Centers for Medicare & Medicaid Services (CMS)
Federally-Facilitated Marketplace (FFM)

EDGE Software Stack Upgrade to Red Hat Enterprise Linux (RHEL) 7.3/MySQL 5.7.16/Java Development Kit (JDK) 1.8

Version 5
January 24, 2017

Contents

1. Introduction 1
2. Conventions 1
3. Upgrade an Existing OP EDGE Server 2
   - 3.1 Identify and Back up Schemas 2
   - 3.2 Confirm that the Backup was Successfully Created 3
   - 3.3 Save Backup Files 4
   - 3.4 Back up Directories 5
   - 3.5 Get Record Counts 7
   - 3.6 Upgrade RHEL 6.x to RHEL 7.3 8
   - 3.7 Uninstall MariaDB and Install MySQL 5.7 9
   - 3.8 Configure MySQL 9
   - 3.9 Install EDGE Application v18 – Part 1 12
   - 3.10 Install JDK or JRE 1.8 13
   - 3.11 Configure Hosts and Network Files 14
   - 3.12 Set Password Policy 15
   - 3.13 Install EDGE Application v18 – Part 2 15
   - 3.14 Restore Data to MySQL 16
   - 3.15 Restore Directories 17
   - 3.16 Download Latest EDGE Version 18
   - 3.17 Test Application 19
4. Provision a New OP Server with Upgraded Software Stack 19
   - 4.1 Provision a New RHEL 7.3 Server 20
   - 4.2 Uninstall MariaDB and Install MySQL 5.7 20
   - 4.3 Configure MySQL 21
   - 4.4 Install JDK or JRE 1.8 23
   - 4.5 Install EDGE Application v18 – Part 1 24
   - 4.6 Configure Hosts and Network Files 25
   - 4.7 Set Password Policy 26
   - 4.8 Install EDGE Application v18 – Part 2 27
   - 4.9 Identify and Back up Schemas 27
   - 4.10 Confirm that the Backup was Successfully Created 28
   - 4.11 Save Backup Files 28
   - 4.12 Backup Directories 30
   - 4.13 Get Record Counts 31
   - 4.14 Stop Communication between Old Server and CMS S3 Bucket 31
   - 4.15 Restore Data to MySQL 32
   - 4.16 Restore Directories 35
   - 4.17 Download Latest EDGE Version 36
   - 4.18 Test Application 37
5. Upgrade an Existing AWS EDGE Server 38
   - 5.1 Back up Schemas 38
   - 5.2 Confirm the Backup was Successfully Created 39
   - 5.3 Save your Backup Files from an AWS Server 41
   - 5.4 Back up Directories 44
   - 5.5 Get Record Counts 45
   - 5.6 Un-provision Instance 45

5.7 Confirm Newly Provisioned EDGE Instance 52
5.8 Restore Directories 52
5.9 Restore Data to MySQL 53
5.10 Test Application 56
6. Provision a New AWS Server 57
7. APPENDIX 58
8. Acronyms and Abbreviations 62

Tables

Table 1 - Upgrade an Existing OP EDGE Server Steps 2
Table 2 - Upgraded OP Server Test Cases 19
Table 3 - Provision a New OP Server with Upgraded Software Steps 19
Table 4 - Newly Provisioned OP Server Test Cases 37
Table 5 - Upgrade an Existing AWS EDGE Server 38
Table 6 - Upgraded AWS Server Test Cases 56
Table 7 - Acronyms and Abbreviations 62

1. Introduction

External Data Gathering Environment (EDGE) servers must be upgraded to Red Hat Enterprise Linux (RHEL) 7.3, Java Development Kit (JDK) or Java Runtime Environment (JRE) 1.8, and MySQL 5.7 build 16 or later (do not jump to version 5.8 if it is made available), Community edition, by **11:59 p.m. ET on January 31, 2017.** The reason for the RHEL upgrade is to ensure compatibility with EDGE versions deployed after January 31, 2017. If the deadline is not met, EDGE servers would not be on supported software/operating system (OS) versions, which could cause errors in file processing, Risk Adjustment (RA) or Reinsurance (RI) calculations or any other EDGE functionality. Please note that the Centers for Medicare & Medicaid Services (CMS) has only tested the Community edition of MySQL 5.7.16. While CMS does not foresee any issues using the Enterprise edition, CMS will not be able to provide support for the Enterprise edition**.**

Some upgrading steps should be completed **before 11:59 p.m. ET on December 16, 2016,** and the rest of the steps should be completed **on or after 12:00 a.m. on December 17, 2016**, after EDGE version 18 is deployed. The timing for the steps is detailed in the document. In addition, a stop sign is added to the steps that either need CMS action before proceeding or have to be completed **on or after December 17, 2016**. Please note that the Enrollee (Without) Claims (ECS), RA and RI and Frequency Distribution Reports will be run on December 16, 2016 at 11:59 p.m. ET, and calculations will be executed based on the data on your production server connected to CMS S3 at that time.

This document details the steps involved in the upgrade for On-Premise (OP) and Amazon Web Services (AWS) Elastic Compute Cloud (EC2) EDGE servers:

- **Upgrade an Existing OP EDGE Server** - Perform an in-place upgrade of the existing RHEL 6.x server, OR
- **Provision a New OP Server with Upgraded Software** - Provision a new RHEL 7.3 server and migrate the EDGE application and data from the old RHEL 6.x server.
- **Upgrade an Existing AWS EDGE Server** - Perform an in-place upgrade of the existing RHEL 6.x server.

Issuers should consult RHEL, Java and MySQL documentation for software installation support for any questions outside of the scope of this document. Issuers who have technical questions related to the steps for the EDGE software stack upgrade provided below, or the EDGE application, should reach out to the Financial Management Coordination Center (FMCC) at EDGE_Server_Data@cms.hhs.gov and include a subject line of "RHEL 7.3 Upgrade – Server Type <*insert AWS or OP*> – Health Insurance Oversight System (HIOS) ID <*insert one (1) of your HIOS IDs*>".

