-mode option, 499

plugin-dir option, 499

port option, 499

print-defaults option, 501

problems, 517, 4835

protocol option, 499

quick option, 514

quote-names option, 508

replace option, 502

result-file option, 509

routines option, 512

server-public-key-path option, 499

set-charset option, 504

set-gtid-purged option, 506

shared-memory-base-name option, 515

show-create-skip-secondary-engine option, 509

single-transaction option, 515

skip-comments option, 503

skip-generated-invisible-primary-key option, 512

skip-opt option, 514

socket option, 499

source-data option, 506

SSL options, 500

ssl-fips-mode option, 500

tab option, 509

tables option, 512

tls-ciphersuites option, 500

tls-version option, 500

triggers option, 512

tz-utc option, 509

user option, 500

using for backups, 1676

verbose option, 503

version option, 504

views, 517, 4835

where option, 512

workarounds, 517, 4835

xml option, 510

zstd-compression-level option, 500

mysqldumpslow, 356, 639

debug option, 640

help option, 640

verbose option, 641

mysqld\_multi, 354, 407

defaults-extra-file option, 408

defaults-file option, 408

example option, 408

help option, 408

log option, 408

mysqladmin option, 408

mysqld option, 408

no-defaults option, 408

no-log option, 408

password option, 409

silent option, 409

tcp-ip option, 409

user option, 409

verbose option, 409

version option, 409

MYSQLD\_OPTS environment variable, 217

mysqld\_safe, 354, 399

basedir option, 400

core-file-size option, 400

datadir option, 400

defaults-extra-file option, 401

defaults-file option, 401

help option, 400

ledir option, 401

log-error option, 401

malloc-lib option, 401

mysqld option, 402

mysqld-safe-log-timestamps option, 401

mysqld-version option, 402

nice option, 402

no-defaults option, 403

open-files-limit option, 403

pid-file option, 403

plugin-dir option, 403

port option, 403

skip-kill-mysqld option, 403

skip-syslog option, 403

socket option, 403

syslog option, 403

syslog-tag option, 403

timezone option, 403

user option, 404

mysqlimport, 314, 355, 517, 2666

bind-address option, 521

character-sets-dir option, 521

columns option, 521

compress option, 521

compression-algorithms option, 521

debug option, 522

debug-check option, 522

debug-info option, 522

default-auth option, 522

default-character-set option, 522

defaults-extra-file option, 522

defaults-file option, 522

defaults-group-suffix option, 522

delete option, 522

enable-cleartext-plugin option, 523

force option, 523

get-server-public-key option, 523

help option, 521

host option, 523

ignore option, 523

ignore-lines option, 523

local option, 523, 1203

lock-tables option, 523

login-path option, 524

low-priority option, 524

no-defaults option, 524

password option, 524

pipe option, 525

plugin-dir option, 525

port option, 525

print-defaults option, 525

protocol option, 525

replace option, 525

server-public-key-path option, 525

shared-memory-base-name option, 526

silent option, 526

socket option, 526

SSL options, 526

ssl-fips-mode option, 526

tls-ciphersuites option, 527

tls-version option, 527

use-threads option, 527

user option, 527

verbose option, 527

version option, 527

zstd-compression-level option, 527

MySQLInstallerConsole, 153

configure action, 156

help action, 156

install action, 156

list action, 159

modify action, 159

remove action, 160

set action, 160

status action, 161

update action, 162

upgrade action, 162

mysqlpump, 355, 528

add-drop-database option, 534

add-drop-table option, 534

add-drop-user option, 535

add-locks option, 535

all-databases option, 535

bind-address option, 535

character-sets-dir option, 535

column-statistics option, 535

complete-insert option, 535

compress option, 536

compress-output option, 536

compression-algorithms option, 536

databases option, 536

debug option, 536

debug-check option, 536

debug-info option, 536

default-auth option, 537

default-character-set option, 537

default-parallelism option, 537

defaults-extra-file option, 537

defaults-file option, 537

defaults-group-suffix option, 537

defer-table-indexes option, 537

events option, 537

exclude-databases option, 538

exclude-events option, 538

exclude-routines option, 538

exclude-tables option, 538

exclude-triggers option, 538

exclude-users option, 538

extended-insert option, 538

get-server-public-key option, 538

help option, 534

hex-blob option, 539

host option, 539

include-databases option, 539

include-events option, 539

include-routines option, 539

include-tables option, 539

include-triggers option, 539

include-users option, 539

insert-ignore option, 539

log-error-file option, 539

login-path option, 539

max-allowed-packet option, 540

net-buffer-length option, 540

no-create-db option, 540

no-create-info option, 540

no-defaults option, 540

object selection, 545

parallel-schemas option, 540

parallelism, 546

password option, 540

plugin-dir option, 541

port option, 541

print-defaults option, 541

protocol option, 541

replace option, 542

restrictions, 547

result-file option, 542

routines option, 542

server-public-key-path option, 542

set-charset option, 542

set-gtid-purged option, 542

single-transaction option, 543

skip-definer option, 543

skip-dump-rows option, 543

skip-generated-invisible-primary-key option, 543

socket option, 543

SSL options, 543

ssl-fips-mode option, 544

tls-ciphersuites option, 544

tls-version option, 544

triggers option, 544

tz-utc option, 544

user option, 545

users option, 545

version option, 545

watch-progress option, 545

zstd-compression-level option, 545

mysqlsh, 355

mysqlshow, 356, 548

bind-address option, 551

character-sets-dir option, 551

compress option, 551

compression-algorithms option, 551

count option, 551

debug option, 551

debug-check option, 551

debug-info option, 551

default-auth option, 552

default-character-set option, 552

defaults-extra-file option, 552

defaults-file option, 552

defaults-group-suffix option, 552

enable-cleartext-plugin option, 552

get-server-public-key option, 552

help option, 551

host option, 553

keys option, 553

login-path option, 553

no-defaults option, 553

password option, 553

pipe option, 554

plugin-dir option, 554

port option, 554

print-defaults option, 554

protocol option, 554

server-public-key-path option, 554

shared-memory-base-name option, 555

show-table-type option, 555

socket option, 555

SSL options, 555

ssl-fips-mode option, 555

status option, 555

tls-ciphersuites option, 555

tls-version option, 556

user option, 556

verbose option, 556

version option, 556

zstd-compression-level option, 556

mysqlslap, 356, 556

auto-generate-sql option, 561

auto-generate-sql-add-autoincrement option, 561

auto-generate-sql-execute-number option, 561

auto-generate-sql-guid-primary option, 561

auto-generate-sql-load-type option, 561

auto-generate-sql-secondary-indexes option, 562

auto-generate-sql-unique-query-number option, 562

auto-generate-sql-unique-write-number option, 562

auto-generate-sql-write-number option, 562

commit option, 562

compress option, 562

compression-algorithms option, 562

concurrency option, 562

create option, 562

create-schema option, 562

csv option, 562

debug option, 563

debug-check option, 563

debug-info option, 563

default-auth option, 563

defaults-extra-file option, 563

defaults-file option, 563

defaults-group-suffix option, 563

delimiter option, 563

detach option, 564

enable-cleartext-plugin option, 564

engine option, 564

get-server-public-key option, 564

help option, 561

host option, 564

iterations option, 564

login-path option, 564

no-defaults option, 564

no-drop option, 564

number-char-cols option, 565

number-int-cols option, 565

number-of-queries option, 565

only-print option, 565

password option, 565

pipe option, 566

plugin-dir option, 566

port option, 566

post-query option, 566

post-system option, 566

pre-query option, 566

pre-system option, 566

print-defaults option, 566

protocol option, 566

query option, 566

server-public-key-path option, 567

shared-memory-base-name option, 567

silent option, 567

socket option, 567

sql-mode option, 567

SSL options, 567

ssl-fips-mode option, 567

tls-ciphersuites option, 568

tls-version option, 568

user option, 568

verbose option, 568

version option, 568

zstd-compression-level option, 568

mysqlx X Plugin option, 3959

mysqlx\_bind\_address system variable, 3959

mysqlx\_compression\_algorithms system variable, 3961

mysqlx\_connect\_timeout system variable, 3962

mysqlx\_deflate\_default\_compression\_level system variable, 3962

mysqlx\_deflate\_max\_client\_compression\_level system variable, 3962

mysqlx\_document\_id\_unique\_prefix system variable, 3963

mysqlx\_enable\_hello\_notice system variable, 3963

mysqlx\_idle\_worker\_thread\_timeout system variable, 3963

mysqlx\_interactive\_timeout system variable, 3964

mysqlx\_lz4\_default\_compression\_level system variable, 3964

mysqlx\_lz4\_max\_client\_compression\_level system variable, 3964

mysqlx\_max\_allowed\_packet system variable, 3965

mysqlx\_max\_connections system variable, 3965

mysqlx\_min\_worker\_threads system variable, 3965

mysqlx\_port system variable, 3966

mysqlx\_port\_open\_timeout system variable, 3966

mysqlx\_read\_timeout system variable, 3966

mysqlx\_socket system variable, 3967

mysqlx\_ssl\_ca system variable, 3967

mysqlx\_ssl\_capath system variable, 3968

mysqlx\_ssl\_cert system variable, 3968

mysqlx\_ssl\_cipher system variable, 3968

mysqlx\_ssl\_crl system variable, 3969

mysqlx\_ssl\_crlpath system variable, 3969

mysqlx\_ssl\_key system variable, 3969

MYSQLX\_TCP\_PORT environment variable, 646

MYSQLX\_TCP\_PORT option

CMake, 251

MYSQLX\_UNIX\_ADDR option

CMake, 251

MYSQLX\_UNIX\_PORT environment variable, 646

mysqlx\_wait\_timeout system variable, 3969

mysqlx\_write\_timeout system variable, 3970

mysqlx\_zstd\_default\_compression\_level system variable, 3970

mysqlx\_zstd\_max\_client\_compression\_level system variable, 3971

mysql\_acquire\_locking\_service\_locks() C function

locking service, 1161

mysql\_clear\_password authentication plugin, 1346

mysql\_config, 641

cflags option, 642

cxxflags option, 642

include option, 642

libs option, 642

libs\_r option, 642

plugindir option, 642

port option, 642

socket option, 642

variable option, 642

version option, 642

mysql\_config\_editor, 356, 601

debug option, 604

help option, 604

verbose option, 605

version option, 605

mysql\_config\_server, 641

MYSQL\_DATADIR option

CMake, 245

MYSQL\_DEBUG environment variable, 357, 646, 1182

mysql\_firewall\_flush\_status() MySQL Enterprise Firewall function, 1624

mysql\_firewall\_mode system variable, 1625

mysql\_firewall\_trace system variable, 1625

MYSQL\_FIREWALL\_USERS

INFORMATION\_SCHEMA table, 4950

MYSQL\_FIREWALL\_WHITELIST

INFORMATION\_SCHEMA table, 4950

MYSQL\_GROUP\_SUFFIX environment variable, 646

MYSQL\_HISTFILE environment variable, 455, 646

MYSQL\_HISTIGNORE environment variable, 456, 646

MYSQL\_HOME environment variable, 646

MYSQL\_HOST environment variable, 384, 646

mysql\_info(), 2507, 2659, 2676, 2729

mysql\_insert\_id(), 2659

mysql\_install\_db

removed features, 54

mysql\_keyring service, 1165

MYSQL\_MAINTAINER\_MODE option

CMake, 251

mysql\_migrate\_keyring, 356, 607

component-dir option, 609

defaults-extra-file option, 609

defaults-file option, 610

defaults-group-suffix option, 610

destination-keyring option, 610

destination-keyring-configuration-dir option, 610

get-server-public-key option, 610

help option, 609

host option, 610

login-path option, 611

no-defaults option, 611

online-migration option, 611

password option, 611

port option, 611

print-defaults option, 611

server-public-key-path option, 612

socket option, 612

source-keyring option, 612

source-keyring-configuration-dir option, 612

SSL options, 612

ssl-fips-mode option, 613

tls-ciphersuites option, 613

tls-version option, 613

user option, 613

verbose option, 613

version option, 613

mysql\_native\_password authentication plugin, 1336

mysql\_native\_password\_proxy\_users system variable, 858, 1296

mysql\_no\_login authentication plugin, 1393

MYSQL\_OPENSSL\_UDF\_DH\_BITS\_THRESHOLD environment variable, 646, 1648

MYSQL\_OPENSSL\_UDF\_DSA\_BITS\_THRESHOLD environment variable, 646, 1648

MYSQL\_OPENSSL\_UDF\_RSA\_BITS\_THRESHOLD environment variable, 646, 1648

mysql\_options()

MYSQL\_OPT\_LOAD\_DATA\_LOCAL\_DIR, 1204

MYSQL\_OPT\_LOCAL\_INFILE, 1203, 1204

MYSQL\_OPT\_COMPRESS

deprecated features, 48

MYSQL\_OPT\_SSL\_ENFORCE

removed features, 54

MYSQL\_OPT\_SSL\_VERIFY\_SERVER\_CERT

removed features, 54

mysql\_plugin

removed features, 56

MYSQL\_PROJECT\_NAME option

CMake, 251

MYSQL\_PS1 environment variable, 646

MYSQL\_PWD

deprecated features, 48

MYSQL\_PWD environment variable, 646

mysql\_query\_attribute\_string() function, 1970

mysql\_real\_escape\_string\_quote(), 1909, 2219

mysql\_release\_locking\_service\_locks() C function

locking service, 1161

MYSQL\_SECURE\_AUTH

removed features, 52

mysql\_secure\_installation, 354, 412

defaults-extra-file option, 414

defaults-file option, 414

defaults-group-suffix option, 414

help option, 414

host option, 414

no-defaults option, 414

password option, 414

port option, 414

print-defaults option, 415

protocol option, 415

socket option, 415

SSL options, 415

ssl-fips-mode option, 415

tls-ciphersuites option, 415

tls-version option, 415

use-default option, 416

user option, 416

mysql\_session\_track\_get\_first() C API function, 1035

mysql\_session\_track\_get\_next() C API function, 1035

mysql\_ssl\_rsa\_setup, 355, 416

datadir option, 418

help option, 418

suffix option, 418

uid option, 418

verbose option, 418

version option, 418

MYSQL\_TCP\_PORT environment variable, 357, 646, 1175, 1176

MYSQL\_TCP\_PORT option

CMake, 251

MYSQL\_TEST\_LOGIN\_FILE environment variable, 367, 602, 646

MYSQL\_TEST\_TRACE\_CRASH environment variable, 646

MYSQL\_TEST\_TRACE\_DEBUG environment variable, 646

mysql\_tzinfo\_to\_sql, 355, 418

MYSQL\_UNIX\_ADDR option

CMake, 251

MYSQL\_UNIX\_PORT environment variable, 357, 646, 1175, 1176

mysql\_upgrade, 355, 419

bind-address option, 423

character-sets-dir option, 424

compress option, 424

compression-algorithms option, 424

debug option, 424

debug-check option, 424

debug-info option, 424

default-auth option, 424

default-character-set option, 424

defaults-extra-file option, 424

defaults-file option, 424

defaults-group-suffix option, 425

deprecated features, 48

force option, 425

get-server-public-key option, 425

help option, 423

host option, 425

login-path option, 425

max-allowed-packet option, 425

mysql\_upgrade\_info file, 283, 420

net-buffer-length option, 425

no-defaults option, 425

password option, 426

pipe option, 426

plugin-dir option, 426

port option, 426

print-defaults option, 426

protocol option, 426

server-public-key-path option, 426

shared-memory-base-name option, 427

skip-sys-schema option, 427

socket option, 427

SSL options, 427

ssl-fips-mode option, 427

tls-ciphersuites option, 428

tls-version option, 428

upgrade-system-tables option, 428

user option, 428

verbose option, 428

version-check option, 428

write-binlog option, 428

zstd-compression-level option, 428

mysql\_upgrade\_info file

deprecated features, 48

mysql\_upgrade, 283, 420

my\_key\_fetch() keyring service function, 1165

my\_key\_generate() keyring service function, 1166

my\_key\_remove() keyring service function, 1166

my\_key\_store() keyring service function, 1166

my\_print\_defaults, 357, 643

config-file option, 643

debug option, 643

defaults-extra-file option, 643

defaults-file option, 643

defaults-group-suffix option, 643

extra-file option, 643

help option, 643

login-path option, 643

no-defaults option, 643

show option, 644

verbose option, 644

version option, 644

**N**

Name, 4225

name-file option

comp\_err, 412

named pipes, 165, 170

named time zone support

Unknown or incorrect time zone, 1025

named windows

window functions, 2455

named-commands option

mysql, 442

named\_pipe system variable, 858

named\_pipe\_full\_access\_group system variable, 859

names, 1919

case sensitivity, 1923

variables, 1960

namespaces

network, 1018

NAME\_CONST(), 2472, 4829

naming

releases of MySQL, 108

NATIONAL CHAR data type, 2077

NATIONAL VARCHAR data type, 2078

native backup and restore

backup identifiers, 4553

native C API, 6198

native functions

reference, 2133

native operators

reference, 2133

NATURAL INNER JOIN, 2698

NATURAL JOIN, 2698

natural key, 6198

NATURAL LEFT JOIN, 2698

NATURAL LEFT OUTER JOIN, 2698

NATURAL RIGHT JOIN, 2698

NATURAL RIGHT OUTER JOIN, 2698

NCHAR data type, 2077

NDB API counters (NDB Cluster), 4571

scope, 4576

status variables associated with, 4578

types, 4576

NDB API database objects

and NDB Cluster replication, 4678

NDB API replica status variables

and NDB Cluster Replication, 4677

NDB Cluster, 3986

"quick" configuration, 4076

administration, 4226, 4306, 4324, 4335, 4335, 4499, 4532

and application feature requirements, 4032

and DNS, 4045

and INFORMATION\_SCHEMA, 4674

and IP addressing, 4045

and MySQL privileges, 4673

and MySQL root user, 4673, 4675

and networking, 3995

and transactions, 4124

API node, 3990, 4214

applications supported, 4032

availability, 4030

available platforms, 3987

BACKUP Events, 4532

backups, 4428, 4550, 4550, 4551, 4554, 4555

CHECKPOINT Events, 4527

cluster logs, 4523, 4525

CLUSTERLOG commands, 4525

CLUSTERLOG STATISTICS command, 4532

commands, 4226, 4306, 4324, 4335, 4499

compared to InnoDB, 4030, 4031, 4032, 4032

compared to standalone MySQL Server, 4030, 4031, 4032, 4032

concepts, 3990

configuration, 4044, 4076, 4076, 4107, 4108, 4117, 4214, 4335, 4557

configuration (example), 4100

configuration changes, 4537

configuration files, 4063, 4099

configuration parameters, 4078, 4079, 4086, 4087, 4088

configuring, 4554

CONNECT command, 4500

CONNECTION Events, 4526

connection string, 4106

CREATE NODEGROUP command, 4500

data node, 3990, 4117

data nodes, 4306, 4322

defining node hosts, 4107

direct connections between nodes, 4293

Disk Data tables (see [NDB Cluster Disk Data](#_bookmark1))

