



Managing SQL Server on the AWS Relational Database Service (RDS)



Jamie Wick

<https://blog.wicktech.net>

Twitter: @Jamie_Wick

Personal Details

Work



Education



Community



Photography





What is Relational Database Service?

Collection of fully managed database engines

- SQL Server, PostgreSQL, MySQL, Oracle, MariaDB

Handles routine database tasks including:

- Provisioning, patching, backup, recovery, failure detection & repair

SQL Server Managed Instance

- Not Managed Database or SQL Server Virtual Machine (VM)



What is Relational Database Service?

Features & Benefits:

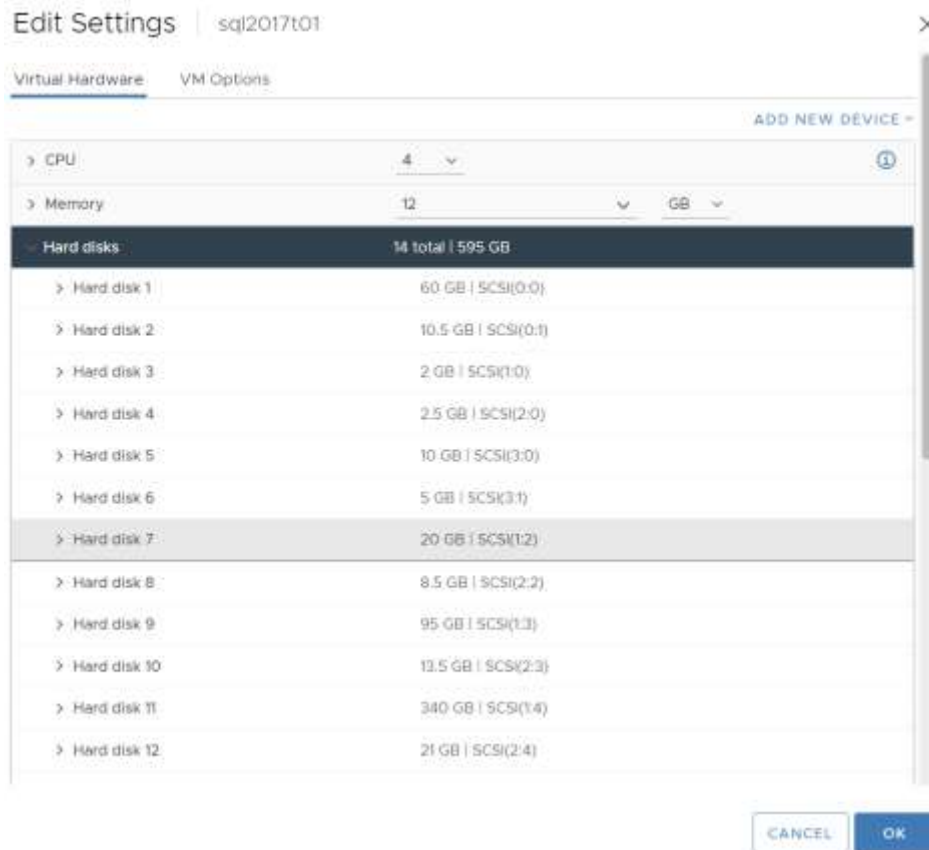
- Support for Infrastructure as Code (Terraform)
- Scalable & Auto-Scaling Hardware
- Automatic (scheduled) Patching
- High-Availability (Multi-AZ)
- Encryption at rest (TDE) and in-transit (SSL)
- CloudWatch, Enhanced Monitoring & Performance Insights

Constraints:

- No or limited access to OS & OS level features
- Many SQL settings & menus not accessible through SSMS UI
- Default limit of 10 SQL instances
- Max databases per instance 30 (micro – large) or 100 (xlarge +)
- Same compatibility level for all databases in an instance

Before RDS Managed Instance

- Static hardware or virtual machines
- SQL ConfigurationFile.ini



```
;SQL Server 2017 Configuration File
[OPTIONS]
IACCEPTSQLSERVERLICENSETERMS="True"
; By specifying this parameter and accepting Micros
IACCEPTYTHONLICENSETERMS="False"
; Specifies a Setup work flow, like INSTALL, UNINST
ACTION="Install"
; Specifies that SQL Server Setup should not displa
SUPPRESSPRIVACYSTATEMENTNOTICE="True"
; By specifying this parameter and accepting Micros
; IACCEPTROPENLICENSETERMS="False"
; Use the /ENU parameter to install the English ver
ENU="True"
; Setup will not display any user interface.
QUIET="False"
; Setup will display progress only, without any use
QUIETSIMPLE="True"
; Parameter that controls the user interface behavi
; UIMODE="Normal"
; Specify whether SQL Server Setup should discover
UpdateEnabled=False
; If this parameter is provided, then this computer
USEMICROSOFTUPDATE="True"
; Specify the location where SQL Server Setup will
share. By default SQL Server Setup will search Micr
UpdateSource="MU"
; Specifies features to install, uninstall, or upgr
Full-Text, and Data Quality Services (DQS) server.
; FEATURES=SQLENGINE,REPLICATION,ADVANCEDANALYTICS,
```