2. Conventions

The following documentation conventions will be used:

Convention	Description
Black Bold	Black bold characters indicate a command that should be run at the Linux or MySQL command line.
<Red Bold>	Red bold characters indicate text that needs to be replaced with a value custom to the issuer.

Note: Please do not copy commands to the command line directly from this document. You can either type the commands in the command line or you can copy commands from this document to NotePad or TextPad, and then copy it to the command line.

3. Upgrade an Existing OP EDGE Server

The first approach is to upgrade the software on an existing server:

- RHEL 6.x server to RHEL 7.3
- MySQL 5.x to 5.7
- JDK 1.x to 1.8

The high level steps for this approach are:

Table 1 - Upgrade an Existing OP EDGE Server Steps

Step	Timing
Note: Issuers cannot submit any data to their EDGE server between step 1 and step 14.	
1. Identify and Back up Schemas.	On or after December 17, 2016
2. Confirm that the Backup was Successfully Created.	On or after December 17, 2016
3. Save Backup Files.	On or after December 17, 2016
4. Back up Directories.	On or after December 17, 2016
5. Get Record Counts.	On or after December 17, 2016
6. Upgrade RHEL 6.x to RHEL 7.3.	On or after December 17, 2016
7. Uninstall MariaDB and Install MySQL 5.7.	On or after December 17, 2016
8. Configure MySQL.	On or after December 17, 2016
9. Install JDK or JRE 1.8.	On or after December 17, 2016
10. Configure Hosts and Network Files.	On or after December 17, 2016
11. Set Password Policy.	On or after December 17, 2016
12. Restore Data to MySQL.	On or after December 17, 2016
13. Download Latest EDGE Version.	On or after December 17, 2016
14. Test Application.	On or after December 17, 2016

3.1 Identify and Back up Schemas

This step needs to be done on or after December 17, 2016.

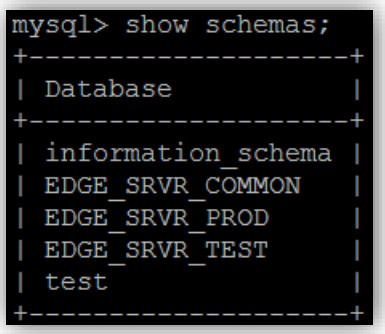
This step will identify the schemas that you will need to back up and later restore on your server.

1. Log in to your OP server.

```
You have new mail in /var/spool/mail/ec2-user
[ec2-user@edgeserver-2906515 edge]$ mysql --host=localhost --user=edgedbuser --password=xxxxxxxx
```

2. Identify the schemas to back up. Login into MySQL to identify the schemas.

Note: You will need to back up all schemas other than the “information_schema” and “test” schema shown below. Please note that you do need to back up and restore the “EDGE_SRVR_TEST” current and archived schemas if you wish to reference them in future. **CMS will not be able to recover the data if the schemas are not backed up.**



3. Exit out of MySQL.

4. At the Linux command prompt, execute the following command in order to navigate to the bin folder:

   cd /opt/edge/bin

5. At the command prompt, execute the following command to backup your schemas:

   ./edge dbbackup

6. Wait for the backup process to complete. The Linux command line will appear when the backup is complete, allowing a user to enter new commands.

3.2 Confirm that the Backup was Successfully Created

This step needs to be done on or after December 17, 2016.

This step will confirm that the backup was successfully created in the backup folder.

1. Log in to the OP server.
2. At the command prompt, execute the following command to navigate to the backup folder:

   cd /opt/edge/ingest/backup

3. Verify that the backup for all of your schemas was created with the following naming convention: *HIOSID.SchemaName.LOCAL_BACKUP.TodayDateandTime.sql*.

   ls –ltr

Note: The date and time on the backup files should be today's date and time.

```
[ec2-user@HPT1_OP_80991 backup]$ ll
total 64396
-rw-rw-r--. 1 ec2-user ec2-user      791 Oct  6 13:17 80991_EDGE_SRVR_COMMON_2014.LOCAL_BACKUP.D10062015T011738.sql
-rw-rw-r--. 1 ec2-user ec2-user 22914528 Oct  6 13:17 80991_EDGE_SRVR_COMMON.LOCAL_BACKUP.D10062015T011738.sql
-rw-rw-r--. 1 ec2-user ec2-user      789 Oct  6 13:17 80991_EDGE_SRVR_PROD_2014.LOCAL_BACKUP.D10062015T011738.sql
-rw-rw-r--. 1 ec2-user ec2-user    78009 Oct  6 13:17 80991_EDGE_SRVR_PROD.LOCAL_BACKUP.D10062015T011742.sql
-rw-rw-r--. 1 ec2-user ec2-user      789 Oct  6 13:17 80991_EDGE_SRVR_TEST_2014.LOCAL_BACKUP.D10062015T011738.sql
-rw-rw-r--. 1 ec2-user ec2-user    78009 Oct  6 13:17 80991_EDGE_SRVR_TEST.LOCAL_BACKUP.D10062015T011741.sql
```