DROP NODEGROUP command, 4500

ENTER SINGLE USER MODE command, 4500

ERROR Events, 4531

error logs, 4316

event log format, 4526

event logging thresholds, 4525

event logs, 4523, 4525

event severity levels, 4525

event types, 4523, 4526

execution threads, 4189

EXIT command, 4501

EXIT SINGLE USER MODE command, 4501

FAQ, 5299

fragment replicas, 3993

FULLY\_REPLICATED (NDB\_TABLE), 2621

GCP Stop errors, 4208

general description, 3989

HELP command, 4501

HostName parameter

and security, 4669

importing data, 4556

indirect indexes, 2608

INFO Events, 4531

information sources, 3988

insecurity of communication protocols, 4669

installation, 4044

installation (Linux), 4047

installation (Windows), 4055

installing .deb file (Linux), 4053

installing binary (Windows), 4055

installing binary release (Linux), 4047

installing from source (Linux), 4054

installing from source (Windows), 4058

installing RPM (Linux), 4049

interconnects, 4306

Java clients, 3991

JSON, 2608

large tables, 2578

log files, 4316, 4323

logging commands, 4525

management client (ndb\_mgm), 4335

management commands, 4532

management node, 3990, 4108

management nodes, 4323

managing, 4498

MAX\_ROWS, 2578

memory usage and recovery, 4036, 4537

mgm client, 4499

mgm management client, 4532

mgm process, 4335

mgmd process, 4324

monitoring, 4571

multiple management servers, 4538

mysqld options and variables for, 4226

mysqld process, 4226, 4557

ndbd, 4306

ndbd process, 4306, 4534

ndbinfo\_select\_all, 4317

ndbmtd, 4322

ndb\_mgm, 4065, 4335

ndb\_mgmd process, 4323

network configuration

and security, 4669

network transporters, 4306

networking, 4293, 4294

node failure (single user mode), 4539

node identifiers, 4297, 4298

node logs, 4523

NODELOG DEBUG command, 4501

NODERESTART Events, 4528

nodes and node groups, 3993

nodes and types, 3990

NOLOGGING (NDB\_TABLE), 2620

partitioning support, 4035

partitions, 3993

PARTITION\_BALANCE (NDB\_TABLE), 2620

Performance Schema, 4661

performing queries, 4066

preparing for replication, 4692

process management, 4306

PROMPT command, 4501

QUIT command, 4501

READ\_BACKUP (NDB\_TABLE), 2620

replication, 4675

(see also [NDB Cluster replication](#_bookmark2))

REPORT command, 4502

requirements, 3995

resetting, 4537

RESTART command, 4502

restarting, 4069

restoring backups, 4428

rolling restarts (multiple management servers), 4538

runtime statistics, 4532

SCHEMA Events, 4531

security, 4668

and firewalls, 4670, 4672

and HostName parameter, 4669

and network configuration, 4669

and network ports, 4672

and remote administration, 4672

networking, 4669

security procedures, 4674

shared memory transport, 4294

SHOW command, 4502

SHUTDOWN command, 4504

shutting down, 4069

single user mode, 4500, 4538

SINGLEUSER Events, 4532

SQL node, 3990, 4214

SQL nodes, 4557

SQL statements for monitoring, 4662

START BACKUP command, 4700

START command, 4504

start phases (summary), 4535

starting, 4076

starting nodes, 4059, 4065

starting or restarting, 4535

STARTUP Events, 4527

STATISTICS Events, 4530

STATUS command, 4504

status variables, 4265

STOP command, 4504

storage requirements, 2125

thread states, 1904

trace files, 4316

transaction handling, 4039

transaction isolation level, 4037

transporters

shared memory (SHM), 4294

TCP/IP, 4293

troubleshooting backups, 4555

upgrades and downgrades, 4070, 4536

USING HASH, 2547

using tables and data, 4066

NDB Cluster 8.0, 3997

NDB Cluster Auto-Installer (NO LONGER SUPPORTED), 4076

NDB Cluster Disk Data, 4558

creating log file groups, 4559

creating tables, 4559, 4561

creating tablespaces, 4560

dropping Disk Data objects, 4563

storage requirements, 4564

NDB Cluster How-To, 4044

NDB Cluster limitations, 4033

and differences from standard MySQL limits, 4036

binary logging, 4042

database objects, 4040

Disk Data storage, 4043

error handling and reporting, 4040

geometry data types, 4035

implementation, 4042

imposed by configuration, 4036

JSON columns, 4036

memory usage and transaction handling, 4039

multiple management servers, 4044

multiple MySQL servers, 4043

partitioning, 4035

performance, 4042

resolved in current version from previous versions, 4044

syntax, 4033

transactions, 4037

unsupported features, 4041

NDB Cluster processes, 4306

NDB Cluster programs, 4306

NDB Cluster replication, 4675

and --initial option, 4682

and circular replication, 4679

and NDB API database objects, 4678

and primary key, 4682

and single point of failure, 4696

and unique keys, 4682

backups, 4699

bidirectional replication, 4705

circular replication, 4705

concepts, 4677, 4677

conflict resolution, 4713

failover, 4696, 4697

gap event, 4679

known issues, 4679

loss of connection, 4679

point-in-time recovery, 4704

preparing, 4692

read conflict detection and resolution, 4724

requirements, 4677

reset-replica.pl backup automation script, 4702

restoring from backup, 4699

starting, 4695

storage engines other than NDB on replica, 4683

synchronization of source and replica, 4702

system tables used, 4685

NDB Cluster Replication

and NDB API replica status variables, 4677

NDB Cluster replication conflict resolution

exceptions table, 4720

NDB comment options, 2616

ndb option

ndb\_perror, 4416

perror, 645

NDB statistics variables

and NDB API counters, 4578

NDB statistics variables (NDB Cluster), 4571

scope, 4576

types, 4576

NDB storage engine (see [NDB Cluster](#_bookmark3))

FAQ, 5299

NDB tables

and MySQL root user, 4673

NDB utilities

security issues, 4675

NDB$CFT\_CAUSE, 4721

NDB$EPOCH(), 4717

limitations, 4718

NDB$EPOCH2(), 4719

NDB$EPOCH2\_TRANS(), 4719

NDB$EPOCH\_TRANS(), 4717, 4719

NDB$MAX(), 4715

NDB$MAX\_DELETE\_WIN(), 4715

NDB$MAX\_DEL\_WIN\_INS(), 4716

NDB$MAX\_INS(), 4716

NDB$OLD, 4715

NDB$OP\_TYPE, 4721

NDB$ORIG\_TRANSID, 4721

ndb-allow-copying-alter-table option

mysqld, 4227

ndb-applier-allow-skip-epoch option

mysqld, 4227

ndb-batch-size option

mysqld, 4227

ndb-blob-read-batch-bytes option

mysqld, 4229

ndb-blob-write-batch-bytes option

mysqld, 4229

ndb-cluster-connection-pool option

mysqld, 4228

ndb-cluster-connection-pool-nodeids option

mysqld, 4228

ndb-connectstring option

mysqld, 4230

ndbd, 4314

ndbinfo\_select\_all, 4321

ndb\_blob\_tool, 4345

ndb\_config, 4353

ndb\_delete\_all, 4363

ndb\_desc, 4372

ndb\_drop\_index, 4377

ndb\_drop\_table, 4381

ndb\_import, 4396

ndb\_index\_stat, 4406

ndb\_mgm, 4339

ndb\_mgmd, 4331

ndb\_move\_data, 4412

ndb\_restore, 4443

ndb\_select\_all, 4466

ndb\_select\_count, 4471

ndb\_show\_tables, 4476

ndb\_waiter, 4489

ndb-default-column-format option (NDB Cluster), 4230

ndb-deferred-constraints option (NDB Cluster), 4230

ndb-distribution option (NDB Cluster), 4231

ndb-log-apply-status option

mysqld, 4231

ndb-log-empty-epochs option

mysqld, 4232

ndb-log-empty-update option

mysqld, 4232

ndb-log-exclusive-reads option

mysqld, 4232

ndb-log-fail-terminate option

mysqld, 4233

ndb-log-orig option

mysqld, 4233

ndb-log-transaction-dependency option

mysqld, 4233

ndb-log-transaction-id option

mysqld, 4234

ndb-log-update-as-write

conflict resolution, 4714

ndb-log-update-as-write option (NDB Cluster), 4234

ndb-log-update-minimal option (NDB Cluster), 4235

ndb-log-update-write, 4692

ndb-log-updated-only, 4692

ndb-log-updated-only option (NDB Cluster), 4235

ndb-mgmd-host option

ndbd, 4314

ndbinfo\_select\_all, 4321

ndb\_blob\_tool, 4345

ndb\_config, 4357

ndb\_delete\_all, 4363

ndb\_desc, 4372

ndb\_drop\_index, 4377

ndb\_drop\_table, 4382

ndb\_import, 4396

ndb\_index\_stat, 4406

ndb\_mgm, 4339

ndb\_mgmd, 4331

ndb\_move\_data, 4412

ndb\_restore, 4443

ndb\_select\_all, 4466

ndb\_select\_count, 4472

ndb\_show\_tables, 4476

ndb\_waiter, 4489

ndb-mgmd-host option (NDB Cluster), 4236

ndb-nodegroup-map option

ndb\_restore, 4443

ndb-nodeid option

mysqld, 4236

ndbd, 4314

ndbinfo\_select\_all, 4321

ndb\_blob\_tool, 4345

ndb\_config, 4357

ndb\_delete\_all, 4363

ndb\_desc, 4373

ndb\_drop\_index, 4377

ndb\_drop\_table, 4382

ndb\_import, 4396

ndb\_index\_stat, 4406

ndb\_mgm, 4339

ndb\_mgmd, 4331

ndb\_move\_data, 4413

ndb\_restore, 4443

ndb\_select\_all, 4466

ndb\_select\_count, 4472

ndb\_show\_tables, 4476

ndb\_waiter, 4489

ndb-optimization-delay option

mysqld, 4237

ndb-optimized-node-selection option

mysqld, 4237

ndbd, 4314

ndbinfo\_select\_all, 4321

ndb\_blob\_tool, 4345

ndb\_config, 4358

ndb\_delete\_all, 4363

ndb\_desc, 4373

ndb\_drop\_index, 4377

ndb\_drop\_table, 4382

ndb\_import, 4396

ndb\_index\_stat, 4406

ndb\_mgm, 4340

ndb\_mgmd, 4331

ndb\_move\_data, 4413

ndb\_restore, 4443

ndb\_select\_all, 4467

ndb\_select\_count, 4472

ndb\_show\_tables, 4476

ndb\_waiter, 4489

ndb-schema-dist-timeout option

mysqld, 4231

ndb-transid-mysql-connection-map option

mysqld, 4237

ndb-wait-connected option

mysqld, 4238

ndb-wait-setup option

mysqld, 4238

ndbcluster option

mysqld, 4226

ndbcluster plugin threads, 4661

NDBCLUSTER storage engine (see [NDB Cluster](#_bookmark3))

ndbd, 4306, 4306

-n option, 4315

character-sets-dir option, 4309

connect-delay option, 4309

connect-retries option, 4309

connect-retry-delay option, 4310

connect-string option, 4310

core-file option, 4310

defaults-extra-file option, 4310

defaults-file option, 4311

defaults-group-suffix option, 4311

filesystem-password option, 4311

filesystem-password-from-stdin option, 4311

help option, 4312

initial option, 4312

initial-start option, 4313

install option, 4313

logbuffer-size option, 4313

login-path option, 4314

ndb-connectstring option, 4314

ndb-mgmd-host option, 4314

ndb-nodeid option, 4314

ndb-optimized-node-selection option, 4314

no-defaults option, 4314

nostart option, 4315

nowait-nodes option, 4315

print-defaults option, 4315

remove option, 4315

usage option, 4315

verbose option, 4316

version option, 4316

ndbd (NDB Cluster)

defined, 3990

(see also [data node (NDB Cluster)](#_bookmark4))

