

# RDS Migration- Blue/Green Deployment.

- 1. Knowledge Base
  - 1.1. Blue/Green Deployment
    - 1.1.1. Blue/Green Environment Creation
    - 1.1.2. Switch Over
      - 1.1.2.1. Cancel to Switch over
      - 1.1.2.2. Proceed to Switch over
        - 1.1.2.2.1. Choose the quiet time to switch over to production env
      - 1.1.2.3. Success Switch over
      - 1.1.2.4. FAQ on Switch over
- 2. Demo
  - 2.1. Prerequisite
  - 2.2. Creating a blue/green deployment
  - 2.3. Connecting to green db instance via MySQL workbench in Integration env
  - 2.4. Switching a Blue/Green deployment
  - 2.5. Check Pods
  - 2.6. Re deploy CloudFormation
- 3. SwitchOver Tracking from various team
- 4. Ref
  - 4.1. AWS
  - 4.2. MySQL
- 5. Important note from AWS
- 6. Rollback
  - 6.1. Renaming the DB instance
- 7. Deleting a blue/green deployment
- 8. FAQ

## 1. Knowledge Base

### 1.1. Blue/Green Deployment

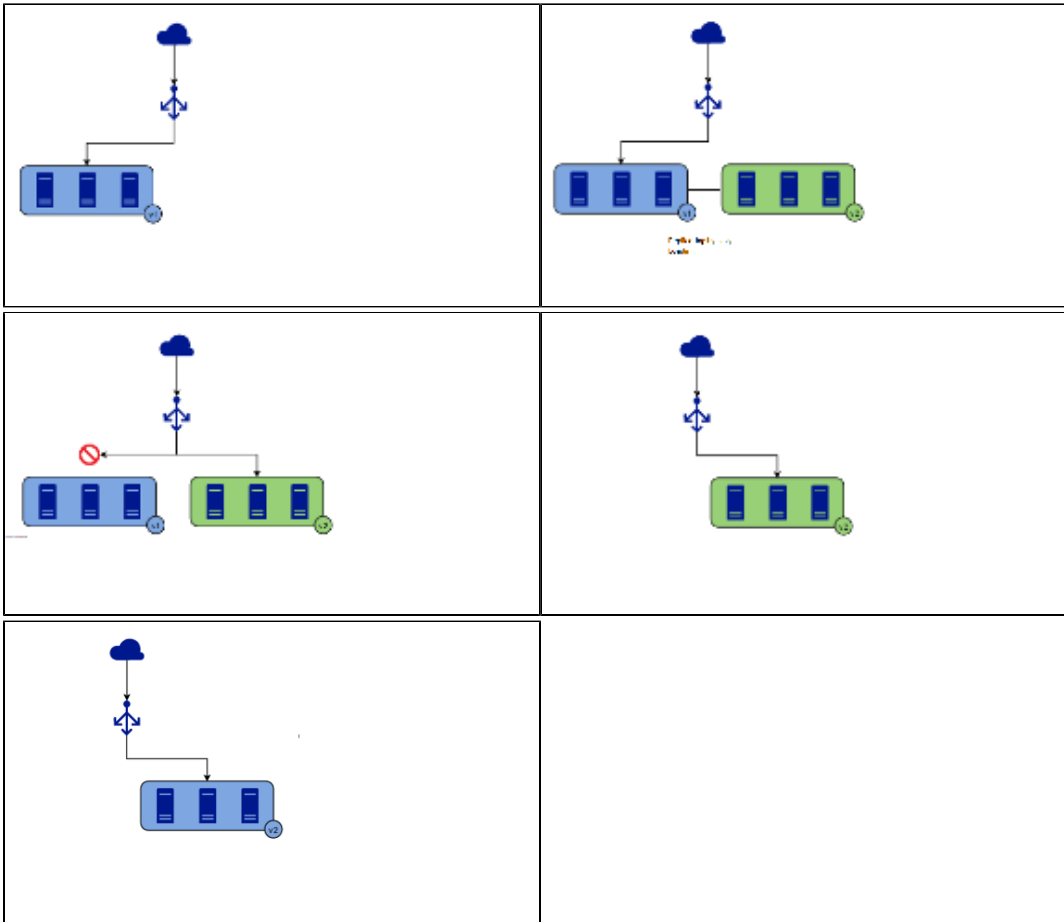
Step 1: Blue env to green      Step 2: B/G deployment      Step 3: Switch over started      Step 4: App connected

Step 5: B/G deployment success

Replicating data to green by lazy loading      **Downtime expecting( 2 mins)**

**Depending on how much replica is pending from blue to green.**

**The above estimation we got from the pilot-service Application**



Before starting the b/g deployment, one should be aware of some facts

### 1.1.1. Blue/Green Environment Creation

- B/G Env. Creation has 3 steps, which take approximately 45 to 50 mins,
  - Creating a read replica of the source
  - Db engine version upgrade
  - Configure backups

Note:

- Above observation of B/G creation time is tested with one table with 103,250 records.
- If any of the above steps fail, b/g deployment tries to fix the issue.