Infrastructure as Code

- Terraform (or AWS CLI)
- Source control repository (Github/Gitlab)

Showing 2 changed files ▾ with 1 addition and 1 deletion

v sql-dev.tf		
...	...	@@ -26,7 +26,6 @@ resource "aws_db_instance" "sql-dev" {
26	26	skip_final_snapshot = true
27	27	allow_major_version_upgrade = true
28	28	option_group_name = aws_db_option_group.sqlserver-exp-15.backupstore.name
29	-	- parameter_group_name = aws_db_parameter_group.sqlserver-se-15.name
30	29	tags = {
31	30	Department = "IT"
32	31	}
...	...	

v sql1.tf		
...	...	@@ -31,6 +31,7 @@ resource "aws_db_instance" "sql1" {
31	31	skip_final_snapshot = true
32	32	allow_major_version_upgrade = true
33	33	option_group_name = aws_db_option_group.sqlserver-std-15.backupstore.name
34	+	+ parameter_group_name = aws_db_parameter_group.sqlserver-se-15.name
34	35	tags = {
35	36	Department = "IT"
36	37	}
...	...	

Infrastructure as Code

- Error checks with CI/CD pipelines

```
125 Terraform will perform the following actions:
126 # aws_db_instance.sql1 will be updated in-place
127 ~ resource "aws_db_instance" "sql1" {
128     id                                = "sql1"
129     name                              = ""
130     ~ parameter_group_name            = "default:sqlserver-se-15.0" -> "sqlserver-se-15"
131     tags                              = {
132         "Department" = "IT"
133     }
134     ~ (42 unchanged attributes hidden)
135 }
136 # aws_instance. will be updated in-place
137 ~ resource "aws_instance" " " {
138     id                                = " "
139     tags                              = {
140         "Department" = " "
141         "Name"        = " "
142         "campus-adjoin" = "true"
143         "environment" = "development"
144     }
145     ~ volume_tags                    = {
146         ~ "environment" = "development" -> null
147         ~ (2 unchanged elements hidden)
148     }
149     ~ (33 unchanged attributes hidden)
150     ~ (8 unchanged blocks hidden)
151 }
152 Plan: 0 to add, 2 to change, 0 to destroy.
```

Infrastructure as Code

- Reusable code ‘building blocks’

```
61 resource "aws_db_parameter_group" "sqlserver-se-15" {
62     name     = "sqlserver-se-15"
63     family   = "sqlserver-se-15.0"
64
65     Jamie Wick, 2 weeks ago | 1 author (Jamie Wick)
66     parameter {
67         // enable XPs for DBMail
68         name = "database mail xps"
69         value = "1"
70     }
71 }
72
73 Jamie Wick, 2 weeks ago | 1 author (Jamie Wick)
74 resource "aws_iam_role" "rds-enhanced-monitoring" {
75     name = "rds-enhanced-monitoring"
76     assume_role_policy = jsonencode({
77         Version = "2012-10-17"
78         Statement = [
79             {
80                 Action = "sts:AssumeRole"
81                 Effect = "Allow"
82                 Sid    = ""
83                 Principal = {
84                     Service = "rds.amazonaws.com"
85                 }
86             },
87         ]
88     })
89 }
```