ndbinfo database, 4583

and query cache, 4586

basic usage, 4587

determining support for, 4583

ndbinfo option

mysqld, 4237

ndbinfo\_database system variable, 4263

ndbinfo\_max\_bytes system variable, 4263

ndbinfo\_max\_rows system variable, 4263

ndbinfo\_offline system variable, 4264

ndbinfo\_select\_all, 4306, 4317

-l option, 4321

character-sets-dir option, 4319

connect-retries option, 4319

connect-retry-delay option, 4320

connect-string option, 4320

core-file option, 4319

defaults-extra-file option, 4320

defaults-file option, 4320

defaults-group-suffix option, 4320

delay option, 4320

help option, 4321

login-path option, 4321

loops option, 4321

ndb-connectstring option, 4321

ndb-mgmd-host option, 4321

ndb-nodeid option, 4321

ndb-optimized-node-selection option, 4321

no-defaults option, 4322

print-defaults option, 4322

usage option, 4322

version option, 4322

ndbinfo\_show\_hidden system variable, 4264

ndbinfo\_table\_prefix system variable, 4264

ndbinfo\_version system variable, 4265, 4265

ndbmtd, 4306, 4322

-n option, 4315

ClassicFragmentation, 4188

configuration, 4192, 4194

connect-delay option, 4309

connect-retries option, 4309

connect-retry-delay option, 4310

EnableMultithreadedBackup, 4189

initial option, 4312

initial-start option, 4313

install option, 4313

logbuffer-size option, 4313

MaxNoOfExecutionThreads, 4189

nostart option, 4315

nowait-nodes option, 4315

remove option, 4315

trace files, 4323, 4323

verbose option, 4316

ndbxfrm, 4306, 4492

compress option, 4493

decrypt-key option, 4493

decrypt-key-from-stdin option, 4493

decrypt-password option, 4494

decrypt-password-from-stdin option, 4494

defaults-extra-file option, 4494

defaults-file option, 4494

defaults-group-suffix option, 4494

detailed-info option, 4494

encrypt-block-size option, 4496

encrypt-cipher option, 4496

encrypt-kdf-iter-count option, 4496

encrypt-key option, 4496

encrypt-key-from-stdin option, 4496

encrypt-password option, 4497

encrypt-password-from-stdin option, 4497

help option, 4497

info option, 4497

login-path option, 4498

no-defaults option, 4498

print-defaults option, 4498

usage option, 4498

version option, 4498

Ndb\_api\_adaptive\_send\_deferred\_count status variable, 4265

Ndb\_api\_adaptive\_send\_deferred\_count\_replica status variable, 4265

Ndb\_api\_adaptive\_send\_deferred\_count\_session status variable, 4265

Ndb\_api\_adaptive\_send\_deferred\_count\_slave status variable, 4265

Ndb\_api\_adaptive\_send\_forced\_count status variable, 4265

Ndb\_api\_adaptive\_send\_forced\_count\_replica status variable, 4266

Ndb\_api\_adaptive\_send\_forced\_count\_session status variable, 4266

Ndb\_api\_adaptive\_send\_forced\_count\_slave status variable, 4266

Ndb\_api\_adaptive\_send\_unforced\_count status variable, 4266

Ndb\_api\_adaptive\_send\_unforced\_count\_replica status variable, 4266

Ndb\_api\_adaptive\_send\_unforced\_count\_slave session variable, 4266

Ndb\_api\_adaptive\_send\_unforced\_count\_slave status variable, 4266

Ndb\_api\_bytes\_received\_count status variable, 4268

Ndb\_api\_bytes\_received\_count\_replica status variable, 4267

Ndb\_api\_bytes\_received\_count\_session status variable, 4267

Ndb\_api\_bytes\_received\_count\_slave status variable, 4267

Ndb\_api\_bytes\_sent\_count status variable, 4267

Ndb\_api\_bytes\_sent\_count\_replica status variable, 4267

Ndb\_api\_bytes\_sent\_count\_session status variable, 4267

Ndb\_api\_bytes\_sent\_count\_slave status variable, 4267

Ndb\_api\_event\_bytes\_count status variable, 4269

Ndb\_api\_event\_bytes\_count\_injector status variable, 4269

Ndb\_api\_event\_data\_count status variable, 4268

Ndb\_api\_event\_data\_count\_injector status variable, 4268

Ndb\_api\_event\_nondata\_count status variable, 4268

Ndb\_api\_event\_nondata\_count\_injector status variable, 4268

Ndb\_api\_pk\_op\_count status variable, 4269

Ndb\_api\_pk\_op\_count\_replica status variable, 4269

Ndb\_api\_pk\_op\_count\_session status variable, 4269

Ndb\_api\_pk\_op\_count\_slave status variable, 4269

Ndb\_api\_pruned\_scan\_count status variable, 4270

Ndb\_api\_pruned\_scan\_count\_replica status variable, 4270

Ndb\_api\_pruned\_scan\_count\_session status variable, 4270

Ndb\_api\_pruned\_scan\_count\_slave status variable, 4270

Ndb\_api\_range\_scan\_count status variable, 4271

Ndb\_api\_range\_scan\_count\_replica status variable, 4271

Ndb\_api\_range\_scan\_count\_session status variable, 4270

Ndb\_api\_range\_scan\_count\_slave status variable, 4271

Ndb\_api\_read\_row\_count status variable, 4272

Ndb\_api\_read\_row\_count\_replica status variable, 4271

Ndb\_api\_read\_row\_count\_session status variable, 4271

Ndb\_api\_read\_row\_count\_slave status variable, 4272

Ndb\_api\_scan\_batch\_count status variable, 4273

Ndb\_api\_scan\_batch\_count\_replica status variable, 4272

Ndb\_api\_scan\_batch\_count\_session status variable, 4272

Ndb\_api\_scan\_batch\_count\_slave status variable, 4273

Ndb\_api\_table\_scan\_count status variable, 4274

Ndb\_api\_table\_scan\_count\_replica status variable, 4273

Ndb\_api\_table\_scan\_count\_session status variable, 4273

Ndb\_api\_table\_scan\_count\_slave status variable, 4273

Ndb\_api\_trans\_abort\_count status variable, 4274

Ndb\_api\_trans\_abort\_count\_replica status variable, 4274

Ndb\_api\_trans\_abort\_count\_session status variable, 4274

Ndb\_api\_trans\_abort\_count\_slave status variable, 4274

Ndb\_api\_trans\_close\_count status variable, 4275

Ndb\_api\_trans\_close\_count\_replica status variable, 4275

Ndb\_api\_trans\_close\_count\_session status variable, 4274

Ndb\_api\_trans\_close\_count\_slave status variable, 4275

Ndb\_api\_trans\_commit\_count status variable, 4276

Ndb\_api\_trans\_commit\_count\_replica status variable, 4275

Ndb\_api\_trans\_commit\_count\_session status variable, 4275

Ndb\_api\_trans\_commit\_count\_slave status variable, 4276

Ndb\_api\_trans\_local\_read\_row\_count status variable, 4277

Ndb\_api\_trans\_local\_read\_row\_count\_replica status variable, 4276

Ndb\_api\_trans\_local\_read\_row\_count\_session status variable, 4276

Ndb\_api\_trans\_local\_read\_row\_count\_slave status variable, 4276

Ndb\_api\_trans\_start\_count status variable, 4277

Ndb\_api\_trans\_start\_count\_replica status variable, 4277

Ndb\_api\_trans\_start\_count\_session status variable, 4277

Ndb\_api\_trans\_start\_count\_slave status variable, 4277

Ndb\_api\_uk\_op\_count status variable, 4278

Ndb\_api\_uk\_op\_count\_replica status variable, 4278

Ndb\_api\_uk\_op\_count\_session status variable, 4277

Ndb\_api\_uk\_op\_count\_slave status variable, 4278

Ndb\_api\_wait\_exec\_complete\_count status variable, 4279

Ndb\_api\_wait\_exec\_complete\_count\_replica status variable, 4278

Ndb\_api\_wait\_exec\_complete\_count\_session status variable, 4278

Ndb\_api\_wait\_exec\_complete\_count\_slave status variable, 4278

Ndb\_api\_wait\_meta\_request\_count status variable, 4280

Ndb\_api\_wait\_meta\_request\_count\_replica status variable, 4279

Ndb\_api\_wait\_meta\_request\_count\_session status variable, 4279

Ndb\_api\_wait\_meta\_request\_count\_slave status variable, 4279

Ndb\_api\_wait\_nanos\_count status variable, 4280

Ndb\_api\_wait\_nanos\_count\_replica status variable, 4280

Ndb\_api\_wait\_nanos\_count\_session status variable, 4280

Ndb\_api\_wait\_nanos\_count\_slave status variable, 4280

Ndb\_api\_wait\_scan\_result\_count status variable, 4281

Ndb\_api\_wait\_scan\_result\_count\_replica status variable, 4281

Ndb\_api\_wait\_scan\_result\_count\_session status variable, 4281

Ndb\_api\_wait\_scan\_result\_count\_slave status variable, 4281

ndb\_apply\_status table (NDB Cluster replication), 4686, 4698

(see also [NDB Cluster replication](#_bookmark2))

ndb\_autoincrement\_prefetch\_sz system variable, 4239

ndb\_binlog\_index table

system table, 1044

ndb\_binlog\_index table (NDB Cluster replication), 4687, 4698

(see also [NDB Cluster replication](#_bookmark2))

ndb\_blob\_tool, 4306, 4340

add-missing option, 4342

character-sets-dir option, 4343

check-missing option, 4343

check-orphans option, 4343

connect-retries option, 4343

connect-retry-delay option, 4343

connect-string option, 4343

core-file option, 4343

database option, 4344

defaults-extra-file option, 4344

defaults-file option, 4344

defaults-group-suffix option, 4344

delete-orphans option, 4344

dump-file option, 4344

help option, 4344

login-path option, 4344

ndb-connectstring option, 4345

ndb-mgmd-host option, 4345

ndb-nodeid option, 4345

ndb-optimized-node-selection option, 4345

no-defaults option, 4345

print-defaults option, 4345

usage option, 4345

verbose option, 4346

version option, 4346

ndb\_cache\_check\_time system variable, 4239

ndb\_clear\_apply\_status system variable, 4240

Ndb\_cluster\_node\_id status variable, 4281

NDB\_COLUMN, 2616

ndb\_config, 4306, 4346

character-sets-dir option, 4358

cluster-config-suffix option, 4349

config-binary-file option, 4350

config-file option, 4351

configinfo option, 4350

config\_from\_node option, 4351

connect-retries option, 4358

connect-retry-delay option, 4358

connect-string option, 4357

connections option, 4352

core-file option, 4358

defaults-extra-file option, 4357

defaults-file option, 4356

defaults-group-suffix option, 4357

diff-default option, 4352

fields option, 4352

help option, 4357

host option, 4352

login-path option, 4357

mycnf option, 4353

ndb-connectstring option, 4353

ndb-mgmd-host option, 4357

ndb-nodeid option, 4357

ndb-optimized-node-selection option, 4358

no-defaults option, 4353

nodeid option, 4353

nodes option, 4353

print-defaults option, 4356

query option, 4353, 4354

query-all option, 4354

rows option, 4354

system option, 4354

type option, 4354

usage option, 4355

version option, 4355

xml option, 4355

Ndb\_config\_from\_host status variable, 4281

Ndb\_config\_from\_port status variable, 4281

Ndb\_config\_generation status variable, 4282

Ndb\_conflict\_fn\_epoch status variable, 4282

Ndb\_conflict\_fn\_epoch2 status variable, 4282

Ndb\_conflict\_fn\_epoch2\_trans status variable, 4282

Ndb\_conflict\_fn\_epoch\_trans status variable, 4282

Ndb\_conflict\_fn\_max status variable, 4282

Ndb\_conflict\_fn\_max\_del\_win status variable, 4282

Ndb\_conflict\_fn\_max\_del\_win\_ins status variable, 4283

Ndb\_conflict\_fn\_max\_ins status variable, 4283

Ndb\_conflict\_fn\_old status variable, 4283

Ndb\_conflict\_last\_conflict\_epoch status variable, 4283

Ndb\_conflict\_last\_stable\_epoch status variable, 4283

Ndb\_conflict\_reflected\_op\_discard\_count status variable, 4283

Ndb\_conflict\_reflected\_op\_prepare\_count status variable, 4283

Ndb\_conflict\_refresh\_op\_count status variable, 4283

ndb\_conflict\_role system variable, 4240

Ndb\_conflict\_trans\_conflict\_commit\_count status variable, 4284

Ndb\_conflict\_trans\_detect\_iter\_count status variable, 4284

Ndb\_conflict\_trans\_reject\_count status variable, 4284

Ndb\_conflict\_trans\_row\_conflict\_count status variable, 4284

Ndb\_conflict\_trans\_row\_reject\_count status variable, 4284

ndb\_cpcd, 4306

ndb\_data\_node\_neighbour system variable, 4241

ndb\_dbg\_check\_shares system variable, 4241

ndb\_default\_column\_format system variable, 4242

ndb\_deferred\_constraints system variable, 4242

ndb\_delete\_all, 4306, 4359

character-sets-dir option, 4361

connect-retries option, 4361

connect-retry-delay option, 4361

connect-string option, 4361

core-file option, 4362

database option, 4362

defaults-extra-file option, 4362

defaults-file option, 4362

defaults-group-suffix option, 4362

diskscan option, 4362

help option, 4362

login-path option, 4362

ndb-connectstring option, 4363

ndb-mgmd-host option, 4363

ndb-nodeid option, 4363

ndb-optimized-node-selection option, 4363

no-defaults option, 4363

print-defaults option, 4363

transactional option, 4364

tupscan option, 4364

usage option, 4364

version option, 4364

ndb\_desc, 4306, 4364

auto-inc option, 4370

blob-info option, 4370

character-sets-dir option, 4370

connect-retries option, 4371

connect-retry-delay option, 4371

connect-string option, 4371

context option, 4371

core-file option, 4371

database option, 4371

defaults-extra-file option, 4371

defaults-file option, 4372

defaults-group-suffix option, 4372

extra-node-info option, 4372

extra-partition-info option, 4372

help option, 4372

login-path option, 4372

ndb-connectstring option, 4372

ndb-mgmd-host option, 4372

ndb-nodeid option, 4373

ndb-optimized-node-selection option, 4373

no-defaults option, 4373

print-defaults option, 4373

retries option, 4373

table option, 4373

unqualified option, 4373

usage option, 4373

version option, 4373

ndb\_distribution system variable, 4242

ndb\_drop\_index, 4306, 4373

character-sets-dir option, 4375

connect-retries option, 4375

connect-retry-delay option, 4375

connect-string option, 4375

core-file option, 4376

database option, 4376

defaults-extra-file option, 4376

defaults-file option, 4376

defaults-group-suffix option, 4376

help option, 4376

login-path option, 4376

ndb-connectstring option, 4377

ndb-mgmd-host option, 4377

ndb-nodeid option, 4377

ndb-optimized-node-selection option, 4377

no-defaults option, 4377

print-defaults option, 4377

usage option, 4377

version option, 4377

ndb\_drop\_table, 4306, 4378

character-sets-dir option, 4380

connect-retries option, 4380

connect-retry-delay option, 4380

connect-string option, 4380

core-file option, 4380

database option, 4380

defaults-extra-file option, 4381

defaults-file option, 4381

defaults-group-suffix option, 4381

help option, 4381

login-path option, 4381

ndb-connectstring option, 4381

ndb-mgmd-host option, 4382

ndb-nodeid option, 4382

ndb-optimized-node-selection option, 4382

no-defaults option, 4382

print-defaults option, 4382

usage option, 4382

version option, 4382

Ndb\_epoch\_delete\_delete\_count status variable, 4284

ndb\_error\_reporter, 4306, 4382

connection-timeout option, 4383

dry-scp option, 4383

fs option, 4383

help option, 4383

options, 4383

skip-nodegroup option, 4384

ndb\_eventbuffer\_free\_percent system variable, 4243

ndb\_eventbuffer\_max\_alloc system variable, 4243

Ndb\_execute\_count status variable, 4284

ndb\_extra\_logging system variable, 4243

ndb\_force\_send system variable, 4244

ndb\_fully\_replicated system variable, 4244

ndb\_import, 4306, 4384

abort-on-error option, 4389

ai-increment option, 4389

ai-offset option, 4389

ai-prefetch-sz option, 4389

character-sets-dir option, 4390

connect-retries option, 4390

connect-retry-delay option, 4390

connect-string option, 4390

connections option, 4390

continue option, 4391

core-file option, 4391

csvopt option, 4391

db-workers option, 4391

defaults-extra-file option, 4392

defaults-file option, 4391

defaults-group-suffix option, 4392

errins-delay option, 4392

errins-type option, 4392

fields-enclosed-by option, 4392

fields-escaped-by option, 4393

fields-optionally-enclosed-by option, 4393

fields-terminated-by option, 4393

help option, 4393

idlesleep option, 4393

idlespin option, 4393

ignore-lines option, 4394

input-type option, 4394

input-workers option, 4394

keep-state option, 4394

lines-terminated-by option, 4394

log-level option, 4395

login-path option, 4395

max-rows option, 4395

missing-ai-column option, 4395

monitor option, 4395

ndb-connectstring option, 4396

ndb-mgmd-host option, 4396

ndb-nodeid option, 4396

ndb-optimized-node-selection option, 4396

no-asynch option, 4396

no-defaults option, 4396

no-hint option, 4396

opbatch option, 4397

opbytes option, 4397

output-type option, 4397

output-workers option, 4397

pagecnt option, 4398

pagesize option, 4397

polltimeout option, 4398

print-defaults option, 4398

rejects option, 4398

resume option, 4398

rowbatch option, 4399

rowbytes option, 4399

state-dir option, 4399

stats option, 4399

table option, 4399

tempdelay option, 4399

temperrors option, 4400

usage option, 4400

verbose option, 4400

version option, 4400

ndb\_index\_stat, 4306, 4400

-d option, 4404

character-sets-dir option, 4403

connect-retries option, 4404

connect-retry-delay option, 4404

connect-string option, 4404

core-file option, 4404

database option, 4404

defaults-extra-file option, 4404

defaults-file option, 4405

defaults-group-suffix option, 4405

delete option, 4405

dump option, 4405

example, 4401

help option, 4405

interpreting output, 4401

login-path option, 4405

loops option, 4405

ndb-connectstring option, 4406

ndb-mgmd-host option, 4406

ndb-nodeid option, 4406

ndb-optimized-node-selection option, 4406

no-defaults option, 4406

print-defaults option, 4406

query option, 4406

sys-check option, 4407

sys-create option, 4407

sys-create-if-not-exist option, 4407

sys-create-if-not-valid option, 4407

sys-drop option, 4407

sys-skip-events option, 4407

sys-skip-tables option, 4407

update option, 4407

usage option, 4407

verbose option, 4408

version option, 4408

ndb\_index\_stat\_enable system variable, 4244

ndb\_index\_stat\_option system variable, 4245

ndb\_join\_pushdown system variable, 4246

Ndb\_last\_commit\_epoch\_server status variable, 4284

Ndb\_last\_commit\_epoch\_session status variable, 4284

ndb\_log\_apply\_status system variable, 4248

ndb\_log\_apply\_status variable (NDB Cluster replication), 4698

ndb\_log\_bin system variable, 4248

ndb\_log\_binlog\_index system variable, 4248

ndb\_log\_empty\_epochs system variable, 4249

ndb\_log\_empty\_update system variable, 4249

ndb\_log\_exclusive\_reads (system variable), 4725

ndb\_log\_exclusive\_reads system variable, 4249

ndb\_log\_orig system variable, 4250

ndb\_log\_transaction\_compression system variable, 4250

ndb\_log\_transaction\_compression\_level\_zstd system variable, 4251

ndb\_log\_transaction\_id system variable, 4250

Ndb\_metadata\_blacklist\_size status variable (OBSOLETE), 4285

ndb\_metadata\_check system variable, 4252

ndb\_metadata\_check\_interval system variable, 4252

Ndb\_metadata\_detected\_count status variable, 4285

Ndb\_metadata\_excluded\_count status variable, 4285

ndb\_metadata\_sync system variable, 4252

Ndb\_metadata\_synced\_count status variable, 4285

ndb\_mgm, 4306, 4335 (see mgm)