Engine version 5.7.41	VCPU 1	AWS KMS key <a href="#">aws/rds</a>
DB name rdspilot	RAM 2 GB	Storage type General Purpose SSD (gp2)
License model General Public License	Availability	Storage 5 GiB
Option groups <a href="#">default:mysql-8-0</a> Pending apply <a href="#">default:mysql-5-7</a> Pending removal	Master username edenrdsmysql_usr	Provisioned IOPS -
Amazon Resource Name (ARN) arn:aws:rds:us-west-2:468669635168:db:eden-taskteam-sampleapp-v2-mysql-master-green-lvqhon	Master password *****	Storage throughput -
Resource ID db-JI2RUAC2LI355LLH6727FIDUHM	IAM DB authentication Not enabled	Storage autoscaling Disabled
Created time April 13, 2023, 17:07 (UTC+01:00)	Multi-AZ Yes	
DB instance parameter group <a href="#">default.mysql8.0</a> Failed to apply	Secondary Zone us-west-2c	

- Before upgrading the MySQL 8.0 version, it checks the prepatch compatibility. These are the checks it will carry before upgrading to 8

1) Usage of old temporal type  
No issues found.

2) Usage of db objects with names conflicting with new reserved keywords  
No issues found.

3) Usage of utf8mb3 charset  
The following objects use the utf8mb3 character set. It is recommended to convert them to use utf8mb4 instead, for improved Unicode support.  
More Information:  
<https://dev.mysql.com/doc/refman/8.0/en/charset-unicode-utf8mb3.html>

mysql - schema's default character set: utf8

4) Table names in the mysql schema conflicting with new tables in 8.0  
No issues found.

5) Partitioned tables using engines with non native partitioning  
No issues found.

6) Foreign key constraint names longer than 64 characters  
No issues found.

7) Usage of obsolete MAXDB sql\_mode flag  
No issues found.

8) Usage of obsolete sql\_mode flags  
No issues found.

9) ENUM/SET column definitions containing elements longer than 255 characters  
No issues found.

10) Usage of partitioned tables in shared tablespaces  
No issues found.

11) Circular directory references in tablespace data file paths  
No issues found.

12) Usage of removed functions  
No issues found.

13) Usage of removed GROUP BY ASC/DESC syntax  
No issues found.

14) Removed system variables for error logging to the system log configuration  
No issues found.

15) Removed system variables  
No issues found.

16) System variables with new default values  
No issues found.

17) Schema inconsistencies resulting from file removal or corruption  
No issues found.

18) Issues reported by 'check table x for upgrade' command  
No issues found.

19) The definer column for mysql.events cannot be null or blank.  
No issues found.

20) Tables with dangling FULLTEXT index reference  
No issues found.

21) Routines with deprecated keywords in definition  
No issues found.

22) DB instance must have enough free disk space  
No issues found.

23) Creating indexes larger than 767 bytes on tables with redundant row format might cause the tables to be inaccessible.  
No issues found.

24) The tables with redundant row format can't have an index larger than 767 bytes.  
No issues found.

25) Column definition mismatch between InnoDB Data Dictionary and actual table definition.  
No issues found.

Once b/g env is created, the data in blue will be **asynchronously** replicating to green. But due to **network issues** or **i/o issues**, there may be a delay to replicate the data to green. This can be checked using the ReplicaLag metric in CloudWatch. (This is shown further below).

### 1.1.2. Switch Over

A switchover promotes the green environment to be the new production environment

#### 1.1.2.1. Cancel to Switch over

If the replica stopped completely and shows an error, then restart the whole process again by deleting the blue/green deployment. Blue green deployment internally deletes the green environment. This can be seen in Blue/Green deployment--->Connectivity & Security Scroll down to the Replication section.

Replication (2)					
<div> <input type="text" value="Filter by Replication"/> <div> <div>&lt;</div> <div>1</div> <div>&gt;</div> <div>⚙</div> </div> </div>					
DB identifier	Replica mode	Region & AZ	Replication source	Replication state	
eden-taskteam-sampleapp-v2-mysql-master <span>Blue</span>	-	us-west-2b	-	-	
eden-taskteam-sampleapp-v2-mysql-master-green-wtyqrb <span>Green</span>	-	us-west-2a	eden-taskteam-sampleapp-v2-mysql-master	Error	

### 1.1.2.2. Proceed to Switch over

There are 2 factors

- ReplicaLag metrics of green env
- The maximum number of connections of DB instance in blue env. This can be checked from performance insight if it is enabled or from the DatabaseConnections metric in CloudWatch of blue env.

ReplicaLag should be near zero.

> 0- replica is continuing in the background

< 0 replica is not active

During the switchover, writes are cut off from databases in both environments. **During this cut-off time, if any operation takes place from the application, we are losing the data here.**

#### 1.1.2.2.1. Choose the quiet time to switch over to production env

Check DatabaseConnections from CloudWatch for 1 month and decide the time based on low database connections.

### 1.1.2.3. Success Switch over

Check the pod. It should run without any interruption.

In the edge case, if the pod goes crash back loop status ( pod is not able to connect to new db instance due to credential issue), [re-deploy the CFN](#)