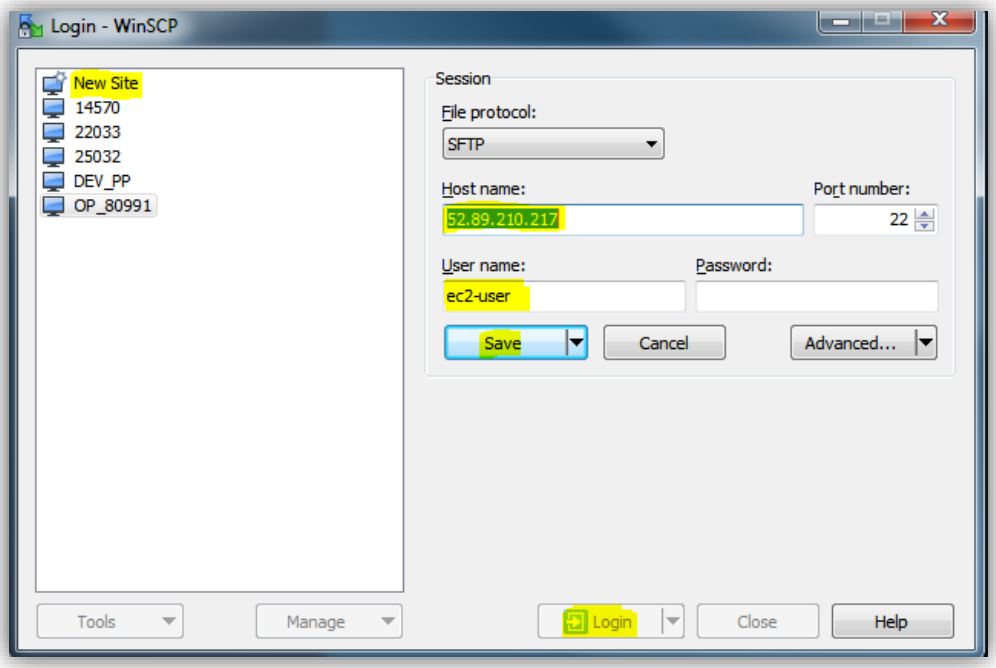
3.3 Save Backup Files

This step needs to be done on or after December 17, 2016.

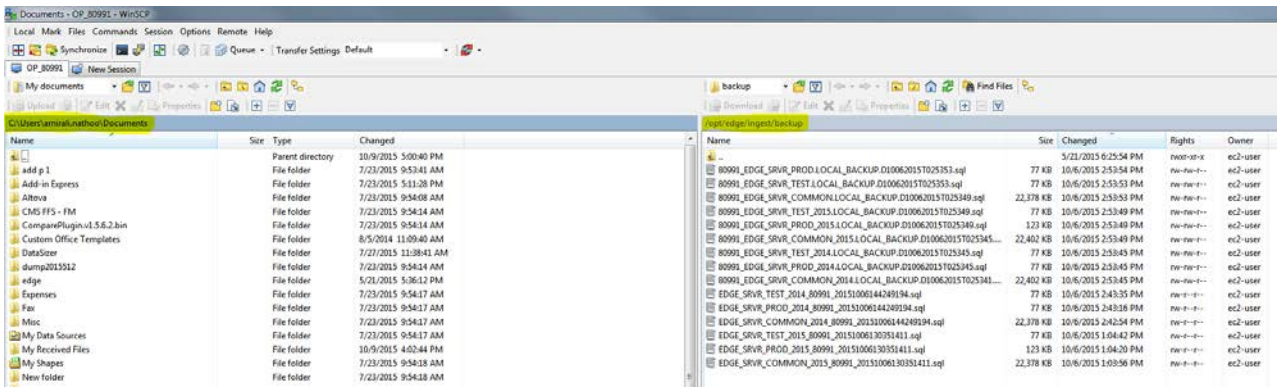
This step will save your schema backup files outside of your server.

Note: It is important that you download and store the generated backup in a secure location off of your server that meets your internal Information Technology (IT) backup policies. Additionally, you should ensure that they meet all CMS' data retention requirements outlined in the "Backup Policy and User Guide for AWS and On-Premise EDGE Servers" published on the Registration for Technical Assistance Portal (REGTAP). Only the MySQL schemas are backed up with the "edge dbbackup" command, which does not include the inbound or outbound Extensible Markup Language (XML) files. As stated in the backup policy, retention of inbound and outbound data files that contributed to the final calculations is a recommended best practice. Before moving to the next step, CMS recommends that issuers save the inbound XML files to an external location in the event the backup and restore fails and data needs to be resubmitted. The outbound files can additionally be backed up to troubleshoot why data was accepted or rejected, but this is not required. **CMS will not be able to recover the data if the data is not backed up.**

1. Retrieve your Internet Protocol (IP) Address.
2. Login to WinSCP.



3. Select the right panel window that is connected to your server.
4. Navigate to the following directory: /opt/edge/ingest/backup.



5. Select the left panel window that is connected to directories off of your server.
6. Navigate to the location you want to save your files.
7. Drag the files from the right window to the location on the left.

3.4 Back up Directories

This step needs to be done on or after December 17, 2016.

This step will create a backup of the /opt/edge directory on the existing RHEL 6.x server and move the backup to a storage location outside of the OP EDGE server.

1. At the command prompt, execute the following command to navigate to the backup folder:

cd /opt/edge

```
[ec2-user@edgeserver-2906515 /]$ cd /opt/edge
[ec2-user@edgeserver-2906515 edge]$
```

2. At the command prompt, execute the following command to back up the EDGE folder:

   tar -cvf <insert HIOS ID>-edge-app.tar *

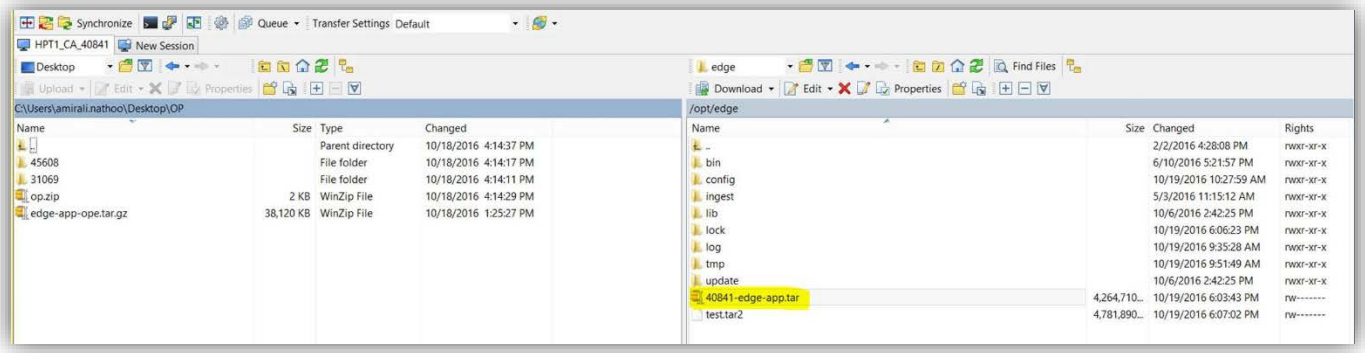
```
[ec2-user@edgeserver-2906515 edge]$ cd /opt/edge
[ec2-user@edgeserver-2906515 edge]$ tar -cvf 40841-edge-app.tar *
```