Infrastructure as Code

- System state configuration

```
5 resource "aws_db_instance" "sql1" {
6   identifier      = "sql1"
7   allocated_storage = 100
8   // enable storage auto scaling
9   max_allocated_storage = 200 Jamie Wick, 2 weeks ago • add performance insights to sql1 -
10  storage_type     = "gp2"
11  availability_zone = "us-east-1b"
12
13  backup_retention_period = 14
14  deletion_protection    = true
15  maintenance_window     = "Sun:05:00-Sun:09:00"
16  db_subnet_group_name   = data.aws_db_subnet_group.private_main.name
17  engine                 = "sqlserver-se"
18  engine_version         = "15.00.4236.7.v1"
19  license_model          = "license-included"
20  instance_class         = "db.t3.xlarge"
21  enabled_cloudwatch_logs_exports = [
22    "agent",
23    "error"
24  ]
25  apply_immediately = false
26  multi_az          = false
27  username          = "sql1sa"
28  password          = data.vault_generic_secret.sql1.data["sql1sa"]
29  vpc_security_group_ids = [
30    aws_security_group.wm_sql.id,
31    data.aws_security_group.default.id
32  ]
33  skip_final_snapshot = true
34  allow_major_version_upgrade = true
35  option_group_name     = aws_db_option_group.sqlserver-std-15-backuprestore.name
36  parameter_group_name  = aws_db_parameter_group.sqlserver-se-15.name
37  performance_insights_enabled = true
38  performance_insights_retention_period = 7
39  // performance_insights_kms_key_id =
40  // Only enable enhanced monitoring for troubleshooting
41  // monitoring_interval = 30
42  // monitoring_role_arn = aws_iam_role.rds-enhanced-monitoring.arn
43  Jamie Wick, 3 weeks ago | 1 author (Jamie Wick)
44  tags = {
45    Department = "IT"
46  }
```

RDS Console

RDS > Databases > sql1

sql1

Summary

DB identifier sql1	CPU <div><div></div>3,28%</div>	Status <div><div></div>Available</div>	Class db.t3.xlarge
Role Instance	Current activity <div><div></div>0.00 sessions</div>	Engine SQL Server Standard Edition	Region & AZ us-east-1b

- Connectivity & security
- Monitoring
- Logs & events
- Configuration
- Maintenance & backups
- Tags

Connectivity & security

Endpoint & port

Endpoint sql1	rds.amazonaws.com
Port 1433	

Networking

Availability Zone us-east-1b
VPC <div></div>
Subnet group private-main
Subnets <div>subnet-1c921f6a</div> <div>subnet-e343e7bb</div>
Network type IPv4

Security

VPC security groups <div></div>
<div><div></div>Active</div>
Publicly accessible No
Certificate authority Info rds-ca-2019
Certificate authority date August 22, 2024, 13:08 (UTC-04:00)
DB instance certificate expiration date August 22, 2024, 13:08 (UTC-04:00)

RDS Console

Settings

License model

License type associated with the database engine

license-included ▼

DB engine version

Version number of the database engine to be used for this database

15.00.4236.7.v1 ▼

DB instance identifier [Info](#)

Type a name for your DB instance. The name must be unique across all DB instances owned by your AWS account in the current AWS Region.

sql1

The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 60 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.

☐ Manage master credentials in AWS Secrets Manager

Manage master user credentials in Secrets Manager. RDS can generate a password for you and manage it throughout its lifecycle.

ⓘ Some features from RDS won't be supported if you want to manage the master credentials in Secrets Manager. [Learn more](#)

☐ Auto generate a password

Amazon RDS can generate a password for you, or you can specify your own password.

New master password [Info](#)

Constraints: At least 8 printable ASCII characters. Can't contain any of the following: / (slash), ' (single quote), " (double quote) and @ (at sign).

Confirm master password [Info](#)

Storage

Storage type [Info](#)

General Purpose SSD (gp2) ▼

Baseline performance determined by volume size

Allocated storage [Info](#)

100

GiB

The minimum value is 100 GiB and the maximum value is 16,384 GiB.

Storage autoscaling [Info](#)

Provides dynamic scaling support for your database's storage based on your application's needs.

☒ Enable storage autoscaling

Enabling this feature will allow the storage to increase after the specified threshold is exceeded.

Maximum storage threshold [Info](#)

Charges will apply when your database autoscales to the specified threshold

200

GiB

The minimum value is 110 GiB and the maximum value is 16,384 GiB.