### 1.1.2.4. FAQ on Switch over

## 2. Demo

### 2.1. Prerequisite

- Check the MySQL Connector version which connects to MySQL 8.0

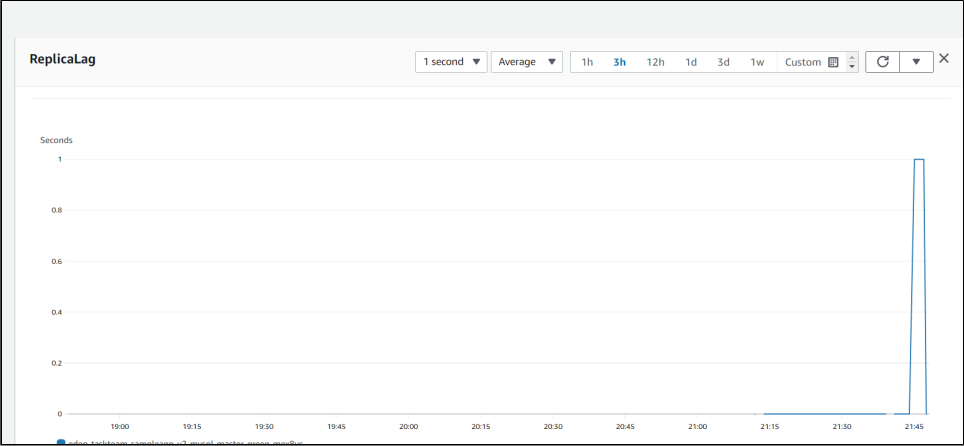
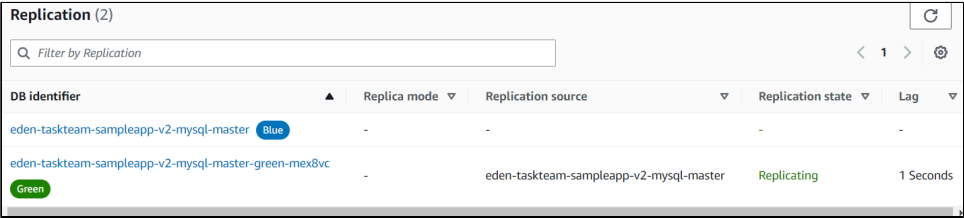
Note: mysql-connector-j is recommended over mysql-connector-java

### 2.2. Creating a blue/green deployment

One should have a DevOps role(If not, please create a service ticket: [https://concur.service-now.com/csp?id=sc\\_cat\\_item&sys\\_id=da0398df1b3f6f0068ff0dc8cd4bcb6e](https://concur.service-now.com/csp?id=sc_cat_item&sys_id=da0398df1b3f6f0068ff0dc8cd4bcb6e))