3. At the command prompt, execute the following command to validate that the backup named "<insert HIOS ID>-edge-app.tar" was created:

   ls -ltr

```
update/sql/common/02_edge_refdata_ddl.sql
update/sql/common/01_edge_batchjob_ddl.sql
update/sql/issuer/
update/sql/issuer/01_edge_appdata_ddl.sql
You have mail in /var/spool/mail/ec2-user
[ec2-user@edgeserver-2906515 edge]$ ls -ltr
total 4264756
drwxr-xr-x. 8 ec2-user ec2-user       4096 May  3 11:15 ingest
drwxr-xr-x. 2 ec2-user ec2-user       4096 Jun 10 17:21 bin
drwxr-xr-x. 2 ec2-user ec2-user      12288 Oct  6 14:42 lib
drwxr-xr-x. 6 ec2-user ec2-user       4096 Oct  6 14:42 update
drwxr-xr-x. 2 ec2-user ec2-user       4096 Oct 19 09:35 log
drwxr-xr-x. 2 ec2-user ec2-user       4096 Oct 19 09:51 tmp
drwxr-xr-x. 2 ec2-user ec2-user       4096 Oct 19 10:27 config
drwxr-xr-x. 2 ec2-user ec2-user       4096 Oct 19 18:28 lock
-rw-------. 1 ec2-user ec2-user 4367063040 Oct 19 18:28 40841-edge-app.tar
[ec2-user@edgeserver-2906515 edge]$
```

4. File Transfer Protocol (FTP) this tar file to a location outside of the OP EDGE server. FTP utilities like WinSCP can be used as shown in the previous step.



5. Delete the /opt/edge directory. **This step has to be executed only after making sure the previous steps for backup are complete.** Otherwise, the contents of this directory are lost. At the command prompt, execute the following command.

   rm –rf /opt/edge

```
[ec2-user@edgeServer-41101 edge]$
[ec2-user@edgeServer-41101 edge]$
[ec2-user@edgeServer-41101 edge]$ rm -rf /opt/edge
```

3.5 Get Record Counts

This step needs to be done on or after December 17, 2016.

This step will guide you through getting counts of the records on your server, which will be used in step 3.12 to verify that the data was restored successfully.

1. Login into MySQL as root user, get counts of all the tables in the database and extract to a CSV file.
2. FTP the CSV file to a storage location outside of the OP EDGE server. FTP utilities like WinSCP can be used as shown in a previous step. See Appendix A for queries to get counts on the common and application schemas.

```
    -> (SELECT COUNT(*) FROM ENRLMT_MNT_TYP),
    -> (SELECT COUNT(*) FROM EXCTN_ZN_TYPE),
    -> (SELECT COUNT(*) FROM GNDR_TYPE),
    -> (SELECT COUNT(*) FROM INFANT_DIAG_CODES),
    -> (SELECT COUNT(*) FROM INSRD_MMBR_STUS_TYPE),
    -> (SELECT COUNT(*) FROM INSRNC_PLAN),
    -> (SELECT COUNT(*) FROM INT_CNTRL_RLS_NMBR),
    -> (SELECT COUNT(*) FROM ISSR_ORG),
    -> (SELECT COUNT(*) FROM ISSR_PLCY_RATG_AREA),
    -> (SELECT COUNT(*) FROM MEDICARE_MAX_OUT_OF_POCKET),
    -> (SELECT COUNT(*) FROM ORG_TYPE),
    -> (SELECT COUNT(*) FROM PRCSG_CONFIG_PARM),
    -> (SELECT COUNT(*) FROM PRVDR_QLFYR_TYPE),
    -> (SELECT COUNT(*) FROM RA_REASON_CODE),
    -> (SELECT COUNT(*) FROM REMOTE_CMD_QUEUE),
    -> (SELECT COUNT(*) FROM REV_CD_TYPE),
    -> (SELECT COUNT(*) FROM RISK_ADJSTMT_CLM_FLTRING_STUS_TYPE),
    -> (SELECT COUNT(*) FROM SBMTTING_ORG),
    -> (SELECT COUNT(*) FROM SERVICE_POLICY_TYPE),
    -> (SELECT COUNT(*) FROM SRVC_CD_MDFR_TYPE),
    -> (SELECT COUNT(*) FROM SRVC_CD_TYPE),
    -> (SELECT COUNT(*) FROM SRVC_CD_TYPE_2014),
    -> (SELECT COUNT(*) FROM SRVC_CD_TYPE_2015),
    -> (SELECT COUNT(*) FROM SRVC_PLC_TYPE),
    -> (SELECT COUNT(*) FROM SRVC_TYPE),
    -> (SELECT COUNT(*) FROM STATE_CALC_TYPE_INTR),
    -> (SELECT COUNT(*) FROM SUBMSN_PRCSG_STUS_TYPE),
    -> (SELECT COUNT(*) FROM SUBMSN_STUS_TYPE),
    -> (SELECT COUNT(*) FROM SUBMSN_TYPE),
    -> (SELECT COUNT(*) FROM TOBACCO_USE_TYPE),
    -> (SELECT COUNT(*) FROM USER_FEE_RATE),
    -> (SELECT COUNT(*) FROM VOID_RPLC_IND_TYPE),
    -> (SELECT COUNT(*) FROM ZIP_CD)
    -> INTO OUTFILE '/tmp/edge_srvr_common_dbcounts_results.csv'
    -> FIELDS TERMINATED BY ',' OPTIONALLY ENCLOSED BY '"'
    -> LINES TERMINATED BY '\N';
Query OK, 1 row affected (0.02 sec)
```

3.6 Upgrade RHEL 6.x to RHEL 7.3

This step needs to be done on or after December 17, 2016.