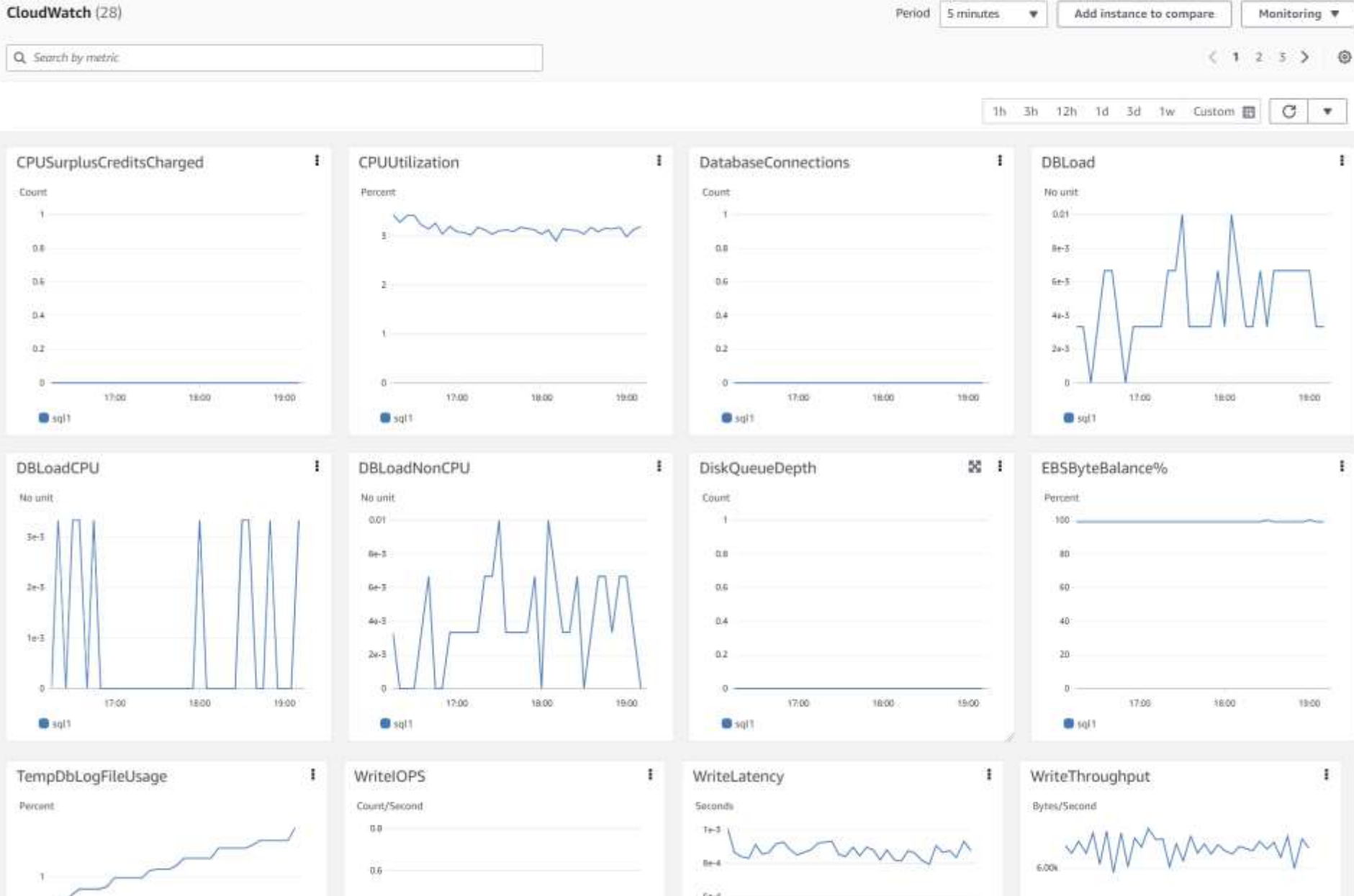
Availability & durability

Multi-AZ deployment [Info](#)

☐ Yes (Mirroring / Always On)

☒ No




CloudWatch



Performance Insights




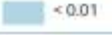
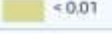


Top waits (3)

Find waits

	Load by waits (AAS)	Waits
<input type="radio"/>	 < 0.01	BACKUPTHREAD
<input type="radio"/>	 < 0.01	CPU
<input type="radio"/>	 < 0.01	WRITELOG

Top SQL (6)

Find SQL statements

	Load by waits (AAS)	SQL statements
<input type="radio"/>	 < 0.01	BACKUP LOG ? TO VIRTUAL_DEVICE = ? WITH buffercount =
<input type="radio"/>	 < 0.01	BACKUP LOG ? TO VIRTUAL_DEVICE = ? WITH buffercount =
<input type="radio"/>	 < 0.01	BACKUP LOG ? TO VIRTUAL_DEVICE = ? WITH buffercount =
<input type="radio"/>	 < 0.01	BACKUP LOG ? TO VIRTUAL_DEVICE = ? WITH buffercount =
<input checked="" type="radio"/>	 < 0.01	UPDATE rdsadmin.dbo.log_backup_manifest SET family_gui =
<input type="radio"/>	 < 0.01	UPDATE rdsadmin.dbo.log_backup_manifest SET family_gui =
<input type="radio"/>	 < 0.01	BACKUP LOG ? TO VIRTUAL_DEVICE = ? WITH buffercount =