-e option, 4338

backup-password-from-stdin option, 4337

character-sets-dir option, 4337

connect-retries option, 4337

connect-retry-delay option, 4337

connect-string option, 4338

core-file option, 4338

defaults-extra-file option, 4338

defaults-file option, 4338

defaults-group-suffix option, 4338

encrypt-backup option, 4338

execute option, 4338

help option, 4339

login-path option, 4339

ndb-connectstring option, 4339

ndb-mgmd-host option, 4339

ndb-nodeid option, 4339

ndb-optimized-node-selection option, 4340

no-defaults option, 4340

print-defaults option, 4340

usage option, 4340

using with MySQL Cluster Manager, 4499

version option, 4340

ndb\_mgm (NDB Cluster management node client), 4065

ndb\_mgmd, 4306 (see mgmd)

-d option, 4329

-f option, 4327

-P option, 4333

-v option, 4334

bind-address option, 4326

character-sets-dir option, 4326

cluster-config-suffix option, 4326

config-cache option, 4327

config-file option, 4327

configdir option, 4328

connect-retries option, 4328

connect-retry-delay option, 4328

connect-string option, 4328

core-file option, 4329

daemon option, 4329

defaults-extra-file option, 4329

defaults-file option, 4329

defaults-group-suffix option, 4329

help option, 4329

initial option, 4329

install option, 4330

interactive option, 4330

log-name option, 4330

login-path option, 4330

mycnf option, 4331

ndb-connectstring option, 4331

ndb-mgmd-host option, 4331

ndb-nodeid option, 4331

ndb-optimized-node-selection option, 4331

no-defaults option, 4332

no-nodeid-checks option, 4331

nodaemon option, 4332

nowait-nodes option, 4332

print-defaults option, 4333

print-full-config option, 4333

reload option, 4333

remove option, 4334

skip-config-file option, 4334

usage option, 4334

verbose option, 4334

version option, 4334

ndb\_mgmd (NDB Cluster process), 4323

ndb\_mgmd (NDB Cluster)

defined, 3990

(see also [management node (NDB Cluster)](#_bookmark9))

ndb\_move\_data, 4306, 4408

abort-on-error option, 4410

character-sets-dir option, 4410

connect-retries option, 4410

connect-retry-delay option, 4410

connect-string option, 4411

core-file option, 4411

database option, 4411

defaults-extra-file option, 4411

defaults-file option, 4411

defaults-group-suffix option, 4411

drop-source option, 4412

error-insert option, 4412

exclude-missing-columns option, 4412

help option, 4412

login-path option, 4412

lossy-conversions option, 4412

ndb-connectstring option, 4412

ndb-mgmd-host option, 4412

ndb-nodeid option, 4413

ndb-optimized-node-selection option, 4413

no-defaults option, 4413

print-defaults option, 4413

promote-attributes option, 4413

staging-tries option, 4413

usage option, 4413

verbose option, 4413

version option, 4414

Ndb\_number\_of\_data\_nodes status variable, 4285

ndb\_optimized\_node\_selection system variable, 4253

ndb\_perror, 4414

defaults-extra-file option, 4415

defaults-file option, 4415

defaults-group-suffix option, 4415

help option, 4415

login-path option, 4415

ndb option, 4416

no-defaults option, 4416

print-defaults option, 4416

silent option, 4416

verbose option, 4416

version option, 4416

ndb\_print\_backup\_file, 4306, 4416

backup-key option, 4418

backup-key-from-stdin option, 4418

backup-password option, 4418

backup-password-from-stdin option, 4419

control-directory-number option, 4419

defaults-extra-file option, 4419

defaults-file option, 4419

defaults-group-suffix option, 4419

fragment-id option, 4419

help option, 4419

login-path option, 4420

no-defaults option, 4420

no-print-rows option, 4420

print-defaults option, 4420

print-header-words option, 4420

print-restored-rows option, 4420

print-rows option, 4420

print-rows-per-page option, 4421

rowid-file option, 4421

show-ignored-rows option, 4421

table-id option, 4421

usage option, 4421

verbose option, 4421

version option, 4421

ndb\_print\_file, 4306, 4421

file-key option, 4422

file-key-from-stdin option, 4422

help option, 4423

quiet option, 4423

usage option, 4423

verbose option, 4423

version option, 4423

ndb\_print\_frag\_file, 4306, 4423

ndb\_print\_schema\_file, 4306, 4424

ndb\_print\_sys\_file, 4306, 4424

Ndb\_pruned\_scan\_count status variable, 4285

Ndb\_pushed\_queries\_defined status variable, 4285

Ndb\_pushed\_queries\_dropped status variable, 4285

Ndb\_pushed\_queries\_executed status variable, 4285

Ndb\_pushed\_reads status variable, 4285

ndb\_read\_backup

and NDB\_TABLE, 2620

ndb\_read\_backup system variable, 4254

ndb\_recv\_thread\_activation\_threshold system variable, 4254

ndb\_recv\_thread\_cpu\_mask system variable, 4254

ndb\_redo\_log\_reader, 4425

dump option, 4426

file-key option, 4426

file-key-from-stdin option, 4426

lap option, 4426

twiddle option, 4427

ndb\_replication table, 4688

ndb\_replica\_batch\_size system variable, 4260

ndb\_replica\_blob\_write\_batch\_bytes system variable, 4261

Ndb\_replica\_max\_replicated\_epoch status variable, 4286

ndb\_report\_thresh\_binlog\_epoch\_slip system variable, 4255

ndb\_report\_thresh\_binlog\_mem\_usage system variable, 4255

ndb\_restore, 4428

allow-pk-changes option, 4432

and circular replication, 4707

append option, 4434

backup-password option, 4434

backup-password-from-stdin option, 4435

backup-path option, 4434

backupid option, 4435

character-sets-dir option, 4435

connect option, 4435

connect-retries option, 4435

connect-retry-delay option, 4436

connect-string option, 4436

core-file option, 4436

decrypt option, 4436

defaults-extra-file option, 4436

defaults-file option, 4436

defaults-group-suffix option, 4436

disable-indexes option, 4437

dont-ignore-systab-0 option, 4437

errors, 4454

exclude-databases option, 4437

exclude-intermediate-sql-tables option, 4437

exclude-missing-columns option, 4438

exclude-missing-tables option, 4438

exclude-tables option, 4438

fields-enclosed-by option, 4439

fields-optionally-enclosed-by option, 4439

fields-terminated-by option, 4439

help option, 4440

hex option, 4440

ignore-extended-pk-updates option, 4440

include-databases option, 4440

include-stored-grants option, 4440

include-tables option, 4441

lines-terminated-by option, 4442

login-path option, 4442

lossy-conversions option, 4442

ndb-connectstring option, 4443

ndb-mgmd-host option, 4443

ndb-nodegroup-map option, 4443

ndb-nodeid option, 4443

ndb-optimized-node-selection option, 4443

no-binlog option, 4442

no-defaults option, 4443

no-restore-disk-objects option, 4442

no-upgrade option, 4442

nodeid option, 4443

num-slices option, 4444

parallelism option, 4445

preserve-trailing-spaces option, 4446

print option, 4446

print-data option, 4446

print-defaults option, 4446

print-log option, 4447

print-meta option, 4447

print-sql-log option, 4447

progress-frequency option, 4447

promote-attributes option, 4447

rebuild-indexes option, 4448

remap-column option, 4448

restore-data option, 4450

restore-epoch option, 4450

restore-meta option, 4450

restore-privilege-tables option, 4450

rewrite-database option, 4450

skip-broken-objects option, 4451

skip-table-check option, 4451

skip-unknown-objects option, 4452

slice-id option, 4452

tab option, 4452

timestamp-printouts option, 4452

typical and required options, 4453

usage option, 4453

verbose option, 4453

version option, 4453

with-apply-status option, 4453

ndb\_row\_checksum system variable, 4256

Ndb\_scan\_count status variable, 4286

ndb\_schema\_dist\_lock\_wait\_timeout system variable, 4256

ndb\_schema\_dist\_timeout system variable, 4256

ndb\_schema\_dist\_upgrade\_allowed system variable, 4257

ndb\_secretsfile\_reader, 4459

defaults-extra-file option, 4460

defaults-file option, 4460

defaults-group-suffix option, 4461

filesystem-password option, 4461

filesystem-password-from-stdin option, 4461

help option, 4461

login-path option, 4461

no-defaults option, 4461

print-defaults option, 4461

usage option, 4461

version option, 4462

ndb\_select\_all, 4306, 4462

character-sets-dir option, 4464

connect-retries option, 4464

connect-retry-delay option, 4464

connect-string option, 4464

core-file option, 4464

database option, 4465

defaults-extra-file option, 4465

defaults-file option, 4465

defaults-group-suffix option, 4465

delimiter option, 4465

descending option, 4465

disk option, 4465

gci option, 4465

gci64 option, 4465

header option, 4466

help option, 4465

lock option, 4466

login-path option, 4466

ndb-connectstring option, 4466

ndb-mgmd-host option, 4466

ndb-nodeid option, 4466

ndb-optimized-node-selection option, 4467

no-defaults option, 4467

nodata option, 4466

order option, 4467

parallelism option, 4467

print-defaults option, 4467

rowid option, 4467

tupscan option, 4467

usage option, 4467

useHexFormat option, 4467

version option, 4467

ndb\_select\_count, 4306, 4468

character-sets-dir option, 4470

connect-retries option, 4470

connect-retry-delay option, 4470

connect-string option, 4470

core-file option, 4471

defaults-extra-file option, 4471

defaults-file option, 4471

defaults-group-suffix option, 4471

help option, 4471

login-path option, 4471

ndb-connectstring option, 4471

ndb-mgmd-host option, 4472

ndb-nodeid option, 4472

ndb-optimized-node-selection option, 4472

no-defaults option, 4472

print-defaults option, 4472

usage option, 4472

version option, 4472

ndb\_setup.py (NO LONGER SUPPORTED), 4306

ndb\_show\_foreign\_key\_mock\_tables system variable, 4257

ndb\_show\_tables, 4306, 4472

character-sets-dir option, 4474

connect-retries option, 4474

connect-retry-delay option, 4474

connect-string option, 4475

core-file option, 4475

database option, 4475

defaults-extra-file option, 4475

defaults-file option, 4475

defaults-group-suffix option, 4475

help option, 4475

login-path option, 4476

loops option, 4476

ndb-connectstring option, 4476

ndb-mgmd-host option, 4476

ndb-nodeid option, 4476

ndb-optimized-node-selection option, 4476

no-defaults option, 4477

parsable option, 4477

print-defaults option, 4477

show-temp-status option, 4477

type option, 4477

unqualified option, 4477

usage option, 4477

version option, 4477

ndb\_size.pl, 4306, 4477

ndb\_size.pl script, 2126

ndb\_slave\_conflict\_role system variable, 4257

Ndb\_slave\_max\_replicated\_epoch status variable, 4286

NDB\_STORED\_USER, 1221, 4568

Ndb\_system\_name status variable, 4286

NDB\_TABLE, 2575, 2620

ndb\_table\_no\_logging system variable, 4258

ndb\_table\_temporary system variable, 4258

ndb\_top, 4306, 4480

color option, 4482

defaults-extra-file option, 4482

defaults-file option, 4482

defaults-group-suffix option, 4483

graph option, 4483

help option, 4483

host option, 4483

login-path option, 4483

measured-load option, 4483

no-defaults option, 4483

node-id option, 4483

os-load option, 4484

password option, 4484

port option, 4484

print-defaults option, 4484

sleep-time option, 4484

socket option, 4484

sort option, 4484

text option, 4485

usage option, 4485

user option, 4485

ndb\_transid\_mysql\_connection\_map

INFORMATION\_SCHEMA table, 4869

Ndb\_trans\_hint\_count\_session status variable, 4286

ndb\_use\_copying\_alter\_table system variable, 4259

ndb\_use\_exact\_count system variable, 4259

ndb\_use\_transactions system variable, 4259

NDB\_UTILS\_LINK\_DYNAMIC

CMake, 261

ndb\_version system variable, 4260

ndb\_version\_string system variable, 4260

ndb\_waiter, 4306, 4485

character-sets-dir option, 4487

connect-retries option, 4487

connect-retry-delay option, 4488

connect-string option, 4488

core-file option, 4488

defaults-extra-file option, 4488

defaults-file option, 4488

defaults-group-suffix option, 4488

help option, 4489

login-path option, 4489

ndb-connectstring option, 4489

ndb-mgmd-host option, 4489

ndb-nodeid option, 4489

ndb-optimized-node-selection option, 4489

no-contact option, 4489

no-defaults option, 4490

not-started option, 4490

nowait-nodes option, 4490

print-defaults option, 4490

single-user option, 4490

timeout option, 4490

usage option, 4490

version option, 4490

wait-nodes option, 4490

negative values, 1910

neighbor page, 6198

nested queries, 2709

Nested-Loop join algorithm, 1713

nested-loop join algorithm, 1717

.NET, 6198

net-buffer-length option

mysql, 442

mysqldump, 513

mysqlpump, 540

mysql\_upgrade, 425

netmask notation

in account names, 1239

network namespaces, 1018

network ports

and NDB Cluster, 4672

network-namespace option

mysql, 442

network-timeout option

mysqldump, 513

net\_buffer\_length system variable, 859

net\_read\_timeout system variable, 860

net\_retry\_count system variable, 860

net\_write\_timeout system variable, 861

new features, 9

atomic DDL, 9

backup lock, 29

C API, 30

cast functions, 31

character sets, 23

clone plugin, 32

common table expressions, 28

configuration, 30

connection management, 30

data dictionary, 9

data types, 25

EXPLAIN ANALYZE, 33

hash join, 32

InnoDB, 12

innodb\_deadlock\_detect, 12

internal temporary tables, 29

JSON, 23

JSON schema CHECK constraints, 34

JSON schema validation, 31

lateral derived tables, 28

logging, 29

multi-valued indexes, 31

ON DUPLICATE KEY UPDATE, 35

optimizer, 26

plugins, 30

query cast injection, 33

redo log archiving, 31

regular expressions, 29

replication, 30

resource management, 11

security, 9

table aliases and DELETE, 29

table encryption, 12

TABLE statement, 35

time zone support, 34

time\_zone, 31

upgrading, 9

VALUES statement, 35

window functions, 28

new features in NDB Cluster, 3997

new system variable, 861

newline (\n), 1908, 2399, 2672

next-key lock, 3114, 6199

InnoDB, 3130

NFS

InnoDB, 3138

ngram\_token\_size system variable, 861

nice option

mysqld\_safe, 402

no matching rows, 5361

NO PAD collations, 2004, 2018, 2081

no-asynch option

ndb\_import, 4396

no-auto-rehash option

mysql, 442

no-autocommit option

mysqldump, 515

no-beep option

mysql, 442

mysqladmin, 472

no-binlog option

ndb\_restore, 4442

no-check option

ibd2sdi, 571

innochecksum, 574

no-contact option

ndb\_waiter, 4489

no-create-db option

mysqldump, 502

mysqlpump, 540

no-create-info option

mysqldump, 502

mysqlpump, 540

no-data option

mysqldump, 511

no-dd-upgrade option

mysqld, 758

no-defaults option, 367

myisamchk, 582

mysql, 442

mysqladmin, 472

mysqlbinlog, 624

mysqlcheck, 483

mysqld, 758

mysqldump, 501

mysqld\_multi, 408

mysqld\_safe, 403

mysqlimport, 524

mysqlpump, 540

mysqlshow, 553

mysqlslap, 564

mysql\_migrate\_keyring, 611

mysql\_secure\_installation, 414

mysql\_upgrade, 425

my\_print\_defaults, 643

ndbd, 4314

ndbinfo\_select\_all, 4322

ndbxfrm, 4498

ndb\_blob\_tool, 4345

ndb\_config, 4353

ndb\_delete\_all, 4363

ndb\_desc, 4373

ndb\_drop\_index, 4377

ndb\_drop\_table, 4382

ndb\_import, 4396

ndb\_index\_stat, 4406

ndb\_mgm, 4340

ndb\_mgmd, 4332

ndb\_move\_data, 4413

ndb\_perror, 4416

ndb\_print\_backup\_file, 4420

ndb\_restore, 4443

ndb\_secretsfile\_reader, 4461

ndb\_select\_all, 4467

ndb\_select\_count, 4472

ndb\_show\_tables, 4477

ndb\_top, 4483

ndb\_waiter, 4490

no-drop option

mysqlslap, 564

no-hint option

ndb\_import, 4396

no-log option

mysqld\_multi, 408

no-monitor option

mysqld, 758

no-nodeid-checks option

ndb\_mgmd, 4331

no-print-rows option

ndb\_print\_backup\_file, 4420

no-restore-disk-objects option

ndb\_restore, 4442

no-set-names option

mysqldump, 504

no-symlinks option

myisamchk, 586

no-tablespaces option

mysqldump, 502

no-upgrade option

ndb\_restore, 4442

nodaemon option

ndb\_mgmd, 4332

nodata option

ndb\_select\_all, 4466

node groups (NDB Cluster), 3993

node logs (NDB Cluster), 4523

node-id option

ndb\_top, 4483

Node.js, 5270

NodeGroup, 4120

NodeGroupTransporters, 4140

NodeId, 4109, 4117, 4216

nodeid option

ndb\_config, 4353

ndb\_restore, 4443

NodeId1, 4288, 4297

NodeId2, 4288, 4298

NodeIdServer, 4289, 4298

NODELOG DEBUG command (NDB Cluster), 4501

NODERESTART Events (NDB Cluster), 4528

nodes

ndbinfo table, 4634

nodes option

ndb\_config, 4353

NOLOGGING, 2620

NOLOGGING (NDB\_TABLE)