Note: Do not complete this step unless all of the backups previously generated were moved to a location off of your EDGE server. **Failure to back up your data will result in complete data loss. CMS will not be able to recover the data.**

Red Hat provides step-by-step instructions to upgrade from RHEL 6.x to 7.3 on the Red Hat website. It is highly recommended that issuers read the Red Hat steps carefully and consult Red Hat with any questions specific to the Red Hat upgrade not pertaining to EDGE. The following links detail the steps:

- https://access.redhat.com/documentation/en-US/Red_Hat_Enterprise_Linux/7/html/Migration_Planning_Guide/chap-Red_Hat_Enterprise_Linux-Migration_Planning_Guide-Upgrading.html
- https://access.redhat.com/solutions/637583

After the upgrade is complete, execute the following command to check the OS version.

cat /etc/redhat-release

```
[ec2-user@PERF-OP-LARGE ~]$ pwd
/home/ec2-user
[ec2-user@PERF-OP-LARGE ~]$ cat /etc/redhat-release
Red Hat Enterprise Linux Server release 7.3 (Maipo)
[ec2-user@PERF-OP-LARGE ~]$
```

3.7 Uninstall MariaDB and Install MySQL 5.7

This step needs to be done on or after December 17, 2016.

This step will uninstall MariaDB and install the Community edition of MySQL 5.7 (issuers upgrading their Enterprise edition will need to reach out to MySQL for upgrade support). MySQL has documented the following steps to uninstall MariaDB (which is the default installation with RHEL 7.3) and to install the Community edition:

> **Note:** CMS has only tested the Community edition of MySQL 5.7.16. While CMS does not foresee any issues using the Enterprise edition, CMS will not be able to provide support for the Enterprise edition**.**

MySQL, which can also be found at the following link: https://dev.mysql.com/doc/mysql-repo-excerpt/5.6/en/replace-third-party-yum.html.

> **Note:** Please make sure you have successfully backed up your data according to the steps above before completing this step. **Failure to back up your data will result in complete data loss. CMS will not be able to recover the data.**

1. At the command prompt, execute the following commands in sequence for uninstalling MariaDB:
    a. **sudo yum list installed mariadb***
    b. **sudo yum-config-manager --disable mariadb**
    c. **sudo yum remove mariadb* -y**
    d. **sudo rm -rf /var/lib/mysql**
    e. **sudo rm /etc/my.cnf**

2. At the command prompt, execute the following commands in sequence for installing the Community edition of MySQL:
    a. **sudo yum -y localinstall https://dev.mysql.com/get/mysql57-community-release-el7-8.noarch.rpm**
    b. **sudo yum -y install mysql-community-server**
    c. **sudo yum -qy --enablerepo=remi,remi-test list mysql mysql-server**
    d. **sudo yum -qy --enablerepo=remi,remi-test install mysql mysql-server**
    e. **sudo service mysqld start**
    f. **chkconfig --levels 235 mysqld on**
    g. **/sbin/restorecon -R -v /var/lib/mysql**
    h. **sudo service mysqld restart**

3.8 Configure MySQL

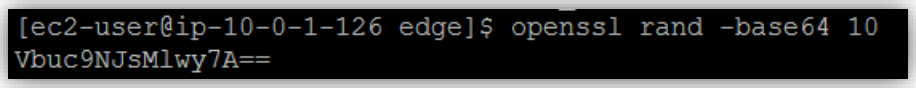
This step needs to be done on or after December 17, 2016.

This step will configure MySQL 5.7. Please note that this will be the minimal configuration needed to make MySQL 5.7 operational. Issuers may add additional configurations to meet their organizational policies.

1. Issuers must generate a password for the root user that contains at least one (1) lower and upper case letter, a number, a special character and is greater than eight (8) characters long. The password can be generated using OpenSSL and executed from the command line with the following command. Issuers are also free to use a different password generation tool that generates a password meeting the aforementioned criteria.

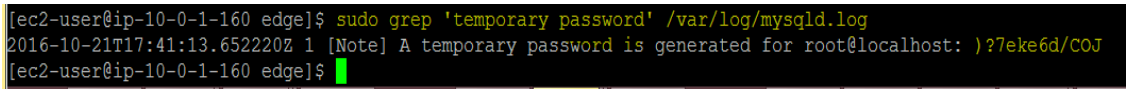
   openssl rand -base64 10

   Note: This is the MySQL root password. Please make note of it and store it outside of the server in a location accessible to authorized MySQL administrators.



2. At the command prompt, execute the following to find the root password MySQL was installed with. Please note that you do not need the password from step 1 for step 2.

   sudo grep 'temporary password' /var/log/mysqld.log

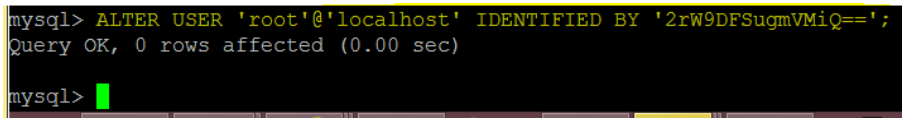


3. At the command prompt, execute the following command to connect to MySQL using the password it was installed with, identified in step 2:

   sudo mysql --user=root -p

4. At the command prompt, execute the following command to change the root user's password to the password that was generated in step 1.

   ALTER USER 'root'@'localhost' IDENTIFIED BY '<insert password generated in step 1>';



   At the command prompt, execute the following command to exit out of MySQL:

   exit;

5. At the command prompt, execute the following command to reconnect with the password set in step 4:

   sudo mysql --user=root -p

```
[ec2-user@ip-10-0-1-126 edge]$ sudo mysql -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 2
Server version: 5.7.16
```

6. Run the following command, which prints the MySQL version. The version should be 5.7.16. Please note that this version check is not applicable to Enterprise editions and is only applicable to the Community edition.