	Description	Instructions	ScreenShot
--	-------------	--------------	------------

1	Go to RDS services	Select the rds instance	<table><thead><tr><th></th><th>DB identifier</th><th>Role</th><th>Engine</th><th>Engine version</th><th>Region &amp; AZ</th><th>Size</th></tr></thead><tbody><tr><td></td><td>computecoredb</td><td>Instance</td><td>PostgreSQL</td><td>10.21</td><td>us-west-2a</td><td>db.t2.small</td></tr><tr><td></td><td>database-1</td><td>Regional cluster</td><td>Aurora MySQL</td><td>5.7.mysql_aurora.2.07.2</td><td>us-west-2</td><td>0 instances</td></tr><tr><td></td><td>dba-test-migration</td><td>Instance</td><td>MySQL Community</td><td>8.0.32</td><td>us-west-2b</td><td>db.m5.xlarge</td></tr><tr><td></td><td>dba-test-migration</td><td>Blue/Green Deployment</td><td>-</td><td>-</td><td>-</td><td>-</td></tr><tr><td></td><td>dba-test-migration-old1</td><td>Instance</td><td>MySQL Community</td><td>5.7.39</td><td>us-west-2b</td><td>db.m5.xlarge</td></tr><tr><td></td><td>devtest-orchestratorapi-db-encrypted</td><td>Instance</td><td>PostgreSQL</td><td>10.21</td><td>us-west-2c</td><td>db.t2.small</td></tr><tr><td></td><td>iops-dba-bg-test-migration</td><td>Instance</td><td>MySQL Community</td><td>5.7.26</td><td>us-west-2a</td><td>db.m5.large</td></tr></tbody></table>		DB identifier	Role	Engine	Engine version	Region & AZ	Size		computecoredb	Instance	PostgreSQL	10.21	us-west-2a	db.t2.small		database-1	Regional cluster	Aurora MySQL	5.7.mysql_aurora.2.07.2	us-west-2	0 instances		dba-test-migration	Instance	MySQL Community	8.0.32	us-west-2b	db.m5.xlarge		dba-test-migration	Blue/Green Deployment	-	-	-	-		dba-test-migration-old1	Instance	MySQL Community	5.7.39	us-west-2b	db.m5.xlarge		devtest-orchestratorapi-db-encrypted	Instance	PostgreSQL	10.21	us-west-2c	db.t2.small		iops-dba-bg-test-migration	Instance	MySQL Community	5.7.26	us-west-2a	db.m5.large
	DB identifier	Role	Engine	Engine version	Region & AZ	Size																																																					
	computecoredb	Instance	PostgreSQL	10.21	us-west-2a	db.t2.small																																																					
	database-1	Regional cluster	Aurora MySQL	5.7.mysql_aurora.2.07.2	us-west-2	0 instances																																																					
	dba-test-migration	Instance	MySQL Community	8.0.32	us-west-2b	db.m5.xlarge																																																					
	dba-test-migration	Blue/Green Deployment	-	-	-	-																																																					
	dba-test-migration-old1	Instance	MySQL Community	5.7.39	us-west-2b	db.m5.xlarge																																																					
	devtest-orchestratorapi-db-encrypted	Instance	PostgreSQL	10.21	us-west-2c	db.t2.small																																																					
	iops-dba-bg-test-migration	Instance	MySQL Community	5.7.26	us-west-2a	db.m5.large																																																					
2	Go to the Actions dropdown	Choose to Create Blue /Green Deployment - new	<div><div>Databases</div><div><div>Group resources</div><div>Modify</div><div>Actions</div><div>Restore from S3</div><div>Create database</div></div><div><div>Filter by databases</div></div><table><thead><tr><th></th><th>DB identifier</th><th>Role</th><th>Engine</th><th>Engine version</th><th>Size</th><th>Status</th></tr></thead><tbody><tr><td></td><td>computecoredb</td><td>Instance</td><td>PostgreSQL</td><td>10.21</td><td>db.t2.small</td><td>Available</td></tr><tr><td></td><td>database-1</td><td>Regional cluster</td><td>Aurora MySQL</td><td>5.7.mysql_aurora.2.07.2</td><td>0 instances</td><td>Available</td></tr><tr><td></td><td>dba-test-migration</td><td>Instance</td><td>MySQL Community</td><td>8.0.32</td><td>db.m5.xlarge</td><td>Available</td></tr><tr><td></td><td>dba-test-migration</td><td>Blue/Green Deployment</td><td>-</td><td>-</td><td>-</td><td>Swapping</td></tr><tr><td></td><td>dba-test-migration-old1</td><td>Instance</td><td>MySQL Community</td><td>5.7.39</td><td>db.m5.xlarge</td><td>Available</td></tr><tr><td></td><td>devtest-orchestratorapi-db-encrypted</td><td>Instance</td><td>PostgreSQL</td><td>10.21</td><td>db.t2.small</td><td>Available</td></tr><tr><td></td><td>iops-dba-bg-test-migration</td><td>Instance</td><td>MySQL Community</td><td>5.7.26</td><td>db.m5.large</td><td>Available</td></tr></tbody></table><div><div>Quick Actions - New</div><div>Convert to Multi-AZ deployment</div><div>Stop temporarily</div><div>Reboot</div><div>Delete</div><div>Set up EC2 connection</div><div>Upgrade now</div><div>Upgrade at next window</div><div>Create read replica</div><div>Create Aurora read replica</div><div>Create Blue/Green Deployment - new</div><div>Promote</div><div>Take snapshot</div></div></div>		DB identifier	Role	Engine	Engine version	Size	Status		computecoredb	Instance	PostgreSQL	10.21	db.t2.small	Available		database-1	Regional cluster	Aurora MySQL	5.7.mysql_aurora.2.07.2	0 instances	Available		dba-test-migration	Instance	MySQL Community	8.0.32	db.m5.xlarge	Available		dba-test-migration	Blue/Green Deployment	-	-	-	Swapping		dba-test-migration-old1	Instance	MySQL Community	5.7.39	db.m5.xlarge	Available		devtest-orchestratorapi-db-encrypted	Instance	PostgreSQL	10.21	db.t2.small	Available		iops-dba-bg-test-migration	Instance	MySQL Community	5.7.26	db.m5.large	Available
	DB identifier	Role	Engine	Engine version	Size	Status																																																					
	computecoredb	Instance	PostgreSQL	10.21	db.t2.small	Available																																																					
	database-1	Regional cluster	Aurora MySQL	5.7.mysql_aurora.2.07.2	0 instances	Available																																																					
	dba-test-migration	Instance	MySQL Community	8.0.32	db.m5.xlarge	Available																																																					