NDB Cluster, 2620

non-locking read, 6199

non-repeatable read, 6199

nonblocking I/O, 6199

nondelimited strings, 1913

nondeterministic functions

optimization, 1741

replication, 1741

Nontransactional tables, 5361

NoOfFragmentLogFiles, 4145

NoOfFragmentLogParts, 4192

NoOfReplicas, 4121

nopager command

mysql, 451

normalized, 6199

normalized JSON values, 2112

normalize\_statement() MySQL Enterprise Firewall function, 1624

NoSQL, 3907, 6199

NoSQL database

MySQL as a, 3909

nostart option

ndbd, 4315

ndbmtd, 4315

NOT

logical, 2169

NOT BETWEEN, 2165

not equal (!=), 2164

not equal (<>), 2164

NOT EXISTS

with subqueries, 2714

NOT IN, 2166

NOT LIKE, 2227

NOT NULL constraint, 6200

NOT REGEXP, 2229

not-started option

ndb\_waiter, 4490

notee command

mysql, 451

NOTIFY\_SOCKET environment variable, 217, 646

Not\_flushed\_delayed\_rows status variable, 984

NOW(), 2198

NOWAIT, 2694

NOWAIT (START BACKUP command), 4552

nowait-nodes option

ndbd, 4315

ndbmtd, 4315

ndb\_mgmd, 4332

ndb\_waiter, 4490

nowarning command

mysql, 451

NO\_AUTO\_VALUE\_ON\_ZERO SQL mode, 999

NO\_BACKSLASH\_ESCAPES SQL mode, 999

NO\_DIR\_IN\_CREATE SQL mode, 999

NO\_ENGINE\_SUBSTITUTION SQL mode, 999

NO\_FIELD\_OPTIONS

removed features, 53

NO\_GROUP\_INDEX, 1846

NO\_ICP, 1847

NO\_INDEX, 1847

NO\_INDEX\_MERGE, 1847

NO\_JOIN\_INDEX, 1847

NO\_KEY\_OPTIONS

removed features, 53

NO\_MRR, 1847

NO\_ORDER\_INDEX, 1847

NO\_RANGE\_OPTIMIZATION, 1847

NO\_SKIP\_SCAN, 1847

NO\_TABLE\_OPTIONS

removed features, 53

NO\_UNSIGNED\_SUBTRACTION SQL mode, 999

NO\_ZERO\_DATE SQL mode, 1000

NO\_ZERO\_IN\_DATE SQL mode, 1000

NTH\_VALUE(), 2446

NTILE(), 2447

NUL, 1908, 2672

NULL, 333, 5359, 6200

ORDER BY, 1734

testing for null, 2164, 2165, 2167, 2167, 2174

null literal

JSON, 2108

NULL value, 333, 1919

ORDER BY, 1919

NULL values

and AUTO\_INCREMENT columns, 5360

and indexes, 2567

and TIMESTAMP columns, 5360

vs. empty values, 5359

NULL-complemented row, 1718, 1722

null-rejected condition, 1722

NULLIF(), 2175

num-slices option

ndb\_restore, 4444

Numa, 4184

number-char-cols option

mysqlslap, 565

number-int-cols option

mysqlslap, 565

number-of-queries option

mysqlslap, 565

numbers, 1910

NumCPUs, 4193

NUMERIC data type, 2059

numeric data types, 2056

storage requirements, 2126

numeric literals

approximate-value, 1910, 2478

exact-value, 1910, 2478

numeric precision, 2056

numeric scale, 2056

NumGeometries()

removed features, 53

NumInteriorRings()

removed features, 53

NumPoints()

removed features, 53

NVARCHAR data type, 2078

**O**

object

JSON, 2108

objects

stored, 4799

objects\_summary\_global\_by\_type table

performance\_schema, 5119

obtaining information about partitions, 4776

OCT(), 2218

OCTET\_LENGTH(), 2218

ODBC, 6200

ODBC compatibility, 901, 2059, 2157, 2167, 2568, 2701

ODBC\_INCLUDES= option

CMake, 245

ODBC\_LIB\_DIR option

CMake, 245

ODirect, 4155

ODirectSyncFlag, 4155

OFF

plugin activation option, 1101

off-page column, 6200

offline\_mode system variable, 862

offset option

mysqlbinlog, 625

OGC (see [Open Geospatial Consortium](#_bookmark11))

OLAP, 2430

old system variable, 862

old-style-user-limits option

mysqld, 759

old\_alter\_table system variable, 863

old\_passwords

removed features, 52

OLTP, 6200

ON

plugin activation option, 1101

ON DUPLICATE KEY

INSERT modifier, 2660

ON DUPLICATE KEY UPDATE, 2656

new features, 35

ON versus USING

joins, 2702

one-database option

mysql, 443

one-factor authentication (see [multifactor authentication](#_bookmark10))

Ongoing\_anonymous\_gtid\_violating\_transaction\_count status variable, 984

Ongoing\_anonymous\_transaction\_count status variable, 984

Ongoing\_automatic\_gtid\_violating\_transaction\_count status variable, 984

online, 6201

online DDL, 3208, 3209, 6201

concurrency, 3224

limitations, 3230

online location of manual, 2

online upgrades and downgrades (NDB Cluster), 4536

order of node updates, 4538

online-migration option

mysql\_migrate\_keyring, 611

only-print option

mysqlslap, 565

ONLY\_FULL\_GROUP\_BY

SQL mode, 2435

ONLY\_FULL\_GROUP\_BY SQL mode, 1001

opbatch option

ndb\_import, 4397

opbytes option

ndb\_import, 4397

OPEN, 2839

Open Geospatial Consortium, 2089

Open Source

defined, 5

open tables, 466, 1786

open-files-limit option

mysqlbinlog, 625

mysqld\_safe, 403

Opened\_files status variable, 984

Opened\_tables status variable, 984

Opened\_table\_definitions status variable, 984

OpenGIS, 2089

opening

tables, 1786

Opening master dump table

thread state, 1904

Opening mysql.ndb\_apply\_status

thread state, 1904

Opening system tables

thread state, 1896

Opening tables

thread state, 1896

OpenLDAP configuration

ldap.conf file, 1367

opens, 466

OpenSSL, 230, 1306

FIPS mode, 1664

OpenSSL FIPS Object Module, 1664

Open\_files status variable, 984

open\_files\_limit system variable, 863

Open\_streams status variable, 984

Open\_tables status variable, 984

Open\_table\_definitions status variable, 984

operating systems

file-size limits, 1792

supported, 108, 108

operations

arithmetic, 2177

operations\_per\_fragment

ndbinfo table, 4636

operators, 2132

arithmetic, 2290

assignment, 1960, 2170

bit, 2290

cast, 2176, 2266

logical, 2168

precedence, 2161

string, 2209

string comparison, 2225

.OPT file, 6200

opt option

mysqldump, 513

optimistic, 6201

optimization, 1692, 1758, 1801

Batched Key Access, 1725, 1726

benchmarking, 1888

BLOB types, 1786

Block Nested-Loop, 1725, 1726

character and string types, 1785

common table expressions, 1746

data change statements, 1764

data size, 1783

DELETE statements, 1765

derived tables, 1746

disk I/O, 1877

foreign keys, 1768

full table scans, 1745

full-text queries, 1769

indexes, 1766

INFORMATION\_SCHEMA queries, 1760

InnoDB tables, 1795

INSERT statements, 1764

many tables, 1786

MEMORY storage engine, 1770

MEMORY tables, 1811

memory usage, 1881

Multi-Range Read, 1724

MyISAM tables, 1807

nondeterministic functions, 1741

numeric types, 1785

Performance Schema queries, 1763

PERFORMANCE\_SCHEMA, 1889

primary keys, 1768

REPAIR TABLE statements, 1809

SELECT statements, 1694

SPATIAL indexes, 1768

spatial queries, 1770

SQL statements, 1694

subqueries, 1746

subquery, 1751

subquery materialization, 1749

tips, 1766

UPDATE statements, 1765

views, 1746

WHERE clauses, 1695

window functions, 1743

optimization (NDB), 1709, 4246

optimizations, 1704

LIMIT clause, 1739

row constructors, 1744

optimize option

mysqlcheck, 483

OPTIMIZE TABLE

and partitioning, 4775

OPTIMIZE TABLE statement, 2930

optimizer, 6201

and replication, 3719

controlling, 1828

cost model, 1856

new features, 26

query plan evaluation, 1828

switchable optimizations, 1829

optimizer hints, 1839

optimizer statistics

for InnoDB tables, 3166

Optimizer Statistics, 3173

optimizer\_prune\_level system variable, 864

optimizer\_search\_depth system variable, 864

optimizer\_switch system variable, 865, 1829

use\_invisible\_indexes flag, 1779

OPTIMIZER\_TRACE

INFORMATION\_SCHEMA table, 4871

OPTIMIZER\_TRACE option

CMake, 252

optimizer\_trace system variable, 869

optimizer\_trace\_features system variable, 869

optimizer\_trace\_limit system variable, 870

optimizer\_trace\_max\_mem\_size system variable, 870

optimizer\_trace\_offset system variable, 870

optimizing

DISTINCT, 1738

filesort, 1734, 1858

GROUP BY, 1736

LEFT JOIN, 1720

ORDER BY, 1732

outer joins, 1720

RIGHT JOIN, 1720

tables, 1689

thread state, 1896

option, 6201

option file, 6201

option files, 360, 1301

.my.cnf, 360, 362, 383, 1176, 1197, 1301

.mylogin.cnf, 360, 601

C:\my.cnf, 1176

escape sequences, 363

my.cnf, 3704

mysqld-auto.cnf, 359, 360, 874, 936, 939, 958, 963, 1590, 2940, 3011, 5089

option prefix

--disable, 367

--enable, 367

--loose, 367

--maximum, 367

--skip, 367

options

boolean, 367

CMake, 231

command-line

mysql, 429

mysqladmin, 467

myisamchk, 581

mysqld, 653

provided by MySQL, 319

replication, 3704

OR, 347, 1704

bitwise, 2299

logical, 2169

OR Index Merge optimization, 1704

ORACLE

removed features, 53

Oracle compatibility, 90, 2429, 2514, 3014

Oracle Key Vault, 3230

keyring\_okv keyring plugin, 1456

ORD(), 2218

ORDER BY, 330, 2520, 2691

maximum sort length, 2692

NULL, 1734

NULL value, 1919

parenthesized query expressions, 2684

window functions, 2452

WITH ROLLUP, 2692

ORDER BY optimization, 1732

order option

ndb\_select\_all, 4467

order-by-primary option

mysqldump, 515

ORDER\_INDEX, 1847

original\_commit\_timestamp, 3701

original\_commit\_timestamp system variable, 3617

original\_server\_version system variable, 3525

orphan stored objects, 4822

os-load option

ndb\_top, 4484

Out of resources error

and partitioned tables, 4789

OUT parameter

condition handling, 2865

out-dir option

comp\_err, 412

out-file option

comp\_err, 412

out-of-range handling, 2063

outer joins

optimizing, 1720

OUTFILE, 2697

output-type option

ndb\_import, 4397

output-workers option

ndb\_import, 4397

OVER clause

window functions, 2449

over-aligned type storage, 250

overflow handling, 2063

overflow page, 6201

Overlaps()

removed features, 53

OverloadLimit, 4289, 4298

overview, 1

**P**

packages

list of, 103

pad attribute

collations, 2004, 2081, 2225

PAD SPACE collations, 2004, 2018, 2081

PAD\_CHAR\_TO\_FULL\_LENGTH

deprecated features, 47

PAD\_CHAR\_TO\_FULL\_LENGTH SQL mode, 1001

page, 6202

page cleaner, 6202

page compression, 3195

page option

innochecksum, 573

page size, 6202

InnoDB, 3075

page-type-dump option

innochecksum, 575

page-type-summary option

innochecksum, 575

pagecnt option

ndb\_import, 4398

pager command

mysql, 451

pager option

mysql, 443

pagesize option

ndb\_import, 4397

PAM

pluggable authentication,

1346

.par file, 6202

parallel-recover option

myisamchk, 586

parallel-schemas option

mysqlpump, 540

parallelism option

ndb\_restore, 4445

parameters

server, 653

PARAMETERS

INFORMATION\_SCHEMA table, 4871

parameters table

data dictionary table, 1041

parameter\_type\_elements table

data dictionary table, 1041

parent events

performance\_schema, 5182

parent table, 6202

parentheses ( and ), 2162

parenthesized query expressions, 2684

parsable option

ndb\_show\_tables, 4477

parser\_max\_mem\_size system variable, 871

partial backup, 6203

partial index, 6203

partial revokes, 1244, 1260

partial trust, 6203

partial updates

and replication, 3721

partial\_revokes system variable, 871

PARTITION, 4731

PARTITION BY

window functions, 2451

PARTITION BY LIST COLUMNS, 4743

PARTITION BY RANGE COLUMNS, 4743

partition management, 4760

partition pruning, 4778

partitioning, 4731

advantages, 4734

and dates, 4735

and foreign keys, 4789

and FULLTEXT indexes, 4789

and replication, 3719, 3722

and SQL mode, 3722, 4787

and subqueries, 4790

and temporary tables, 4790, 4793

by hash, 4750

by key, 4753

by linear hash, 4752

by linear key, 4754

by list, 4740

by range, 4736

COLUMNS, 4743

concepts, 4732

data type of partitioning key, 4790

enabling, 4731

functions allowed in partitioning expressions, 4797

index prefixes, 4790

keys, 4734

limitations, 4787

operators not permitted in partitioning expressions, 4787

operators supported in partitioning expressions, 4787

optimization, 4777, 4778

partitioning expression, 4734

resources, 4732

storage engines (limitations), 4796

subpartitioning, 4791

support, 4731

support in NDB Cluster, 4035

tables, 4731

types, 4735

window functions, 2451

Partitioning

maximum number of partitions, 4789

partitioning information statements, 4776

partitioning keys and primary keys, 4793

partitioning keys and unique keys, 4793

partitions

adding and dropping, 4760

analyzing, 4775

checking, 4775

managing, 4760

modifying, 4760

optimizing, 4775

repairing, 4775

splitting and merging, 4760

truncating, 4760

PARTITIONS

INFORMATION\_SCHEMA table, 4872

partitions (NDB Cluster), 3993

PartitionsPerNode, 4193

PARTITION\_BALANCE, 2620

PARTITION\_BALANCE (NDB\_TABLE)