   SELECT @@VERSION;

```
[ec2-user@edgeServer-84639 ~]$
[ec2-user@edgeServer-84639 ~]$
[ec2-user@edgeServer-84639 ~]$  mysql --host localhost --user=edgedbuser --password=KFkgIJ9t
mysql: [Warning] Using a password on the command line interface can be insecure.
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 246373
Server version: 5.7.16 MySQL Community Server (GPL)

Copyright (c) 2000, 2016, Oracle and/or its affiliates. All rights reserved.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
mysql>
mysql>
```

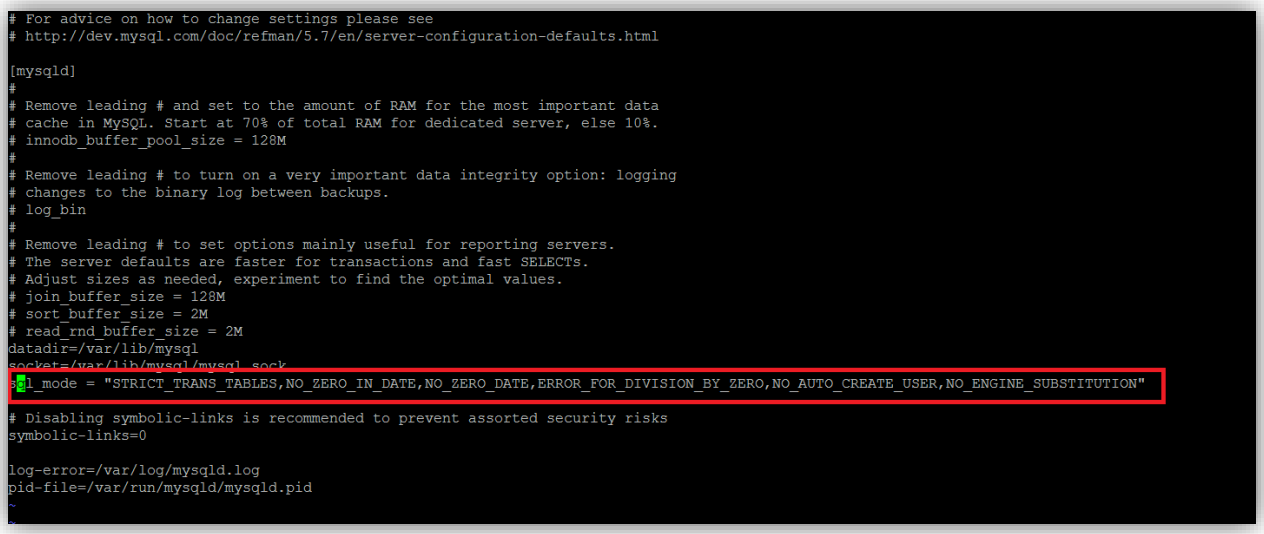
   At the command prompt, execute the following command to exit out of MySQL:
   exit;

7. At the command prompt, execute the following command in order to change the MySQL mode by editing the my.cnf:

   sudo vi /etc/my.cnf

8. Add the following line to the open my.cnf file:

   sql_mode = "STRICT_TRANS_TABLES,NO_ZERO_DATE,ERROR_FOR_DIVISION_BY_ZERO,NO_AUTO_CREATE_USER,NO_ENGINE_SUBSTITUTION"



   Click ESC and type **:wq** to exit the my.cnf file and save changes.

9. At the command prompt, execute the following command to restart MySQL:

   sudo service mysqld restart

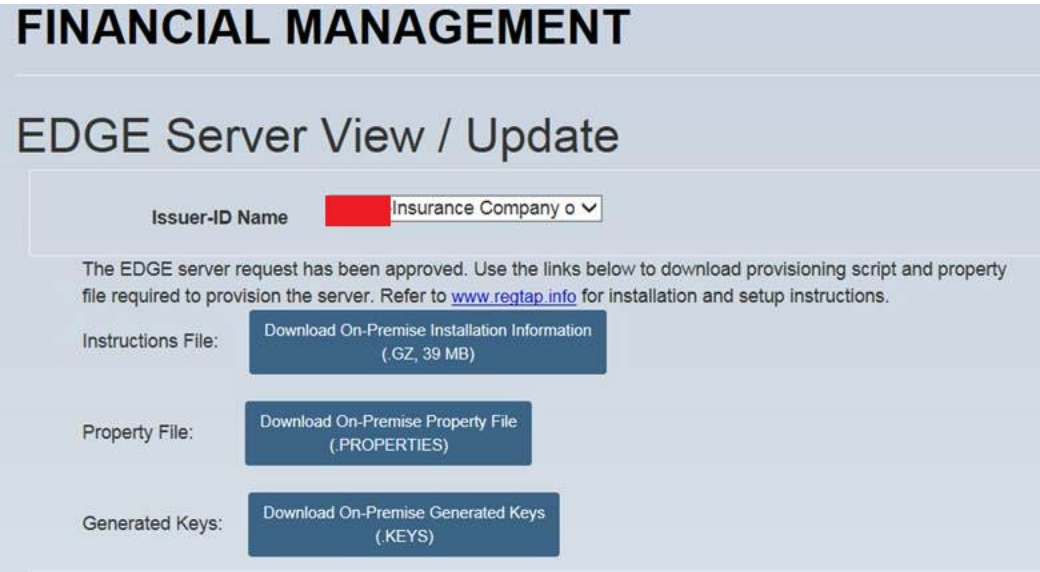
3.9 Install EDGE Application v18 – Part 1

This step needs to be done on or after December 17, 2016.

This step will guide you through setting up Part 1 of the EDGE application by executing steps detailed in the "EDGE Server Job Aid On-Premise EDGE Server Provisioning" document below.

1. Follow the OP provisioning steps from Section 3 up to Section 4.4, Step 15 as detailed in the "EDGE Server Job Aid On-Premise EDGE Server Provisioning" published on REGTAP, to install and configure the EDGE Server application. Please note the following:
   a. Download **only** the installation kit ("Instruction File" as shown in the below screenshot) from the EDGE Server Management (ESM) portal. **Do not** download the properties or keys. Downloading the keys will impact the functioning of the existing server.