	dba-test-migration	Blue/Green Deployment	-	-	-	Swapping																																																					
	dba-test-migration-old1	Instance	MySQL Community	5.7.39	db.m5.xlarge	Available																																																					
	devtest-orchestratorapi-db-encrypted	Instance	PostgreSQL	10.21	db.t2.small	Available																																																					
	iops-dba-bg-test-migration	Instance	MySQL Community	5.7.26	db.m5.large	Available																																																					
3	Enter relevant info in Create Blue /Deployment page	<ul style="list-style-type: none"><li>Provide the Blue /Green Deployment identifier.</li><li>Choose a DB engine version if you want to test a DB engine version upgrade. (Here used 8.0.32)</li><li>Choose a DB parameter group to associate with the DB instances in the green environment. (Used default)</li></ul>	<div><div>Blue/Green Deployment identifier</div><div>Type a name for your Blue/Green Deployment. The name must be unique across all Blue/Green Deployments owned by your AWS account in the current AWS Region.</div><div>iops-dba-bg-test-migration</div><div>The Blue/Green Deployment identifier is case-insensitive, but is stored as all lowercase (as in "mybgdeployment"). Constraints: 1 to 63 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.</div></div> <div><div>Blue/Green Deployment settings</div><div>Choose the engine version for green databases.</div><div>8.0.32 - recommended</div><div>Choose the DB parameter group for green databases.</div><div>default.mysql8.0</div></div>																																																								
4	The new instance provisioning starts	---	<table><tbody><tr><td>iops-dba-bg-test-migration</td><td>Primary</td><td>MySQL Community</td><td>5.7.26</td><td>us-west-2a</td><td>db.m5.large</td><td>Modifying</td></tr><tr><td>iops-dba-bg-test-migration</td><td>Blue/Green Deployment</td><td>-</td><td>-</td><td>-</td><td>-</td><td>Provisioning</td></tr><tr><td>iops-dba-bg-test-migration-green-2frut6</td><td>Primary</td><td>MySQL Community</td><td>5.7.26</td><td>us-west-2a</td><td>db.m5.large</td><td>Creating</td></tr></tbody></table>	iops-dba-bg-test-migration	Primary	MySQL Community	5.7.26	us-west-2a	db.m5.large	Modifying	iops-dba-bg-test-migration	Blue/Green Deployment	-	-	-	-	Provisioning	iops-dba-bg-test-migration-green-2frut6	Primary	MySQL Community	5.7.26	us-west-2a	db.m5.large	Creating																																			
iops-dba-bg-test-migration	Primary	MySQL Community	5.7.26	us-west-2a	db.m5.large	Modifying																																																					
iops-dba-bg-test-migration	Blue/Green Deployment	-	-	-	-	Provisioning																																																					
iops-dba-bg-test-migration-green-2frut6	Primary	MySQL Community	5.7.26	us-west-2a	db.m5.large	Creating																																																					
5	The green instance upgrade starts	---	<table><tbody><tr><td>iops-dba-bg-test-migration</td><td>Primary</td><td>MySQL Community</td><td>5.7.26</td><td>us-west-2a</td><td>db.m5.large</td><td>Available</td></tr><tr><td>iops-dba-bg-test-migration</td><td>Blue/Green Deployment</td><td>-</td><td>-</td><td>-</td><td>-</td><td>Provisioning</td></tr><tr><td>iops-dba-bg-test-migration-green-2frut6</td><td>Primary</td><td>MySQL Community</td><td>5.7.26</td><td>us-west-2a</td><td>db.m5.large</td><td>Upgrading</td></tr></tbody></table>	iops-dba-bg-test-migration	Primary	MySQL Community	5.7.26	us-west-2a	db.m5.large	Available	iops-dba-bg-test-migration	Blue/Green Deployment	-	-	-	-	Provisioning	iops-dba-bg-test-migration-green-2frut6	Primary	MySQL Community	5.7.26	us-west-2a	db.m5.large	Upgrading																																			
iops-dba-bg-test-migration	Primary	MySQL Community	5.7.26	us-west-2a	db.m5.large	Available																																																					
iops-dba-bg-test-migration	Blue/Green Deployment	-	-	-	-	Provisioning																																																					
iops-dba-bg-test-migration-green-2frut6	Primary	MySQL Community	5.7.26	us-west-2a	db.m5.large	Upgrading																																																					
6	The green instance will be available after upgrade		<table><thead><tr><th></th><th>DB identifier</th><th>Role</th><th>Engine</th><th>Engine version</th><th>Region &amp; AZ</th><th>Size</th><th>Status</th></tr></thead><tbody><tr><td></td><td>iops-dba-bg-test-migration</td><td>Primary</td><td>MySQL Community</td><td>5.7.26</td><td>us-west-2a</td><td>db.m5.large</td><td>Available</td></tr><tr><td></td><td>iops-dba-bg-test-migration</td><td>Blue/Green Deployment</td><td>-</td><td>-</td><td>-</td><td>-</td><td>Available</td></tr><tr><td></td><td>iops-dba-bg-test-migration-green-2frut6</td><td>Primary</td><td>MySQL Community</td><td>8.0.32</td><td>us-west-2a</td><td>db.m5.large</td><td>Available</td></tr></tbody></table>		DB identifier	Role	Engine	Engine version	Region & AZ	Size	Status		iops-dba-bg-test-migration	Primary	MySQL Community	5.7.26	us-west-2a	db.m5.large	Available		iops-dba-bg-test-migration	Blue/Green Deployment	-	-	-	-	Available		iops-dba-bg-test-migration-green-2frut6	Primary	MySQL Community	8.0.32	us-west-2a	db.m5.large	Available																								
	DB identifier	Role	Engine	Engine version	Region & AZ	Size	Status																																																				
	iops-dba-bg-test-migration	Primary	MySQL Community	5.7.26	us-west-2a	db.m5.large	Available																																																				
	iops-dba-bg-test-migration	Blue/Green Deployment	-	-	-	-	Available																																																				
	iops-dba-bg-test-migration-green-2frut6	Primary	MySQL Community	8.0.32	us-west-2a	db.m5.large	Available																																																				