SQL text

SQL text for digest ID: FF1B8D6F622CE51A

```
UPDATE rdsadmin.dbo.log_backup_manifest SET
    family_guid = ? rds_sequence_id = ? backup_round_id = ? file_epoch = ? backup_file_time = ? database_name = ?
    metadata_file_content = ? WHERE family_guid = ? AND file_epoch = ? AND backup_round_id = ? AND rds_seque
```

Select metrics shown on the graph

Databases

- ☒ Active Transactions (_Total)
- ☐ Log Bytes Flushed (_Total)
- ☐ Log Flush Waits (_Total)
- ☐ Log Flushes (_Total)
- ☐ Write Transactions (_Total)

General Statistics

- ☐ Processes blocked
- ☐ User Connections

Latches

- ☐ Latch Waits

Locks

- ☐ Number of Deadlocks (_Total)

Memory Manager

- ☐ Memory Grants Pending

SQL Statistics

- ☐ Batch Requests
- ☐ SQL Compilations
- ☐ SQL Re-Compilations

Buffer Manager

- ☐ Page life expectancy
- ☐ Buffer cache hit ratio
- ☐ Page lookups
- ☐ Page reads

SQL Setup Checklist (revisited)

- Apply latest updates
- Service Accounts (IAM Roles)
- Firewall exceptions
- Add Admin Users/Groups
- Enable the SQL Agent service
- Instant File Initialization (IFI)
- Add TempDB files
- Rename/Disable the SA account
- Service Provider Name (SPN)
- Operators
- DBMail
- Trace Flags (3226, 4199, 8152)
- Import Custom SQL procedures
- Filestream & File Tables
- Auditing
- Management Policies (PBM)
- Encryption Certificates

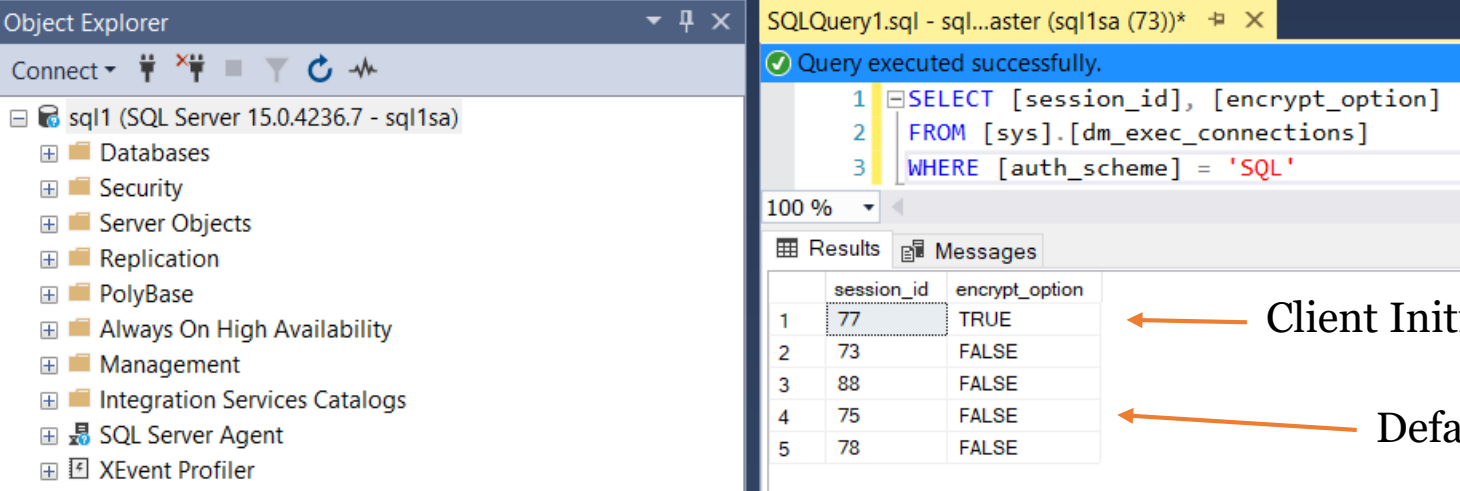
Alerts

- Severity 19-25
- ID 18456 - Login Error
- ID 15247 - Permission Error
- ID 9002 - Log Full
- ID 825 - Disk I/O Error

Maintenance Jobs

- Backups
- Reindex
- CheckDB

Enable SSL Connections



The screenshot shows the SQL Server Enterprise Manager interface. On the left, the Object Explorer displays the server hierarchy for 'sql1 (SQL Server 15.0.4236.7 - sql1sa)'. The right pane shows a query window with the following SQL query:

```
SELECT [session_id], [encrypt_option]
FROM [sys].[dm_exec_connections]
WHERE [auth_scheme] = 'SQL'
```

The query results are displayed in a table with two columns: 'session_id' and 'encrypt_option'.