NDB Cluster, 2620

password

resetting expired, 1271

root user, 275

password management, 1268

password option, 372

mysql, 443

mysqladmin, 472

mysqlbinlog, 625

mysqlcheck, 483

mysqldump, 498

mysqld\_multi, 409

mysqlimport, 524

mysqlpump, 540

mysqlshow, 553

mysqlslap, 565

mysql\_migrate\_keyring, 611

mysql\_secure\_installation, 414

mysql\_upgrade, 426

ndb\_top, 4484

password policy, 1429

password validation, 1429

PASSWORD()

removed features, 52

password1 option, 373, 444, 473, 484, 498, 524, 541, 553, 565

password2 option, 373, 444, 473, 484, 498, 525, 541, 553, 565

password3 option, 373, 444, 473, 484, 498, 525, 541, 554, 566

PASSWORDLESS\_USER\_ADMIN privilege, 1222

passwords

administrator guidelines, 1197

expiration, 1279

for the InnoDB memcached interface, 3391

for users, 1208

forgotten, 5350

logging, 1198

lost, 5350

resetting, 1279, 5350

security, 1196, 1207

setting, 1267, 2914

user guidelines, 1196

password\_history system variable, 872

password\_history table

system table, 1043, 1229

password\_require\_current system variable, 872

password\_reuse\_interval system variable, 873

PATH environment variable, 166, 172, 273, 358, 646

path name separators

Windows, 364

pattern matching, 334, 2228

peer row

window functions, 2452

PERCENT\_RANK(), 2447

performance, 1692

benchmarks, 1889

disk I/O, 1877

estimating, 1828

Performance Schema, 3362, 4954, 6203

data\_locks table, 3332

data\_lock\_waits table, 3332

event filtering, 4966

keyring tables, 5101

memory use, 4962

MySQL Enterprise Firewall tables, 5099

NDB Cluster, 4661

table reference, 4996

Thread pool tables, 5094

Performance Schema functions, 2457

Performance Schema queries

optimization, 1763

performance-schema-consumer-events-stages-current option

mysqld, 5155

performance-schema-consumer-events-stages-history option

mysqld, 5155

performance-schema-consumer-events-stages-history-long option

mysqld, 5155

performance-schema-consumer-events-statements-cpu option

mysqld, 5155

performance-schema-consumer-events-statements-current option

mysqld, 5155

performance-schema-consumer-events-statements-history option

mysqld, 5155

performance-schema-consumer-events-statements-history-long option

mysqld, 5155

performance-schema-consumer-events-transactions-current option

mysqld, 5155

performance-schema-consumer-events-transactions-history option

mysqld, 5155

performance-schema-consumer-events-transactions-history-long option

mysqld, 5156

performance-schema-consumer-events-waits-current option

mysqld, 5156

performance-schema-consumer-events-waits-history option

mysqld, 5156

performance-schema-consumer-events-waits-history-long option

mysqld, 5156

performance-schema-consumer-global-instrumentation option

mysqld, 5156

performance-schema-consumer-statements-digest option

mysqld, 5156

performance-schema-consumer-thread-instrumentation option

mysqld, 5156

performance-schema-consumer-xxx option

mysqld, 5155

performance-schema-instrument option

mysqld, 5155

performance\_schema

accounts table, 5046

clone\_progress table, 5104

clone\_status table, 5103

cond\_instances table, 5010

data\_locks table, 5079, 5182

data\_lock\_waits table, 5083

error\_log table, 5133

events\_errors\_summary\_by\_account\_by\_error table, 5130

events\_errors\_summary\_by\_host\_by\_error table, 5130

events\_errors\_summary\_by\_thread\_by\_error table, 5130

events\_errors\_summary\_by\_user\_by\_error table, 5130

events\_errors\_summary\_global\_by\_error table, 5130

events\_stages\_current table, 5024

events\_stages\_history table, 5025

events\_stages\_history\_long table, 5025

events\_stages\_summary\_by\_account\_by\_event\_name table, 5109

events\_stages\_summary\_by\_host\_by\_event\_name table, 5109

events\_stages\_summary\_by\_thread\_by\_event\_name table, 5109

events\_stages\_summary\_by\_user\_by\_event\_name table, 5109

events\_stages\_summary\_global\_by\_event\_name table, 5109

events\_statements\_current table, 5029

events\_statements\_histogram\_by\_digest table, 5115

events\_statements\_histogram\_global table, 5115

events\_statements\_history table, 5033

events\_statements\_history\_long table, 5034

events\_statements\_summary\_by\_account\_by\_event\_name table, 5111

events\_statements\_summary\_by\_digest table, 5111

events\_statements\_summary\_by\_host\_by\_event\_name table, 5111

events\_statements\_summary\_by\_program table, 5111

events\_statements\_summary\_by\_thread\_by\_event\_name table, 5111

events\_statements\_summary\_by\_user\_by\_event\_name table, 5111

events\_statements\_summary\_global\_by\_event\_name table, 5111

events\_transactions\_current table, 5041

events\_transactions\_history table, 5043

events\_transactions\_history\_long table, 5044

events\_transactions\_summary\_by\_account\_by\_event table, 5117

events\_transactions\_summary\_by\_host\_by\_event\_name table, 5117

events\_transactions\_summary\_by\_thread\_by\_event\_name table, 5117

events\_transactions\_summary\_by\_user\_by\_event\_name table, 5117

events\_transactions\_summary\_global\_by\_event\_name table, 5117

events\_waits\_current table, 5017

events\_waits\_history table, 5019

events\_waits\_history\_long table, 5020

events\_waits\_summary\_by\_account\_by\_event\_name table, 5107

events\_waits\_summary\_by\_host\_by\_event\_name table, 5107

events\_waits\_summary\_by\_instance table, 5107

events\_waits\_summary\_by\_thread\_by\_event\_name table, 5107

events\_waits\_summary\_by\_user\_by\_event\_name table, 5107

events\_waits\_summary\_global\_by\_event\_name table, 5107

file\_instances table, 5011

file\_summary\_by\_event\_name table, 5120

file\_summary\_by\_instance table, 5120

firewall\_groups table, 5100

firewall\_group\_allowlist table, 5100

firewall\_membership table, 5101

hosts table, 5047

host\_cache table, 1012, 5136

innodb\_redo\_log\_files table, 5139

keyring\_component\_status table, 1442, 5101

keyring\_keys table, 1442, 1539, 1575, 5102

log\_status table, 5139

memory\_summary\_by\_account\_by\_event\_name table, 5126

memory\_summary\_by\_host\_by\_event\_name table, 5126

memory\_summary\_by\_thread\_by\_event\_name table, 5126

memory\_summary\_by\_user\_by\_event\_name table, 5126

memory\_summary\_global\_by\_event\_name table, 5126

metadata\_locks table, 5085

mutex\_instances table, 5011

objects\_summary\_global\_by\_type table, 5119

parent events, 5182

performance\_timers table, 5140

prepared\_statements\_instances table, 5111

processlist table, 5141

replication\_applier\_configuration, 5064

replication\_applier\_status, 5065

replication\_applier\_status\_by\_coordinator, 5065

replication\_applier\_status\_by\_worker, 5067

replication\_asynchronous\_connection\_failover, 5062

replication\_asynchronous\_connection\_failover\_managed, 5063

replication\_connection\_configuration, 5056

replication\_connection\_status, 5060

rwlock\_instances table, 5012

session\_account\_connect\_attrs table, 5051

session\_connect\_attrs table, 5052

setup\_actors table, 5001

setup\_consumers table, 5002

setup\_instruments table, 5003

setup\_objects table, 5007

setup\_threads table, 5008

socket\_instances table, 5013

socket\_summary\_by\_event\_name table, 5125

socket\_summary\_by\_instance table, 5125

table\_handles table, 5087

table\_io\_waits\_summary\_by\_index\_usage table, 5122

table\_io\_waits\_summary\_by\_table table, 5121

table\_lock\_waits\_summary\_by\_table table, 5123

thread table, 5144

tls\_channel\_status table, 5149

tp\_thread\_group\_state table, 5095

tp\_thread\_group\_stats table, 5096

tp\_thread\_state table, 5098

users table, 5047

user\_defined\_functions table, 1169, 5150

user\_variables\_by\_thread table, 5053

performance\_schema database, 4954

restrictions, 5184

TRUNCATE TABLE, 4995, 5184

PERFORMANCE\_SCHEMA storage engine, 4954

performance\_schema system variable, 5157

performance\_schema.global\_status table

and NDB Cluster, 4668

performance\_schema.global\_variables table

and NDB Cluster, 4664

Performance\_schema\_accounts\_lost status variable, 5175

performance\_schema\_accounts\_size system variable, 5157

Performance\_schema\_cond\_classes\_lost status variable, 5175

Performance\_schema\_cond\_instances\_lost status variable, 5176

performance\_schema\_digests\_size system variable, 5158

Performance\_schema\_digest\_lost status variable, 5176

performance\_schema\_error\_size system variable, 5158

performance\_schema\_events\_stages\_history\_long\_size system variable, 5158

performance\_schema\_events\_stages\_history\_size system variable, 5159

performance\_schema\_events\_statements\_history\_long\_size system variable, 5159

performance\_schema\_events\_statements\_history\_size system variable, 5159

performance\_schema\_events\_transactions\_history\_long\_size system variable, 5160

performance\_schema\_events\_transactions\_history\_size system variable, 5160

performance\_schema\_events\_waits\_history\_long\_size system variable, 5161

performance\_schema\_events\_waits\_history\_size system variable, 5161

Performance\_schema\_file\_classes\_lost status variable, 5176

Performance\_schema\_file\_handles\_lost status variable, 5176

Performance\_schema\_file\_instances\_lost status variable, 5176

Performance\_schema\_hosts\_lost status variable, 5176

performance\_schema\_hosts\_size system variable, 5161

Performance\_schema\_index\_stat\_lost status variable, 5176

Performance\_schema\_locker\_lost status variable, 5176

performance\_schema\_max\_cond\_classes system variable, 5162

performance\_schema\_max\_cond\_instances system variable, 5162

performance\_schema\_max\_digest\_length system variable, 5162

performance\_schema\_max\_digest\_sample\_age system variable, 5163

performance\_schema\_max\_file\_classes system variable, 5163

performance\_schema\_max\_file\_handles system variable, 5164

performance\_schema\_max\_file\_instances system variable, 5164

performance\_schema\_max\_index\_stat system variable, 5165

performance\_schema\_max\_memory\_classes system variable, 5165

performance\_schema\_max\_metadata\_locks system variable, 5165

performance\_schema\_max\_mutex\_classes system variable, 5166

performance\_schema\_max\_mutex\_instances system variable, 5166

performance\_schema\_max\_prepared\_statements\_instances system variable, 5166

performance\_schema\_max\_program\_instances system variable, 5167

performance\_schema\_max\_rwlock\_classes system variable, 5167

performance\_schema\_max\_rwlock\_instances system variable, 5168

performance\_schema\_max\_socket\_classes system variable, 5168

performance\_schema\_max\_socket\_instances system variable, 5168

performance\_schema\_max\_sql\_text\_length system variable, 5169

performance\_schema\_max\_stage\_classes system variable, 5169

performance\_schema\_max\_statement\_classes system variable, 5170

performance\_schema\_max\_statement\_stack system variable, 5170

performance\_schema\_max\_table\_handles system variable, 5171

performance\_schema\_max\_table\_instances system variable, 5171

performance\_schema\_max\_table\_lock\_stat system variable, 5171

performance\_schema\_max\_thread\_classes system variable, 5172

performance\_schema\_max\_thread\_instances system variable, 5172

Performance\_schema\_memory\_classes\_lost status variable, 5176

Performance\_schema\_metadata\_lock\_lost status variable, 5176

Performance\_schema\_mutex\_classes\_lost status variable, 5176

Performance\_schema\_mutex\_instances\_lost status variable, 5176

Performance\_schema\_nested\_statement\_lost status variable, 5176

Performance\_schema\_prepared\_statements\_lost status variable, 5177

Performance\_schema\_program\_lost status variable, 5177

Performance\_schema\_rwlock\_classes\_lost status variable, 5177

Performance\_schema\_rwlock\_instances\_lost status variable, 5177

Performance\_schema\_session\_connect\_attrs\_longest\_seen status variable, 5177

Performance\_schema\_session\_connect\_attrs\_lost status variable, 5177

performance\_schema\_session\_connect\_attrs\_size system variable, 5173

performance\_schema\_setup\_actors\_size system variable, 5173

performance\_schema\_setup\_objects\_size system variable, 5174

performance\_schema\_show\_processlist system variable, 5174

Performance\_schema\_socket\_classes\_lost status variable, 5177

Performance\_schema\_socket\_instances\_lost status variable, 5177

Performance\_schema\_stage\_classes\_lost status variable, 5177

Performance\_schema\_statement\_classes\_lost status variable, 5177

Performance\_schema\_table\_handles\_lost status variable, 5178

Performance\_schema\_table\_instances\_lost status variable, 5178

Performance\_schema\_table\_lock\_stat\_lost status variable, 5178

Performance\_schema\_thread\_classes\_lost status variable, 5178

Performance\_schema\_thread\_instances\_lost status variable, 5178

Performance\_schema\_users\_lost status variable, 5178

performance\_schema\_users\_size system variable, 5175

performance\_timers

removed features, 55

performance\_timers table

performance\_schema, 5140

PERIOD\_ADD(), 2199

PERIOD\_DIFF(), 2199

Perl, 6203

installing, 314

installing on Windows, 316

Perl API, 5271, 6203

Perl DBI/DBD

installation problems, 316

permission checks

effect on speed, 1765

perror, 357, 644

help option, 645

ndb option, 645

removed features, 58

silent option, 645

verbose option, 645

version option, 645

PERSIST

SET statement, 958, 2940

persisted\_globals\_load system variable, 873, 958

persistent statistics, 6203

PERSIST\_ONLY

SET statement, 958, 2940

persist\_only\_admin\_x509\_subject system variable, 874

PERSIST\_RO\_VARIABLES\_ADMIN privilege, 1222

persist\_sensitive\_variables\_in\_plaintext system variable, 874

pessimistic, 6203

pgman\_time\_track\_stats

ndbinfo table, 4639

phantom, 6203

phantom rows, 3130

phone book collation, German, 2025, 2025

PHP, 6204

PHP API, 6204

physical, 6204

physical backup, 6204

PI(), 2183

pid-file option

mysql.server, 406

mysqld\_safe, 403

pid\_file system variable, 875

Ping

thread command, 1892

pipe option, 373

mysql, 444, 484

mysqladmin, 473

mysqldump, 499

mysqlimport, 525

mysqlshow, 554

mysqlslap, 566

mysql\_upgrade, 426

PIPES\_AS\_CONCAT SQL mode, 1002

PITR, 6204

PKG\_CONFIG\_PATH environment variable, 646

plan stability, 6204

platforms

supported, 108

pluggable authentication

PAM, 1346

restrictions, 1285

Windows, 1357

plugin

audit\_log, 1512

plugin activation options

FORCE, 1101

FORCE\_PLUS\_PERMANENT, 1101

OFF, 1101

ON, 1101

plugin API, 1097

plugin installing

audit\_log, 1513

Clone, 1135

CONNECTION\_CONTROL, 1424

CONNECTION\_CONTROL\_FAILED\_LOGIN\_ATTEMPTS, 1424

Data Masking, 1627

ddl\_rewriter, 1121

keyring\_aws, 1446

keyring\_encrypted\_file, 1446

keyring\_file, 1446

keyring\_hashicorp, 1446

keyring\_oci, 1446

keyring\_okv, 1446

keyring\_udf, 1485

MySQL Enterprise Firewall plugins, 1600

MySQL Enterprise Thread Pool, 1104

Rewriter query rewrite plugin, 1112

Version Tokens, 1123

plugin option prefix

mysqld, 760

plugin service

locking\_service, 1159

mysql\_keyring, 1165

plugin services, 1159

plugin table

system table, 1043

plugin uninstalling

Data Masking, 1627

Rewriter query rewrite plugin, 1112

Version Tokens, 1123

plugin-authentication-kerberos-client-mode option

mysql, 444

mysqldump, 499

plugin-dir option, 373

mysql, 444

mysqladmin, 473

mysqlbinlog, 625

mysqlcheck, 484

mysqldump, 499

mysqld\_safe, 403

mysqlimport, 525

mysqlpump, 541

mysqlshow, 554

mysqlslap, 566

mysql\_upgrade, 426

plugin-load option

mysqld, 759

plugin-load-add option

mysqld, 760

plugindir option

mysql\_config, 642

plugins

activating, 1098

clone, 1134

daemon\_keyring\_proxy\_plugin, 1159

installing, 1098, 2937

new features, 30

security, 1335

server, 1097

uninstalling, 1098, 2938

PLUGINS

INFORMATION\_SCHEMA table, 4875

plugin\_dir system variable, 875

POINT data type, 2090

Point(), 2333

point-in-time recovery, 1682, 6204

InnoDB, 3376

using NDB Cluster replication, 4704

PointFromText()

removed features, 53

PointFromWKB()

removed features, 53

PointN()

removed features, 53

polltimeout option

ndb\_import, 4398

PolyFromText()

removed features, 53

PolyFromWKB()

removed features, 53

POLYGON data type, 2090

Polygon(), 2333

PolygonFromText()