7	At this stage, you can test your staging environment.	Connect to the green instance using vault credential and MySQL workbench.	
8	Monitor the Replica lag.  There are 2 ways to monitor ReplicaLag metric <ol style="list-style-type: none"> <li>Using green instance</li> <li>Using blue /green deployment</li> </ol>	<ul style="list-style-type: none"> <li>Select the green DB identifier</li> <li>Then select MonitoringCloudWatch (it may be on the next page). It should be close to zero while switching over to green, which reduces downtime.</li> </ul>	
9	Monitor the Replica lag using b/g deployment	Select B/G deploymentConnectivity & Security Scroll down to the Replication section.	

## 2.3. Connecting to green db instance via MySQL workbench in Integration env

Refer:

[Connect to RDS instance](#)

[Retrieve namespace secret from Vault](#)

## 2.4. Switching a Blue/Green deployment

Note: **The switchover results in downtime. The downtime is usually under two minutes, but it can be longer depending on your workload.**

After the switchover is complete, the DB instances that were in the green environment become the new production DB instances. The names and endpoints in the current production environment are assigned to the newly promoted production environment.

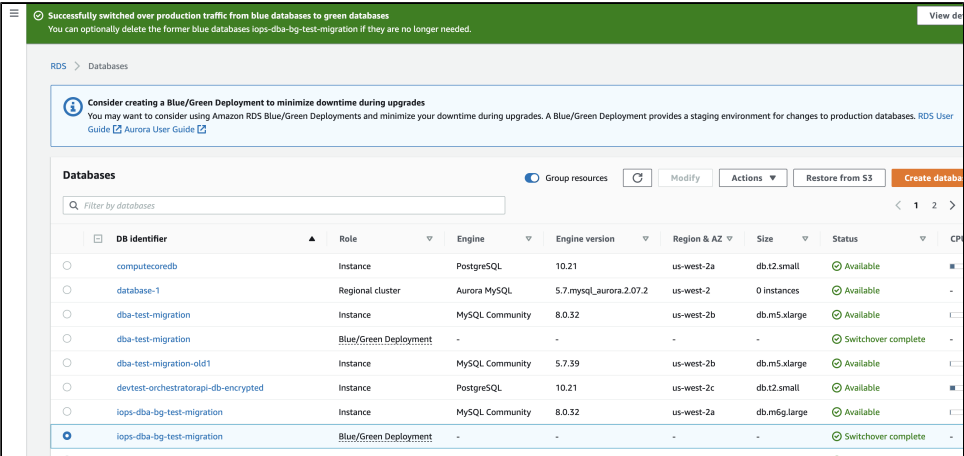

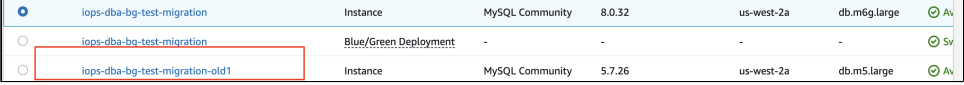
Please read and follow the **Switchover best practices** from the below AWS document.

<https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/blue-green-deployments-switching.html>

	Description	Instructions	Screenshot
--	-------------	--------------	------------

1	Start the switch over	Select the b/g deployment radio button  Select the Actions, then choose Switch over	<div><div><div>RDS &gt; Databases &gt; iops-dba-bg-test-migration</div><div><div>iops-dba-bg-test-migration</div><div>Modify</div><div>Actions Switch over Delete</div></div></div><div><div>Related</div><div><input type="text" value="Filter by databases"/></div><div><table><tr><th><input type="checkbox"/></th><th>DB identifier</th><th>Role</th><th>Engine</th><th>Engine version</th><th>Region &amp; AZ</th><th>Size</th><th>Status</th><th>CPU</th><th>Current</th></tr><tr><td><input type="radio"/></td><td>iops-dba-bg-test-migration</td><td>Primary</td><td>MySQL Community</td><td>5.7.26</td><td>us-west-2a</td><td>db.m5.large</td><td>Available</td><td>1.10%</td><td></td></tr><tr><td><input checked="" type="radio"/></td><td>iops-dba-bg-test-migration</td><td>Blue/Green Deployment</td><td>-</td><td>-</td><td>-</td><td>-</td><td>Available</td><td>-</td><td></td></tr><tr><td><input type="radio"/></td><td>iops-dba-bg-test-migration-green-2frut6</td><td>Primary</td><td>MySQL Community</td><td>8.0.32</td><td>us-west-2a</td><td>db.m6g.large</td><td>Available</td><td>1.38%</td><td></td></tr></table></div></div></div>	<input type="checkbox"/>	DB identifier	Role	Engine	Engine version	Region & AZ	Size	Status	CPU	Current	<input type="radio"/>	iops-dba-bg-test-migration	Primary	MySQL Community	5.7.26	us-west-2a	db.m5.large	Available	1.10%		<input checked="" type="radio"/>	iops-dba-bg-test-migration	Blue/Green Deployment	-	-	-	-	Available	-		<input type="radio"/>	iops-dba-bg-test-migration-green-2frut6	Primary	MySQL Community	8.0.32	us-west-2a	db.m6g.large	Available	1.38%	
<input type="checkbox"/>	DB identifier	Role	Engine	Engine version	Region & AZ	Size	Status	CPU	Current																																		
<input type="radio"/>	iops-dba-bg-test-migration	Primary	MySQL Community	5.7.26	us-west-2a	db.m5.large	Available	1.10%																																			
<input checked="" type="radio"/>	iops-dba-bg-test-migration	Blue/Green Deployment	-	-	-	-	Available	-																																			
<input type="radio"/>	iops-dba-bg-test-migration-green-2frut6	Primary	MySQL Community	8.0.32	us-west-2a	db.m6g.large	Available	1.38%																																			
2	Review the Switch over summary	1. On the <b>Switch over</b> the page, review the switchover summary. Make sure the resources in both environments match what you expect. If they don't, choose <b>Cancel</b> .	<div><div><div>Switchover summary</div><div>You are about to switch over from Blue databases to Green databases. Check the settings of the Green databases to verify that they are ready for the switchover.</div></div><div><div><div>Blue databases</div><div>Identifier iops-dba-bg-test-migration</div><div>Engine version mysql 5.7.26</div><div>Option group default:mysql-5-7</div><div>Parameter group default.mysql5.7</div><div>Size 20 GiB</div><div>VPC sg-06adad16037b67f1d</div><div>Multi-AZ us-west-2a</div><div>Storage type General Purpose SSD (gp2)</div></div><div><div>Green databases</div><div>Identifier iops-dba-bg-test-migration-green-2frut6</div><div>Engine version mysql 8.0.32</div><div>Option group default:mysql-8-0</div><div>Parameter group default.mysql8.0</div><div>Size 20 GiB</div><div>VPC sg-06adad16037b67f1d</div><div>Multi-AZ us-west-2a</div><div>Storage type General Purpose SSD (gp2)</div></div></div></div>																																								
3	Enter the timeout	For <b>Timeout</b> , enter the time limit for the switchover.	<div><div><div>Timeout setting</div><div>The time limit for the switchover. If the switchover takes longer than the specified duration, then the switchover doesn't complete, and no changes are made to the environments. The timeout range is from 30 seconds to 1 hour.</div></div><div><div>Duration</div><div>5</div><div>Unit of time</div><div>minutes</div></div><div><div>Cancel</div><div>Switch over</div></div></div>																																								
4	Switch over is going to start	Apply Switch over	<div><div><div>RDS is switching over production traffic from blue database iops-dba-bg-test-migration to green database iops-dba-bg-test-migration-green-2frut6</div><div>RDS is switching over.</div></div><div><div>RDS &gt; Databases</div></div></div>																																								



5	Successful switch over	-----	
6	Switchover completion	----	
7	Rename the Previous instance as <db-instance-name>-old1	-----	

## 2.5. Check Pods

Check the pod's status. Delete the pod and check pod started successfully or not. If pods not start successfully due to access denied to connect to DB instance, then re deploy the CFN.