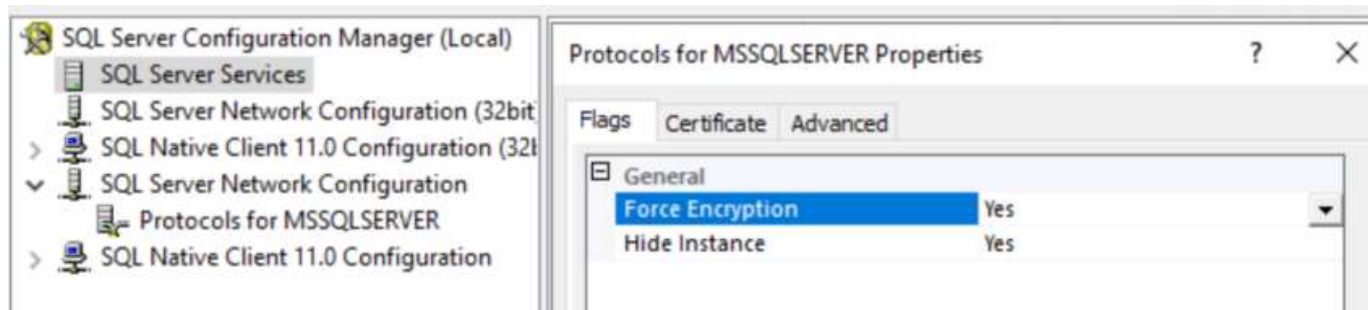
	session_id	encrypt_option
1	77	TRUE
2	73	FALSE
3	88	FALSE
4	75	FALSE
5	78	FALSE

Annotations with arrows point to the results:

- An arrow points to the row with session_id 77 and encrypt_option TRUE, labeled "Client Initiated Enc Connection".
- An arrow points to the row with session_id 73 and encrypt_option FALSE, labeled "Default Connection".

Non-managed SQL instance

- Import SSL Certificate to local cert store.
- Assign database service account read permission to certificate.
- SQL Configuration Manager
 - Select SSL certificate & set Force Encryption = Yes



Enable SSL Connections

RDS managed SQL instance

- SSL Certificate created upon creation of RDS database instance.
- Force encryption using RDS Parameters Group.

sqlserver-se-15

Parameters

Q ssl

<input type="checkbox"/>	Name	Values	Allowed values
<input type="checkbox"/>	rds.force_ssl	1	0, 1

```
parameter {  
    // enable SSL Encrypted connections  
    name      = "rds.force_ssl"  
    value     = "1"  
    apply_method = "pending-reboot"  
}  
}
```

Jamie Wick, 32 minutes ago • e

Enable SSL Connections

Configuration

DB instance ID

sql1

Engine version

15.00.4236.7.v1

DB name

-

License model

License Included

Collation

SQL_Latin1_General_CP1_CI_AS

Option groups

sqlserver-std-15-  In sync

Amazon Resource Name (ARN)

Resource ID

db-

Created time

April 27, 2023, 17:22 (UTC-04:00)

DB instance parameter group


sqlserver-se-15  Pending reboot


Object Explorer

Connect     

sql1 (SQL Server 15.0.4236.7 - sql1sa)

- Databases
- Security
- Server Objects
- Replication
- PolyBase
- Always On High Availability
- Management
- Integration Services Catalogs
- SQL Server Agent
- XEvent Profiler

SQLQuery2.sql - sql...aster (sql1sa (64))*  SQLQuery1.sql

 Query executed successfully.

```
1 SELECT [session_id], [encrypt_option]
2 FROM [sys].[dm_exec_connections]
3 WHERE [auth_scheme] = 'SQL'
```