   Note: Make sure to download (and use) the up-to-date installation kit on or after December 17, 2016 with file size of 52,730kb. Please note that the file size listed on the button is inaccurate.



Also, please note that TPA, submitter and approver users all have roles to get the installation kit.

b. Get the edge.properties and edge.keys from the existing server's /opt/edge/config. This can be extracted from the tar of the /opt/edge directory saved earlier.
c. When working on Section 4.2, upload the installation kit downloaded from ESM and the properties and key files (saved from the existing production server) to this server. The installation kit downloaded can be used for multiple servers in case the issuer has more than one (1) OP server.
d. Execute steps starting with Section 3 all the way to Section 4.4, Step 15. **Do not execute any steps after that, or the installation will fail**.

2. Edit the /opt/edge/config/edge.properties file and move the following properties to the beginning of the file.

   batch_location=${EDGE_HOME}
   local_file_ingest=${batch_location}/ingest

   Click ESC and type **:wq** to exit the edge.properties file and save changes.

   Note: If using a text editor like NotePad++ to edit the properties file, please ensure the End of Line (EOL) conversion is set to UNIX and not Windows. Having a Windows EOL conversion can cause issues while running edge commands. See Appendix B for steps to check/set EOL conversion.

3.10 Install JDK or JRE 1.8

This step needs to be done on or after December 17, 2016.

This step will install JDK or JRE 1.8 using instructions published by Oracle.

1. Create the /opt/edge directory and grant permissions on it
   a. **sudo mkdir /opt/edge**

b. **chmod –R 755 /opt/edge**
c. **cd /opt/edge**

2. At the command prompt, execute the following commands in sequence to install JDK or JRE 1.8:
   a. **sudo yum -y remove java**
   b. **sudo yum install wget –y**
   c. **sudo wget --no-cookies --no-check-certificate --header "Cookie: gpw_e24=http%3A%2F%2Fwww.oracle.com%2F; oraclelicense=accept-securebackup-cookie" http://download.oracle.com/otn-pub/java/jdk/8u102-b14/jdk-8u102-linux-x64.rpm**
   d. **sudo rpm -ivh /opt/edge/jdk-8u102-linux-x64.rpm***
   e. **sudo rm -rf /usr/bin/java**
   f. **sudo ln -s /usr/java/jdk1.8.0_102/bin/java /usr/bin/java**

3. Execute the following command to verify that the Java version is now 1.8:

   a. **java –version**

3.11 Configure Hosts and Network Files

This step needs to be done on or after December 17, 2016.

This step will configure hosts and network files. Please contact the FMCC EDGE mailbox if you have questions about this step.

1. Execute the following steps to configure hosts file:
   a. At the command prompt, execute the following command to edit the hosts file:

      vi /opt/edge/install/hosts

   b. Replace “@EdgeServerId@” in the hosts file with the HIOS ID for the server.
   c. At the command prompt, execute the following command:

      sudo cp /opt/edge/install/hosts /etc/hosts

   d. Verify the contents of /etc/hosts is the same as that of /opt/edge/install/hosts, with the HIOS ID of the server substituted for “@EdgeServerId@”.

      diff /etc/hosts /opt/edge/install/hosts

2. Execute the following steps to configure the network file:
   a. At the command prompt, execute the following command to edit the network file:

      vi /opt/edge/install/network

   b. Replace “@EdgeServerId@” in the network file with the HIOS ID for the server.
   c. At the command prompt, execute the following command:

sudo cp /opt/edge/install/network /etc/sysconfig/network

d. Verify the contents of /etc/sysconfig/network is the same as that of /opt/edge/install/network, with the HIOS ID of the server substituted for "@EdgeServerId@".

diff /etc/sysconfig/network /opt/edge/install/network

3. Execute the following steps to configure the hostname:
   a. At the command prompt, execute the following command to edit the network file:

      vi /opt/edge/install/hostname

   b. Replace "@EdgeServerId@" in the network file with the HIOS ID for the server.
   c. At the command prompt, execute the following command:

      sudo cp /opt/edge/install/hostname /etc/hostname

   d. Verify the contents of /etc/hostname are the same as that of /opt/edge/install/hostname, with the HIOS ID of the server substituted for "@EdgeServerId@".

      diff /etc/hostname /opt/edge/install/hostname

4. Reboot instance:
   a. Execute the following command:

      sudo reboot

3.12 Set Password Policy

This step needs to be done on or after December 17, 2016.

1. At the command prompt, execute the following command to connect to MySQL using the password it was installed with:

   sudo mysql --user=root –p

2. At the command prompt, execute the following command to change the password policy:

   SET GLOBAL validate_password_policy='LOW';

3. At the command prompt, execute the following command to exit out of MySQL:

   exit;

3.13 Install EDGE Application v18 – Part 2

This step needs to be done on or after December 17, 2016.

This step will guide you through setting up Part 2 of the EDGE application by executing steps detailed in the “EDGE Server Job Aid On-Premise EDGE Server Provisioning” document below, starting at Section 4.4, Step 16 all the way to the end of the document.

Follow the OP provisioning steps starting Section 4.4, Step 16 all the way to the end of the document, as detailed in the “EDGE Server Job Aid On-Premise EDGE Server Provisioning” published on REGTAP, to install and configure the EDGE Server application.

> **Note:** In order to run the Install command in Section 4.4 Step 16, the user should log in as MySQL root user. This should not be the same user as the user in the edge.properties file. If it is the same user as the user in the edge.properties file then you should create a new dbUser with root access.

3.14 Restore Data to MySQL

This step needs to be done on or after December 17, 2016.

Issuers can use custom or default schema names. This step will restore both to MySQL. The current default schema names include EDGE_SRVR_COMMON, EDGE_SRVR_PROD, and EDGE_SRVR_TEST, and default archive schema names include EDGE_SRVR_COMMON_YYYY, EDGE_SRVR_PROD_YYYY, and EDGE_SRVR_TEST_YYYY. Schemas that were altered in the “edge.properties” file on the EDGE server may have different names (ex. EDGE_SRVR_COMMON_12345), but will be restored via the same steps.