## 2.6. Re deploy CloudFormation

Redeploy CFN for 2 reasons.

- If pods are not started successfully due to vault credential issues
- After the switch over, pods started successfully, but CFN is in drifted status.

Modify the following properties in CFN

- Family Properties to MySQL8.0
- EngineVersion to 8.0

```

RDSParamGroup:
  Type: AWS::RDS::DBParameterGroup
  Properties:
    - Family: MySQL8.0
      Description: CloudFormation DB Parameter Group
      Parameters:
        log_bin_trust_function_creators: '1'

@@ -438,7 +438,7 @@ Resources:

  - true
  - false

  Engine: MySQL
- EngineVersion: '8.0'
  MasterUsername: !Ref DBUser

```

### 3. SwitchOver Tracking from various team

Team	Replica DB(Y/N)	Switch over time( in mins)			
		Integration	US2	EU2	CCPS
Budget					
Cards					
ClientAudit					
Curaçao					
DaVinci					
eps-mysql-master???					
Funds Management					
Invoice config					
Invoice core					
JPT	8.0				
perdiem-mysql-master	Y (8.0.32)	~1	~1	~1	0
Purchase(purgeorchestration-db-mysql-master)					
Quick expense					
Smart expense					
Incredibles					
spend-alpha-purchase-mysql-master??					
CRService					
spend-ems-rds-mysql-master??					
spend-ems-sandbox					
Wizard					

spend-pay-classic-service-mysql-master??					
spend-pay-global-service-mysql-master??					
spend-pay-invoice-ipm-service-mysql-master??					
spend-tango-invoicecapturedb-mysql-master??					
Request DB					
ua-benchmark-us2-mysql-master??					
us2-db-fictitiousmeal-mysql-master??					
us2-db-fictitiousmeal-mysql-master-new??					
us2-db-fictitiousmeal-mysql-master-old??					
vmsdb-mysql-master??					

## 4. Ref

### 4.1. AWS

This is the documentation created by DBAs based on the test migration done on a restored test database. Each team **must do test migrations** using their own data and application connectivity on MySQL8.

<https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/blue-green-deployments.html>

<https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/blue-green-deployments-overview.html>

### 4.2. MySQL

<https://dev.mysql.com/doc/refman/8.0/en/upgrading-from-previous-series.html>

## 5. Important note from AWS

- RDS B/G deployments are not supported via AWS CloudFormation [ <https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/blue-green-deployments-overview.html#blue-green-deployments-limitations> ].
- There is no rollback feature for RDS B/G deployment currently available. You can review approach shared in blog post from @Matkar, Rajesh which you could leverage and customize <https://aws.amazon.com/blogs/database/performing-major-version-upgrades-for-amazon-aurora-mysql-with-minimum-downtime/>

AWS Document followed for the deployment: <https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/blue-green-deployments-creating.html>

## 6. Rollback

There is no rollback feature for RDS B/G deployment currently available. We are doing it manually. We can rollback to the previous version using renaming the db instances

### 6.1. Renaming the DB instance

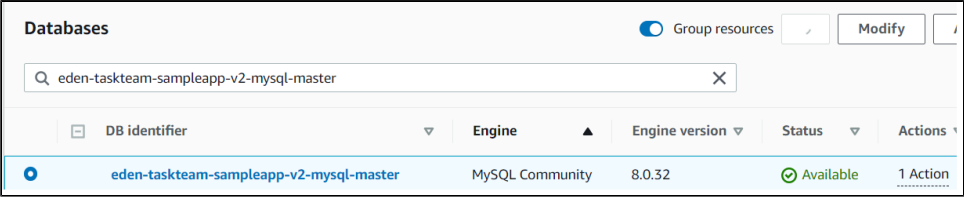
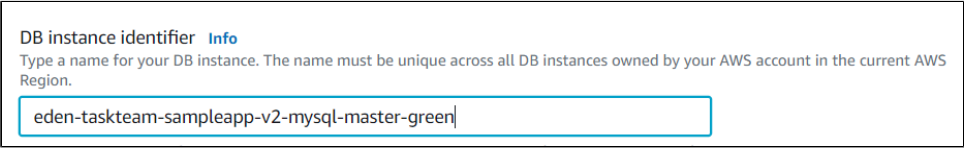
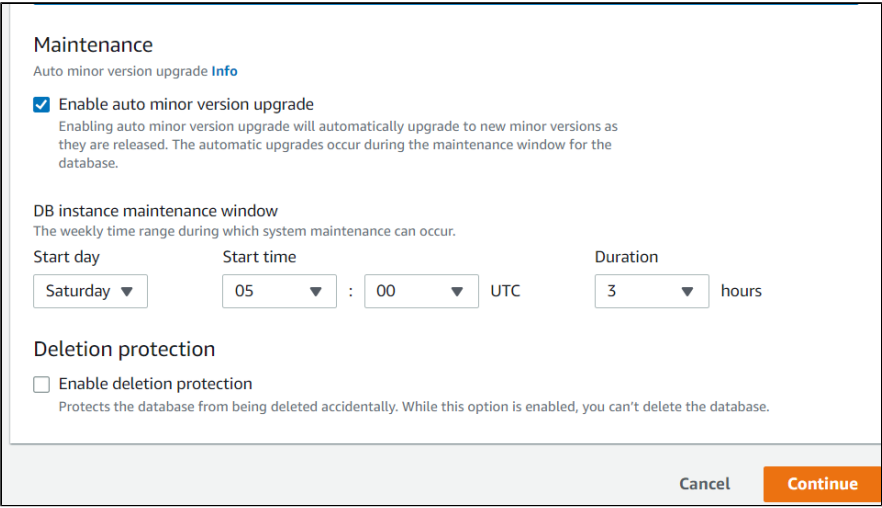
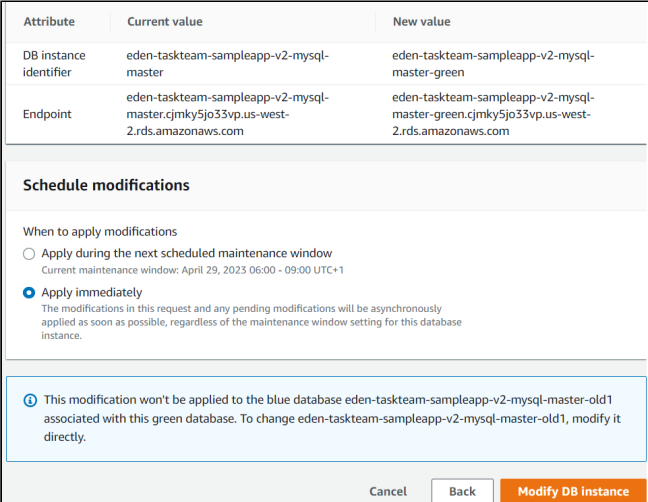
After switching over,