100 %

Results Messages

	session_id	encrypt_option
1	64	TRUE
2	58	TRUE
3	59	TRUE
4	66	TRUE
5	70	TRUE

Common Commands

SQL Server	RDS
	EXEC rdsadmin.dbo.
ALTER DATABASE [] SET [ONLINE/OFFLINE] WITH ROLLBACK IMMEDIATE	rds_set_database_online
xp_readerrorlog	rds_read_error_log
sp_renamedb	rds_modify_db_name
sp_configure	See RDS Parameter Group
Show Extended Events	rds_show_configuration
Set Extended Events	rds_set_configuration
ALTER ROLE [SQLAgentUserRole] ADD MEMBER [login]	Same
ALTER ROLE [SQLAgentOperatorRole] ADD MEMBER [login]	Same (connection error)

Backup Options

- RDS Automated Backups
 - Full daily snapshot + transaction logs
 - Automated retention 1-35 days
 - Backup window (time & duration)
 - Export snapshots to S3 (extended retention)
- Native Backup to S3
 - Requirements:
 - Amazon S3 bucket
 - AWS Identity and Access Management Role (IAM)
 - SQLSERVER_BACKUP_RESTORE option assigned to DB instance
 - Limit of 2 backup/restore tasks running at the same time
 - Native backups cancelled during Maintenance windows & RDS snapshots

```
EXEC msdb.dbo.rds_backup_database  
    @source_db_name='database_name',  
    @s3_arn_to_backup_to='arn:aws:s3:::bucket_name/file_name.extension',  
    [@type='DIFFERENTIAL|FULL'],  
    [@number_of_files=n];
```

Restore Options

RDS Automated Backup (snapshot)

Snapshots (17)

Restore Remove Take snapshot

Filter by snapshot name

Snapshot name	Snapshot creation time	Status	Snapshot type	Snapshot database time
<input type="checkbox"/> rds:sql1-2023-05-11-09-11	May 11, 2023, 05:12 (UTC-04:00)	Available	Automated	-
<input checked="" type="checkbox"/> rds:sql1-2023-05-12-09-11	May 12, 2023, 05:12 (UTC-04:00)	Available	Automated	-

- Restore to a new **instance**

Restore Options

SQL Native Restore (S3/migration)

- Prereqs
 - Create S3 storage bucket
 - Create option group
 - SQLSERVER_BACKUP_RESTORE option
 - Assign IAM Role
 - Assign option group to RDS instance
- 1. Upload backup files to S3 (via AWS CLI or AWS Console)
- 2. Using SSMS
 - a. Connect to RDS instance
 - b. Start backup

```
EXEC rds_restore_database
    @restore_db_name = 'name',
    @s3_arn_to_restore_from = 'arn:aws:s3:::...'
```
 - c. Check restore status

```
EXEC msdb.dbo.rds_task_status
    @db_name='database_name',
    @task_id=ID_number;
```

Enable DBMail

- Amazon Simple Email Service (SES) or SMTP Server
- Enable Database Mail XPs in AWS RDS database options group

```
EXECUTE msdb.dbo.sysmail_add_profile_sp
    @profile_name = 'Admin',
    @description = 'System admin profile for notifications.' ;
```

```
EXECUTE msdb.dbo.sysmail_add_principalprofile_sp
    @profile_name = 'Admin',
    @principal_name = 'public',
    @is_default = 1 ;
```

```
EXECUTE msdb.dbo.sysmail_add_account_sp
    @account_name = 'Admin',
    @description = 'Mail account for sending outgoing notifications.',
    @email_address = 'SQL1-Admin@domain.local',
    @display_name = 'SQL1 Admin',
    @mailserver_name = 'smtp.domain.local';
```

```
EXECUTE msdb.dbo.sysmail_add_profileaccount_sp
    @profile_name = 'Admin',
    @account_name = 'Admin',
    @sequence_number = 1;
```

SQL Server Agent

Limitations

- Unable to manually start, stop, or restart SQL Server Agent.
- Not Supported:
 - Replication Jobs
 - PowerShell & Command-line Scripts
 - SQL Server Agent job notifications (*event log caveat*)
 - SQL Server Agent alerts and operators (*event log caveat*)
 - Using SQL Server Agent to create backups

Operator Notifications & Alerts

Job Properties - DatabaseIntegrityCheck - USER_DATABASES

Select a page

- General
- Steps
- Schedules
- Notifications
- Targets

Script Help

Actions to perform when the job completes:

- | | | |
|---|----------------------|--------------------|
| <input checked="" type="checkbox"/> E-mail: | <input type="text"/> | When the job fails |
| <input type="checkbox"/> Page: | <input type="text"/> | When the job fails |
| <input checked="" type="checkbox"/> Write to the Windows Application event log: | | When the job fails |

```
3 EXEC [msdb].[dbo].[sp_add_operator]
4 @name = 'SQL Admin',
5 @enabled = enabled,
6 @email_address = 'DL-SQLAdmins@domain.local';
```

100 %

Messages

Msg 229, Level 14, State 5, Procedure msdb.dbo.sp_add_operator, Line 1 [Batch Start Line 2]
The EXECUTE permission was denied on the object 'sp_add_operator', database 'msdb', schema 'dbo'.