removed features, 53

PolygonFromWKB()

removed features, 53

port, 6204

port option, 373

mysql, 444

mysqladmin, 473

mysqlbinlog, 625

mysqlcheck, 484

mysqld, 761

mysqldump, 499

mysqld\_safe, 403

mysqlimport, 525

mysqlpump, 541

mysqlshow, 554

mysqlslap, 566

mysql\_config, 642

mysql\_migrate\_keyring, 611

mysql\_secure\_installation, 414

mysql\_upgrade, 426

ndb\_top, 4484

port system variable, 876

port-open-timeout option

mysqld, 761

portability, 1694

types, 2130

PortNumber, 4110

PortNumberStats, 4114

ports, 251, 251, 271, 381, 625, 645, 1174, 1194, 1300, 1332, 5013, 5339

POSITION(), 2218

post-filtering

Performance Schema, 4966

post-query option

mysqlslap, 566

post-system option

mysqlslap, 566

POSTGRESQL

removed features, 53

PostgreSQL compatibility, 91

postinstall

multiple servers, 1169

postinstallation

setup and testing, 265

POW(), 2183

POWER(), 2183

pre-5. 1 database name conversion

removed features, 54

pre-filtering

Performance Schema, 4966

pre-query option

mysqlslap, 566

pre-system option

mysqlslap, 566

precedence

command options, 359

operator, 2161

precision

arithmetic, 2477

fractional seconds, 2056, 2066

numeric, 2056

precision math, 2477

PreferIPVersion, 4289

preload\_buffer\_size system variable, 876

Prepare

thread command, 1892

PREPARE, 2824, 2827

XA transactions, 2760

prepared backup, 6205

prepared statement, 6205

prepared statements, 2824, 2827, 2830, 2830

repreparation, 1867

prepared\_statements\_instances table

performance\_schema, 5111

Prepared\_stmt\_count status variable, 985

preparing

thread state, 1896

preparing for alter table

thread state, 1896

PreSendChecksum, 4290, 4299

preserve-trailing-spaces option

ndb\_restore, 4446

pretty option

ibd2sdi, 571

primary key, 6205

constraint, 95

deleting, 2516

PRIMARY KEY, 2516, 2570

primary keys

and partitioning keys, 4793

primary passwords, 1275

PrimaryMGMNode, 4226

principal, 6205

print command

mysql, 451

print option

ndb\_restore, 4446

print-data option

ndb\_restore, 4446

print-defaults option, 367

myisamchk, 582

mysql, 444

mysqladmin, 473

mysqlbinlog, 625

mysqlcheck, 484

mysqld, 761

mysqldump, 501

mysqlimport, 525

mysqlpump, 541

mysqlshow, 554

mysqlslap, 566

mysql\_migrate\_keyring, 611

mysql\_secure\_installation, 415

mysql\_upgrade, 426

ndbd, 4315

ndbinfo\_select\_all, 4322

ndbxfrm, 4498

ndb\_blob\_tool, 4345

ndb\_config, 4356

ndb\_delete\_all, 4363

ndb\_desc, 4373

ndb\_drop\_index, 4377

ndb\_drop\_table, 4382

ndb\_import, 4398

ndb\_index\_stat, 4406

ndb\_mgm, 4340

ndb\_mgmd, 4333

ndb\_move\_data, 4413

ndb\_perror, 4416

ndb\_print\_backup\_file, 4420

ndb\_restore, 4446

ndb\_secretsfile\_reader, 4461

ndb\_select\_all, 4467

ndb\_select\_count, 4472

ndb\_show\_tables, 4477

ndb\_top, 4484

ndb\_waiter, 4490

print-full-config option

ndb\_mgmd, 4333

print-header-words option

ndb\_print\_backup\_file, 4420

print-log option

ndb\_restore, 4447

print-meta option

ndb\_restore, 4447

print-restored-rows option

ndb\_print\_backup\_file, 4420

print-rows option

ndb\_print\_backup\_file, 4420

print-rows-per-page option

ndb\_print\_backup\_file, 4421

print-sql-log option

ndb\_restore, 4447

print-table-metadata option

mysqlbinlog, 625

print\_identified\_with\_as\_hex system variable, 876

privilege

changes, 1266

privilege checks

effect on speed, 1765

privilege information

location, 1228

privilege restrictions

GRANT statement, 2907

partial revokes, 1260

privilege synchronization (NDB Cluster), 4568

privilege system, 1207

privileges

access, 1207

adding, 1246

ALL, 1213

ALL PRIVILEGES, 1213

ALTER, 1213

ALTER ROUTINE, 1213

and replication, 3718

APPLICATION\_PASSWORD\_ADMIN, 1219

AUDIT\_ABORT\_EXEMPT, 1219

AUDIT\_ADMIN, 1219

AUTHENTICATION\_POLICY\_ADMIN, 1219

BACKUP\_ADMIN, 1219

BINLOG\_ADMIN, 1219

BINLOG\_ENCRYPTION\_ADMIN, 1219

checking, 1248

CLONE\_ADMIN, 1220

CONNECTION\_ADMIN, 1220

CREATE, 1213

CREATE ROLE, 1213

CREATE ROUTINE, 1213

CREATE TABLESPACE, 1213

CREATE TEMPORARY TABLES, 1213

CREATE USER, 1213

CREATE VIEW, 1213

default, 275

DEFINER, 2966, 4821

DELETE, 1214

deleting, 2895

display, 2965

DROP, 1214

DROP ROLE, 1214

dropping, 2895

ENCRYPTION\_KEY\_ADMIN, 1220

EVENT, 1214

EXECUTE, 1214

FILE, 1214

FIREWALL\_ADMIN, 1220

FIREWALL\_EXEMPT, 1220

FIREWALL\_USER, 1220

FLUSH\_OPTIMIZER\_COSTS, 1220

FLUSH\_STATUS, 1220

FLUSH\_TABLES, 1221

FLUSH\_USER\_RESOURCES, 1221

GRANT OPTION, 1214

granting, 2896

GROUP\_REPLICATION\_ADMIN, 1221

GROUP\_REPLICATION\_STREAM, 1221

INDEX, 1214

INNODB\_REDO\_LOG\_ARCHIVE, 1221

INNODB\_REDO\_LOG\_ENABLE, 1221

INSERT, 1215

INVOKER, 2966, 4821

LOCK TABLES, 1215

NDB\_STORED\_USER, 1221

PASSWORDLESS\_USER\_ADMIN, 1222

PERSIST\_RO\_VARIABLES\_ADMIN, 1222

PROCESS, 1215

PROXY, 1215

REFERENCES, 1215

RELOAD, 1215

REPLICATION CLIENT, 1216

REPLICATION SLAVE, 1216

REPLICATION\_APPLIER, 1222

REPLICATION\_SLAVE\_ADMIN, 1222

RESOURCE\_GROUP\_ADMIN, 1222

RESOURCE\_GROUP\_USER, 1222

revoking, 1248, 2910

ROLE\_ADMIN, 1223

SELECT, 1216

SENSITIVE\_VARIABLES\_OBSERVER, 1223

SERVICE\_CONNECTION\_ADMIN, 1223

SESSION\_VARIABLES\_ADMIN, 1223

SET\_USER\_ID, 1223

SHOW DATABASES, 1216

SHOW VIEW, 1216

SHOW\_ROUTINE, 1223

SHUTDOWN, 1216

SKIP\_QUERY\_REWRITE, 1224

SQL SECURITY, 4821

static versus dynamic, 1226

stored objects, 4821

SUPER, 1216

SYSTEM\_USER, 1224, 1256

SYSTEM\_VARIABLES\_ADMIN, 1225

TABLE\_ENCRYPTION\_ADMIN, 1225

TEMPORARY tables, 1213, 2589, 2906

TP\_CONNECTION\_ADMIN, 1225

TRIGGER, 1218

UPDATE, 1218

USAGE, 1218

VERSION\_TOKEN\_ADMIN, 1225

XA\_RECOVER\_ADMIN, 1225

problems

access denied errors, 5338

common errors, 5337

compiling MySQL server, 262

DATE columns, 5358

date values, 2068

installing on Solaris, 220

installing Perl, 316

lost connection errors, 5342

reporting, 2, 84

starting the server, 271

table locking, 1871

time zone, 5356

PROCEDURE ANALYSE()

removed features, 54

procedures

stored, 4801

process, 6205

process management (NDB Cluster), 4306

PROCESS privilege, 1215

processes

display, 2974

monitoring, 1889

ndbinfo table, 4640

Processing events

thread state, 1904

Processing events from schema table

thread state, 1904

Processlist

thread command, 1893

PROCESSLIST, 2974

INFORMATION\_SCHEMA table, 4877

possible inconsistency with INFORMATION\_SCHEMA tables, 3338

processlist

monitoring, 5141

processlist table

performance\_schema, 5141

processlist view

sys schema, 5211

procs\_priv table

system table, 1043, 1229

PROFILING

INFORMATION\_SCHEMA table, 4878

profiling system variable, 877

profiling\_history\_size system variable, 877

program variables

setting, 368

program-development utilities, 357

programs

administrative, 356

client, 355

stored, 2830, 4799

utility, 356

progress-frequency option

ndb\_restore, 4447

promote-attributes option

ndb\_move\_data, 4413

ndb\_restore, 4447

prompt command

mysql, 451

PROMPT command (NDB Cluster), 4501

prompt option

mysql, 445

prompts

meanings, 322

pronunciation

MySQL, 5

protocol option, 373

mysql, 445

mysqladmin, 473

mysqlbinlog, 625

mysqlcheck, 485

mysqldump, 499

mysqlimport, 525

mysqlpump, 541

mysqlshow, 554

mysqlslap, 566

mysql\_secure\_installation, 415

mysql\_upgrade, 426

protocol\_compression\_algorithms system variable, 877

protocol\_version system variable, 878

proxies\_priv

grant table, 1293

proxies\_priv table

system table, 275, 1043, 1229

proximity search, 2244

Proxy, 4290

PROXY privilege, 1215

proxy user mapping

LDAP authentication, 1373

proxy users, 1290

conflict with anonymous users, 1295

default proxy user, 1294

LDAP authentication, 1370

PAM authentication, 1353

PROXY privilege, 1293

server user mapping, 1296

system variables, 1297

Windows authentication, 1360

proxy\_user system variable, 878

pseudo-record, 6205

pseudo\_replica\_mode system variable, 878

pseudo\_slave\_mode system variable, 879

pseudo\_thread\_id system variable, 880

ps\_check\_lost\_instrumentation view

sys schema, 5213

PS\_CURRENT\_THREAD\_ID() function, 2459

ps\_is\_account\_enabled() function

sys schema, 5257

ps\_is\_consumer\_enabled() function

sys schema, 5258

ps\_is\_instrument\_default\_enabled() function

sys schema, 5258

ps\_is\_instrument\_default\_timed() function

sys schema, 5258

ps\_is\_thread\_instrumented() function

sys schema, 5259

ps\_setup\_disable\_background\_threads() procedure

sys schema, 5238

ps\_setup\_disable\_consumer() procedure

sys schema, 5238

ps\_setup\_disable\_instrument() procedure

sys schema, 5239

ps\_setup\_disable\_thread() procedure

sys schema, 5239

ps\_setup\_enable\_background\_threads() procedure

sys schema, 5240

ps\_setup\_enable\_consumer() procedure

sys schema, 5240

ps\_setup\_enable\_instrument() procedure

sys schema, 5240

ps\_setup\_enable\_thread() procedure

sys schema, 5241

ps\_setup\_reload\_saved() procedure

sys schema, 5241

ps\_setup\_reset\_to\_default() procedure

sys schema, 5242

ps\_setup\_save() procedure

sys schema, 5242

ps\_setup\_show\_disabled() procedure

sys schema, 5243

ps\_setup\_show\_disabled\_consumers() procedure

sys schema, 5243

ps\_setup\_show\_disabled\_instruments() procedure

sys schema, 5244

ps\_setup\_show\_enabled() procedure

sys schema, 5244

ps\_setup\_show\_enabled\_consumers() procedure

sys schema, 5245

ps\_setup\_show\_enabled\_instruments() procedure

sys schema, 5245

ps\_statement\_avg\_latency\_histogram() procedure

sys schema, 5245

ps\_thread\_account() function

sys schema, 5259

PS\_THREAD\_ID() function, 2459

ps\_thread\_id() function

sys schema, 5260

ps\_thread\_stack() function

sys schema, 5260

ps\_thread\_trx\_info() function

sys schema, 5261

ps\_trace\_statement\_digest() procedure

sys schema, 5246

ps\_trace\_thread() procedure

sys schema, 5247

ps\_truncate\_all\_tables() procedure

sys schema, 5249

Pthreads, 6205

purge, 3164, 6205

PURGE BINARY LOGS, 2765

purge buffering, 6205

purge configuration, 3164

purge lag, 6206

PURGE MASTER LOGS, 2765

purge scheduling, 3164

purge thread, 6206

Purging old relay logs

thread state, 1896

pushdown joins (NDB), 4246

Python, 5270, 6206

third-party driver, 5271

Python API, 6206

**Q**

Qcache\_free\_blocks

removed features, 52

Qcache\_free\_memory

removed features, 52

Qcache\_inserts

removed features, 52, 52

Qcache\_lowmem\_prunes

removed features, 52

Qcache\_not\_cached

removed features, 52

Qcache\_queries\_in\_cache

removed features, 52

Qcache\_total\_blocks

removed features, 52

QUARTER(), 2199

queries

entering, 320

estimating performance, 1828

examples, 342

speed of, 1694

Queries status variable, 985

Query

thread command, 1893

query, 6206

query attributes, 1967

query cache

and ndbinfo database tables, 4586

removed features, 52

query cast injection

new features, 33

query end

thread state, 1896

query execution plan, 6206

query expansion, 2249

query option

mysqlslap, 566

ndb\_config, 4353, 4354

ndb\_index\_stat, 4406

query rewrite plugins

ddl\_rewriter, 1120

Rewriter, 1111

query-all option

ndb\_config, 4354

query\_alloc\_block\_size system variable, 880

query\_attributes command

mysql, 452

query\_attributes component, 1097

query\_cache\_limit

removed features, 52

query\_cache\_min\_res\_unit

removed features, 52

query\_cache\_size

removed features, 52

query\_cache\_type

removed features, 52

query\_cache\_wlock\_invalidate

removed features, 52

query\_prealloc\_size system variable, 880

questions, 466

Questions status variable, 985

Queueing master event to the relay log

thread state, 1901

Queueing source event to the relay log

thread state, 1901

QUICK

DELETE modifier, 2648

quick option

myisamchk, 586

mysql, 445

mysqlcheck, 485

mysqldump, 514

quiesce, 6206

quiet option

ndb\_print\_file, 4423

Quit

thread command, 1893

quit command

mysql, 452

QUIT command (NDB Cluster), 4501

quotation marks

in strings, 1909

QUOTE(), 1909, 2219

quote-names option

mysqldump, 508

quote\_identifier() function

sys schema, 5262

quoting, 1909

account names, 1238

column alias, 1920, 5360

host names in account names, 1238

schema objects, 2898

user names in account names, 1238

quoting binary data, 1909

quoting of identifiers, 1919

**R**

R-tree, 6206

RADIANS(), 2183

RAID, 6207

RAND(), 2183

random dive, 6207

RANDOM\_BYTES(), 2308

rand\_seed1 system variable, 881

rand\_seed2 system variable, 881

range join type

optimizer, 1817

range partitioning, 4736, 4743

range partitions

adding and dropping, 4761

managing, 4761

range\_alloc\_block\_size system variable, 882

range\_optimizer\_max\_mem\_size system variable, 882

RANK(), 2448

raw backup, 6207

raw option

mysql, 445

mysqlbinlog, 625

raw partitions, 3083

rbr\_exec\_mode system variable, 882

RC

MySQL releases, 108

READ COMMITTED, 6207

implementation in NDB Cluster, 4037

transaction isolation level, 3119

read conflict detection and resolution

in NDB Cluster Replication, 4724

read from standard in

innochecksum, 576

read phenomena, 6207

READ UNCOMMITTED, 6207

transaction isolation level, 3120

read view, 6207

read-ahead, 6207

linear, 3152

random, 3152

read-from-remote-master option

mysqlbinlog, 626

read-from-remote-server option

mysqlbinlog, 626

read-from-remote-source option

mysqlbinlog, 626

read-only database

ALTER DATABASE, 2495

read-only option

myisamchk, 585

read-only transaction, 6208

Reading event from the relay log

thread state, 1902

Reading master dump table data

thread state, 1904

READ\_BACKUP, 2620

READ\_BACKUP (NDB\_TABLE)