1.1 The blue instance name will be appended with **-old1**.

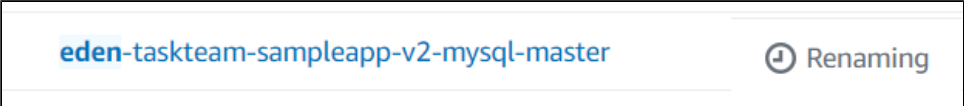

1.2 The green instance name will update with the name of the prod db instance. i.e it takes the name of the blue instance.

DB identifier	Engine	Engine version	
eden-taskteam-sampleapp-v2-mysql-master	MySQL Community	8.0.32	← Green db
eden-taskteam-sampleapp-v2-mysql-master-old1	MySQL Community	5.7.41	← Blue db

As part of the rollback, we need to reverse actions 1.1 and 1.2.

#	Description	Instructions	Screenshot
1	select the green instance	go to database dashboard and search the green instance db	
2	Modify the db instance identifier	After selecting db instance, click on Modify and ONLY rename the green instance Note: Don't do any other action	
3	Go to next page	Click on Continue button at the end of the page	
4	Modify DB instance (Apply immediately)	After clicking on Continue, it shows the summary, and select Apply Immediately radio button. and Click Modify DB Instance button. This renaming takes 2 to 3 minutes	

5	Select the blue instance	go to database dashboard and search the blue instance db and continue the steps 3 and 4. It takes 2 to 3 mins to rename the db instance.	<div><div>Databases</div><div><div><div>Group resources</div><div>Modify</div></div></div><div><div><div>eden-taskteam-sampleapp-v2-mysql-master-old1</div></div></div><div><div><div>DB identifier</div><div>Engine</div><div>Engine version</div></div><div><div>eden-taskteam-sampleapp-v2-mysql-master-old1</div><div>MySQL Community</div><div>5.7.41</div></div></div></div>
6.	Modify the db instance identifier by removing the prefix -old1	After selecting db instance, click on Modify and rename the blue instance by removing the -old1	<div><div>DB engine version</div><div>Version number of the database engine to be used for this database</div><div><div>5.7.41</div></div><div><div>DB instance identifier</div><div>Info</div></div><div>Type a name for your DB instance. The name must be unique across all DB instances owned by your Region.</div><div><div>eden-taskteam-sampleapp-v2-mysql-master</div></div></div>
7.	Change the DB Parameter group to mysql.default.5.7	Change the db parameter group mysql.default.5.7 Click on Modify.	<div><div><div>Additional configuration</div><div>Database options, backup turned on, Enhanced Monitoring turned on, maintenance, CloudWatch Logs, delete protection turned off</div></div><div><div>Database options</div><div><div>DB parameter group</div><div>Info</div></div><div><div>default.mysql5.7</div></div><div><div>Option group</div><div>Info</div></div><div><div>default:mysql-5-7</div></div></div></div>

8. h	Modify DB instance (Apply immediately)	<p>After clicking on Continue, it shows the summary, and select Apply Immediately radio button. and Click Modify DB Instance button.</p> <p>This renaming takes 2 to 3 minutes.</p> <p>Note: After renaming, it reboots the db instance.</p> <p><b>Note: During renaming /rebooting, if the application connects to vault, it complains bad request, but pods are running successfully.</b></p>	 
------	--	---	---

**CAUTION:** During the rollback, after the switch over whatever new data is written in green instances, will not be ported to old db instances. We are losing the data.

You can review approach shared in blog post from @Matkar, Rajesh which you could leverage

and customize <https://aws.amazon.com/blogs/database/performing-major-version-upgrades-for-amazon-aurora-mysql-with-minimum-downtime/>

#### Questions to AWS :

1. When the green instance will be available for writing ?(is any reboot required?)

The green instance will be available for writing once the switch over is successful.

## 7. Deleting a blue/green deployment

<https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/blue-green-deployments-deleting.html>

## 8. FAQ