Operator Notifications & Alerts

```
1  USE msdb;  
2  GO  
3  
4  EXEC msdb.dbo.sp_add_alert @name=N'Log Full',  
5      @message_id=9002,  
6      @severity=0,  
7      @enabled=1,  
8      @delay_between_responses=900,  
9      @include_event_description_in=1,  
10     @category_name=N'[Uncategorized]'  
11  GO
```

100 %

Messages

Msg 229, Level 14, State 5, Procedure msdb.dbo.sp_add_alert, Line 1 [Batch Start Line 2]
The EXECUTE permission was denied on the object 'sp_add_alert', database 'msdb', schema 'dbo'.

Operator Notifications & Alerts

SQL Agent - Job Step

```
BEGIN TRY
    EXECUTE [dbo].[DatabaseIntegrityCheck]
    @Databases = 'USER_DATABASES, -rdsadmin2', @LogToTable = 'Y'
END TRY
BEGIN CATCH
    DECLARE @err VARCHAR(200)
    SELECT @err = ERROR_MESSAGE()
    RAISERROR(@err, 16, 1) WITH LOG
END CATCH
```

```
EXEC rdsadmin.dbo.rds_read_error_log @index = 0, @type = 1;
```



The screenshot shows the SQL Server Enterprise Manager interface. At the top, there is a '100 %' zoom level and a navigation bar with 'Results' and 'Messages' tabs. Below the tabs is a table with four columns: 'LogDate', 'ProcessInfo', and 'Text'. The table contains two rows of error data. The first row shows an error at 2023-05-30 14:48:04.420 from spid78 with the message 'Error: 50000, Severity: 16, State: 1.'. The second row shows the same timestamp and spid78, with the message 'User 'guest' does not have permission to run DBCC checkdb for database 'rdsadmin'.'. The second row is highlighted with a blue background.

	LogDate	ProcessInfo	Text
37	2023-05-30 14:48:04.420	spid78	Error: 50000, Severity: 16, State: 1.
38	2023-05-30 14:48:04.420	spid78	User 'guest' does not have permission to run DBCC checkdb for database 'rdsadmin'.

Operator Notifications & Alerts

CloudWatch > Log groups > /aws/rds/instance/sql1/error > All events

Log events

You can use the filter bar below to search for and match terms, phrases, or values in your log events. [Learn more about filter patterns](#)

Q DBCC checkdb X Clear 1m 30m 1h 12h Custom Display

Timestamp	Message	Log stream name
2023-05-30T10:48:04.420-04:00	2023-05-30 14:48:04.42 sql078 User 'guest' does not have permission to run DBCC checkdb for database 'msadsln'.	sql1-model

Note: Metric filters are case sensitive

Log streams Metric filters Subscription filters Contributor Insights Tags Data protection

Metric filters (3)

Q Find metric filters

sql1-checkdb Filter pattern "DBCC CHECKDB" - "found 0 errors" Metric RDS/SQL / checkdb Error Count Metric value 1 Default value - Unit None Dimensions - Alarms SQL1 Checkdb Error Count	sql1-logfull Filter pattern "Error: 9002" Metric RDS/SQL / Transaction Log Full Metric value 1 Default value - Unit None Dimensions - Alarms SQL1 Transaction Log Full	sql1-permissionerror Filter pattern "Error: 15247" Metric RDS/SQL / Permissions Error Metric value 1 Default value - Unit None Dimensions - Alarms SQL1 Permissions Error
---	---	--

Details Tags **Actions** History Parent alarms

Actions Actions enabled

Type	Description
Notification	When in alarm, send message to topic "SQLServer-DBA"

Additional Resources

<https://aws.amazon.com/blogs/database/part1-best-practices-on-how-to-configure-monitoring-and-alerts-for-amazon-rds-for-sql-server/>

<https://www.mssqltips.com/sql-server-tip-category/205/amazon-aws/>

<https://docs.aws.amazon.com/AmazonCloudWatch/latest/logs/FilterAndPatternSyntax.html>

<https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/SQLServer.ExtendedEvents.html>



Questions?



Jamie Wick

<https://blog.wicktech.net>

Twitter: @Jamie_Wick