NDB Cluster, 2620

read\_buffer\_size myisamchk variable, 583

read\_buffer\_size system variable, 883

read\_firewall\_groups() MySQL Enterprise Firewall function, 1623

read\_firewall\_group\_allowlist() MySQL Enterprise Firewall function, 1622

read\_firewall\_users() MySQL Enterprise Firewall function, 1623

read\_firewall\_whitelist() MySQL Enterprise Firewall function, 1624

read\_only system variable, 884

read\_rnd\_buffer\_size system variable, 885

REAL data type, 2060

RealtimeScheduler, 4185

REAL\_AS\_FLOAT SQL mode, 1002

rebuild-indexes option

ndb\_restore, 4448

Rebuilding the index on master dump table

thread state, 1904

ReceiveBufferMemory, 4290

Receiving from client

thread state, 1896

reconfiguring, 262

reconnect option

mysql, 445

Reconnecting after a failed binlog dump request

thread state, 1901

Reconnecting after a failed master event read

thread state, 1901

Reconnecting after a failed source event read

thread state, 1901

reconnection

automatic, 5144

record lock, 6208

record-level locks

InnoDB, 3130

RECOVER

XA transactions, 2760

recover option

myisamchk, 586

recovery

from crash, 1685

incremental, 1682

InnoDB, 3376

point in time, 1682

RecoveryWork, 4145

redo, 6208

redo log, 3105, 3106, 3108, 6208

redo log archiving, 3108, 6208

new features, 31

RedoBuffer, 4172

RedoOverCommitCounter

data nodes, 4209

RedoOverCommitLimit

data nodes, 4210

reducing

data size, 1783

redundant row format, 3199, 6208

ref join type

optimizer, 1816

references, 2517

REFERENCES privilege, 1215

referential integrity, 3032, 6208

REFERENTIAL\_CONSTRAINTS

INFORMATION\_SCHEMA table, 4879

Refresh

thread command, 1893

ref\_or\_null, 1731

ref\_or\_null join type

optimizer, 1817

REGEXP, 2229

REGEXP operator, 2228

REGEXP\_INSTR(), 2229

REGEXP\_LIKE(), 2230

REGEXP\_REPLACE(), 2232

regexp\_stack\_limit system variable, 885

REGEXP\_SUBSTR(), 2232

regexp\_time\_limit system variable, 886

Register Slave

thread command, 1893

Registering replica on source

thread state, 1901

Registering slave on master

thread state, 1901

regular account

account categories, 1256

regular expression syntax, 2228

regular expressions

in JSON schemas, 2410

new features, 29

regular session

session categories, 1258

rehash command

mysql, 452

rejects option

ndb\_import, 4398

relational, 6209

relational databases

defined, 5

relative option

mysqladmin, 474

relay log (replication), 3648

relay-log-purge option

mysqld, 3535

relay-log-space-limit option

mysqld, 3535

relay\_log system variable, 3549

relay\_log\_basename system variable, 3550

relay\_log\_index system variable, 3550

relay\_log\_info\_file

deprecated features, 48

relay\_log\_info\_file system variable, 3551

relay\_log\_info\_repository system variable, 3551, 3648

relay\_log\_purge system variable, 3552

relay\_log\_recovery system variable, 3552

relay\_log\_space\_limit system variable, 3553

release numbers, 108

RELEASE SAVEPOINT, 2749

releases

DMR, 108

GA, 108

naming scheme, 108

RC, 108

RELEASE\_ALL\_LOCKS(), 2312

RELEASE\_LOCK(), 2312

relevance, 6209

reload option

ndb\_mgmd, 4333

RELOAD privilege, 1215

remap-column option

ndb\_restore, 4448

remote administration (NDB Cluster)

and security issues, 4672

remove action

MySQLInstallerConsole, 160

remove option

mysqld, 761

ndbd, 4315

ndbmtd, 4315

ndb\_mgmd, 4334

removed features, 51

--bootstrap, 54

--des-key-file, 53

--fix-db-names, 54

--fix-table-names, 54

--ignore-db-dir, 52

--log-warnings, 52

--partition, 55

--secure-auth, 52

--skip-partition, 55

--ssl, 54

--ssl-verify-server-cert, 54

--temp-pool, 54

ALTER DATABASE, 54

ALTER TABLE ... UPGRADE PARTITIONING, 58

Area(), 53

AsBinary(), 53

AsText(), 53

AsWKB(), 53

AsWKT(), 53

Buffer(), 53

Centroid(), 53

Com\_alter\_db\_upgrade, 54

Contains(), 53

ConvexHull(), 53

Crosses(), 53

datetime\_format, 53

date\_format, 53

DB2, 53

DECODE(), 53

DES\_DECRYPT(), 53

DES\_ENCRYPT(), 53

DES\_KEY\_FILE, 53

Dimension(), 53

DISABLE\_SHARED, 59

Disjoint(), 53

Distance(), 53

DTrace, 58

embedded server library, 56

ENCODE(), 53

ENCRYPT(), 53

EndPoint(), 53

Envelope(), 53

Equals(), 53

error codes, 56

EXPLAIN EXTENDED, 53

EXPLAIN PARTITIONS, 53

ExteriorRing(), 53

FILE\_FORMAT, 58

FLUSH QUERY CACHE, 52

GeomCollFromText(), 53

GeomCollFromWKB(), 53

GeometryCollectionFromText(), 53

GeometryCollectionFromWKB(), 53

GeometryFromText(), 53

GeometryFromWKB(), 53

GeometryN(), 53

GeometryType(), 53

GeomFromText(), 53

GeomFromWKB(), 53

GLength(), 53

GLOBAL\_STATUS, 55

GLOBAL\_VARIABLES, 55

GRANT, 51

GROUP BY sorting, 53

have\_crypt, 53

HAVE\_CRYPT, 53

IDENTIFIED BY PASSWORD, 52

ignore\_builtin\_innodb, 54

ignore\_db\_dirs, 52

information\_schema\_stats, 51

InnoDB compressed temporary tables, 58

InnoDB remote tablespaces, 58

InnoDB shared tablespaces, 58

Innodb\_available\_undo\_logs, 58

innodb\_file\_format, 58

innodb\_file\_format\_check, 58

innodb\_file\_format\_max, 58

innodb\_large\_prefix, 58

INNODB\_LOCKS, 57

innodb\_locks\_unsafe\_for\_binlog, 51

INNODB\_LOCK\_WAITS, 57

innodb\_support\_xa, 58

INNODB\_SYS\_COLUMNS, 51

INNODB\_SYS\_DATAFILES, 51

INNODB\_SYS\_FIELDS, 51

INNODB\_SYS\_FOREIGN, 51

INNODB\_SYS\_FOREIGN\_COLS, 51

INNODB\_SYS\_INDEXES, 51

INNODB\_SYS\_TABLES, 51

INNODB\_SYS\_TABLESPACES, 51

INNODB\_SYS\_TABLESTATS, 51

INNODB\_SYS\_VIRTUAL, 51

innodb\_undo\_logs, 58

innodb\_undo\_tablespaces, 58

INSTALL\_SCRIPTDIR, 54

InteriorRingN(), 53

internal\_tmp\_disk\_storage\_engine, 58

Intersects(), 53

IsClosed(), 53

IsEmpty(), 53

IsSimple(), 53

JSON\_APPEND(), 58

libmysqld, 56

LineFromText(), 53

LineFromWKB(), 53

LineStringFromText(), 53

LineStringFromWKB(), 53

log\_builtin\_as\_identified\_by\_password, 52

log\_warnings, 52

MAXDB, 53

max\_tmp\_tables, 53

metadata\_locks\_cache\_size, 53

metadata\_locks\_hash\_instances, 53

MLineFromText(), 53

MLineFromWKB(), 53

MPointFromText(), 53

MPointFromWKB(), 53

MPolyFromText(), 53

MPolyFromWKB(), 53

MSSQL, 53

MultiLineStringFromText(), 53

MultiLineStringFromWKB(), 53

MultiPointFromText(), 53

MultiPointFromWKB(), 53

MultiPolygonFromText(), 53

MultiPolygonFromWKB(), 53

multi\_range\_count, 52

myisam\_repair\_threads, 59

MYSQL323, 53

MYSQL40, 53

mysql\_install\_db, 54

MYSQL\_OPT\_SSL\_ENFORCE, 54

MYSQL\_OPT\_SSL\_VERIFY\_SERVER\_CERT, 54

mysql\_plugin, 56

MYSQL\_SECURE\_AUTH, 52

NO\_FIELD\_OPTIONS, 53

NO\_KEY\_OPTIONS, 53

NO\_TABLE\_OPTIONS, 53

NumGeometries(), 53

NumInteriorRings(), 53

NumPoints(), 53

old\_passwords, 52

ORACLE, 53

Overlaps(), 53

PASSWORD(), 52

performance\_timers, 55

perror, 58

PointFromText(), 53

PointFromWKB(), 53

PointN(), 53

PolyFromText(), 53

PolyFromWKB(), 53

PolygonFromText(), 53

PolygonFromWKB(), 53

POSTGRESQL, 53

pre-5. 1 database name conversion, 54

PROCEDURE ANALYSE(), 54

Qcache\_free\_blocks, 52

Qcache\_free\_memory, 52

Qcache\_inserts, 52, 52

Qcache\_lowmem\_prunes, 52

Qcache\_not\_cached, 52

Qcache\_queries\_in\_cache, 52

Qcache\_total\_blocks, 52

query cache, 52

query\_cache\_limit, 52

query\_cache\_min\_res\_unit, 52

query\_cache\_size, 52

query\_cache\_type, 52

query\_cache\_wlock\_invalidate, 52

RESET QUERY CACHE, 52

resolveip, 56

resolve\_stack\_dump, 56

secure\_auth, 52

SESSION\_STATUS, 55

SESSION\_VARIABLES, 55

setup\_timers, 55

show\_compatibility\_56, 55

Slave\_heartbeat\_period, 55

Slave\_last\_heartbeat, 55

Slave\_received\_heartbeats, 55

Slave\_retried\_transactions, 55

Slave\_running, 55

spatial functions, 54

SQL mode, 53

SQL\_CACHE, 52

sql\_log\_bin, 52

SRID(), 53

StartPoint(), 53

sync\_frm, 52

thread states, 52

time\_format, 53

Touches(), 53

tx\_isolation, 52

tx\_read\_only, 52

user variables, 58

Within(), 53

X(), 53

Y(), 53

\N as NULL, 54

Removing duplicates

thread state, 1896

removing tmp table

thread state, 1896

rename

thread state, 1896

rename database, 2642

rename result table

thread state, 1897

RENAME TABLE, 2641

RENAME USER statement, 2909

renaming user accounts, 2909

Reopen tables

thread state, 1897

repair

tables, 476

Repair by sorting

thread state, 1897

Repair done

thread state, 1897

repair option

mysqlcheck, 485

repair options

myisamchk, 585

REPAIR TABLE

and partitioning, 4775

and replication, 3719

REPAIR TABLE statement, 2932

and replication, 2933

options, 2933

output, 2934

partitioning support, 2933

storage engine support, 2933

Repair with keycache

thread state, 1897

repairing

tables, 1687

REPEAT, 2836

labels, 2831

REPEAT(), 2219

REPEATABLE READ, 6209

transaction isolation level, 3118

repertoire, 6209

character set, 1977, 2011

string, 1977

REPLACE, 2686

LOAD DATA modifier, 2669

replace option

mysqldump, 502

mysqlimport, 525

mysqlpump, 542

REPLACE(), 2219

replica, 6209

Replica has read all relay log; waiting for more updates

thread state, 1903

replicas

statements, 2767

replicate-do-db option

mysqld, 3535

replicate-do-table option

mysqld, 3538

replicate-ignore-db option

mysqld, 3537

replicate-ignore-table option

mysqld, 3539

replicate-rewrite-db option

mysqld, 3540

replicate-same-server-id option

mysqld, 3541

replicate-wild-do-table option

mysqld, 3541

replicate-wild-ignore-table option

mysqld, 3542

replication, 3461, 6209

and AUTO\_INCREMENT, 3704

and character sets, 3705

and CHECKSUM TABLE statement, 3705

and CREATE ... IF NOT EXISTS, 3706

and CREATE TABLE ... SELECT, 3706

and DATA DIRECTORY, 3711

and DROP ... IF EXISTS, 3712

and errors on replica, 3721

and floating-point values, 3712

and FLUSH, 3712

and fractional seconds, 3714

and functions, 3712

and INDEX DIRECTORY, 3711

and invoked features, 3714

and LAST\_INSERT\_ID(), 3704

and LIMIT, 3716

and LOAD DATA, 3716

and max\_allowed\_packet, 3717

and MEMORY tables, 3717

and mysql (system) schema, 3718

and partial updates, 3721

and partitioned tables, 3719

and partitioning, 3722

and privileges, 3718

and query optimizer, 3719

and REPAIR TABLE statement, 2933, 3719

and reserved words, 3719

and scheduled events, 3714, 3715

and SQL mode, 3722

and stored routines, 3714

and temporary tables, 3722

and time zones, 3724

and TIMESTAMP, 3704

and transactions, 3723, 3726

and triggers, 3714, 3728

and TRUNCATE TABLE, 3729

and user name length, 3729

and variables, 3729

and views, 3731

attribute demotion, 3709

attribute promotion, 3709

BLACKHOLE, 3705

circular, 4679

crashes, 3721

delayed, 3701

group, 3737

in NDB Cluster, 4675

(see also [NDB Cluster replication](#_bookmark2))

new features, 30

nondeterministic functions, 1741

relay log, 3648

replication metadata repositories, 3648

resource groups, 1032

row-based vs statement-based, 3635

safe and unsafe statements, 3639

semisynchronous, 3695

shutdown and restart, 3721, 3722

statements incompatible with STATEMENT format, 3635

thread states, 1900, 1902, 1903

timeouts, 3723

unexpected halt, 3681

with differing tables on source and replica, 3707

replication channel

commands, 3642

compatibility, 3643

naming conventions, 3645

startup options, 3643

replication channel based filters, 3661

replication channels, 3641

REPLICATION CLIENT privilege, 1216

replication filtering options

and case sensitivity, 3656

replication formats

compared, 3635

replication functions

asynchronous\_connection\_failover\_add\_managed(), 2813

asynchronous\_connection\_failover\_add\_source(), 2812

asynchronous\_connection\_failover\_delete\_managed(), 2815

asynchronous\_connection\_failover\_delete\_source(), 2813

replication implementation, 3633

replication limitations, 3704

replication metadata repositories, 3648

replication mode, 3498

concepts, 3498

disabling online, 3502

enabling online, 3501

verifying anonymous transactions, 3504

replication options, 3704

replication server

statements, 2816

REPLICATION SLAVE privilege, 1216

replication source

thread states, 1900

replication sources

statements, 2765

replication technologies, 3739

replication, asynchronous (see [NDB Cluster replication](#_bookmark2))

REPLICATION\_APPLIER privilege, 1222

replication\_applier\_configuration

performance\_schema, 5064

replication\_applier\_status

performance\_schema, 5065

replication\_applier\_status\_by\_coordinator

performance\_schema, 5066

replication\_applier\_status\_by\_worker

performance\_schema, 5067

replication\_asynchronous\_connection\_failover

performance\_schema, 5062

replication\_asynchronous\_connection\_failover\_managed

performance\_schema, 5063

replication\_connection\_configuration

performance\_schema, 5056

replication\_connection\_status

performance\_schema, 5060

replication\_optimize\_for\_static\_plugin\_config system variable, 3564

replication\_sender\_observe\_commit\_only system variable, 3565

REPLICATION\_SLAVE\_ADMIN privilege, 1222

replica\_allow\_batching, 4696

replica\_allow\_batching system variable, 4260

replica\_checkpoint\_group system variable, 3553

replica\_checkpoint\_period system variable, 3554

replica\_compressed\_protocol system variable, 3555

replica\_exec\_mode system variable, 3555

replica\_load\_tmpdir system variable, 3556

replica\_max\_allowed\_packet system variable, 3557

replica\_net\_timeout system variable, 3557

Replica\_open\_temp\_tables status variable, 985

replica\_parallel\_type

deprecated features, 50

replica\_parallel\_type system variable, 3558

replica\_parallel\_workers

deprecated features, 50

replica\_parallel\_workers system variable, 3559

replica\_pending\_jobs\_size\_max system variable, 3560

replica\_preserve\_commit\_order, 3561

Replica\_rows\_last\_search\_algorithm\_used status variable, 985

replica\_skip\_errors system variable, 3581

replica\_sql\_verify\_checksum system variable, 3562

replica\_transaction\_retries system variable, 3563

replica\_type\_conversions system variable, 3564

REPORT command (NDB Cluster), 4502

reporting

bugs, 2, 84

errors, 84

problems, 2

report\_host system variable, 3565

report\_password system variable, 3565

report\_port system variable, 3566

report\_user system variable, 3566

REPRODUCIBLE\_BUILD option