On the new server, perform the following steps for all schemas.

1. Using WinSCP or any file transfer utility, transfer the saved backup files from Step 3.3 to this new instance under {TMP_DIR}. {TMP_DIR} could be either /tmp or any location which is outside of /opt/edge, depending upon space allocation.

2. Identify the list of all schemas that were backed up on the old server.

3. Log in to MySQL.

4. At the command prompt, execute the following command for all schemas to drop any schemas created by the application setup.

   DROP SCHEMA <insert schema name>;

5. At the command prompt, execute the following command to create a shell schema for each schema:

   CREATE SCHEMA <insert schema name>;

6. At the command prompt, execute the following commands to restore data to the schemas from the backup files of the old server using the saved .sql files.

   USE <insert schema name>;
   source /tmp/<HIOSID.SchemaName.LOCAL_BACKUP.TodayDateandTime.sql>

7. Execute record counts again using queries in Appendix A.
8. Compare the record counts from step 7 to the counts prior to the upgrade. All table counts MUST match.

Note: If the counts do not match, issuers should reach out to the FMCC for troubleshooting at EDGE_Server_Data@cms.hhs.gov and include a subject line of "RHEL 7.3 Upgrade – Server Type <*insert AWS or OP*> – HIOS ID <*insert one (1) of your HIOS IDs*>".

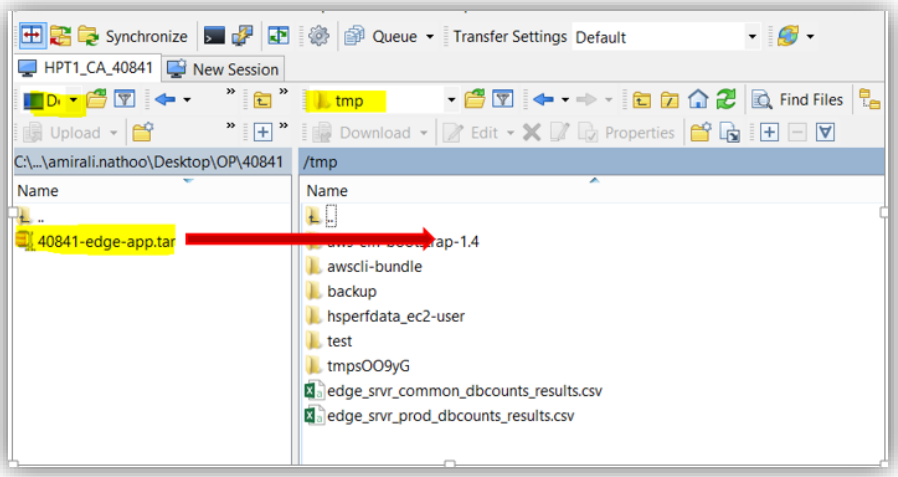
3.15 Restore Directories

This step needs to be done on or after December 17, 2016.

Note: This step must be performed before files are ingested on the upgraded server.

This step will restore ingest and tmp directories under /opt/edge from the server prior upgrade to the upgraded server. After this step, the new server will pick up any remote command released.

1. FTP the /opt/edge **<insert HIOS ID>-edge-app.tar** file from the saved location to the upgraded server under the **{TMP_DIR}/<issuer-id>** directory using WinSCP. {TMP_DIR} could be either /tmp or any location which is outside of /opt/edge, depending upon space allocation



2. Extract the tar to the {TMP_DIR}/<issuer-id> location. {TMP_DIR} could be either /tmp or any location which is outside of /opt/edge, depending upon space allocation.

   tar –xvf <insert HIOS ID>-edge-app.tar

```
[ec2-user@edgeserver-2906515 edge]$ tar -xvf 40841-edge-app.tar .
```

3. Execute the following copy commands to copy the ingest and tmp directories to the new installation.

cp –R {TMP_DIR}/<issuer-id>/ingest/* /opt/edge/ingest
cp –R {TMP_DIR}/<issuer-id>/tmp/* /opt/edge/tmp

3.16 Download Latest EDGE Version

This step needs to be done on or after December 17, 2016.

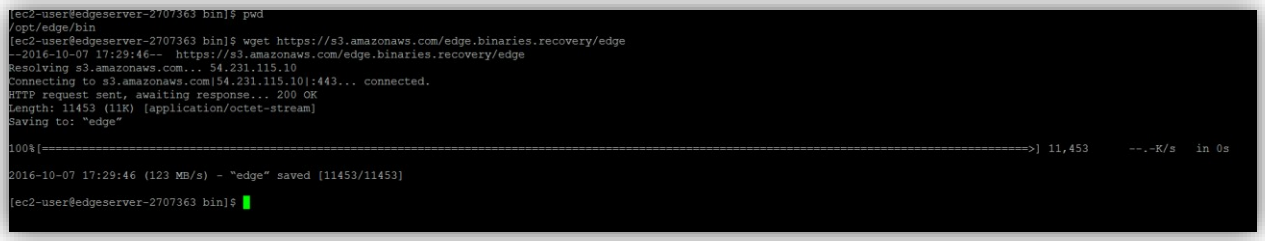
This step will download the latest EDGE version from the CMS AWS S3 bucket. There is a possibility of corruption if the file is stored on Windows and uploaded to Linux, which is addressed in the steps below.

1. At the command prompt, execute the following command:

   cd /opt/edge/bin

2. At the command prompt, execute the following command:

   sudo wget https://s3.amazonaws.com/edge.binaries.recovery/edge



3. Change the ownership to the user under which the EDGE application runs. Normally, it would be “edgeadm” for an OP server or ‘ec2-user’ for an AWS server. Check with your Linux Admin, the OS user name under which the EDGE application runs, before running the following command.

   chown <insert user>:<insert user> edge
   chmod 755 edge

   Example with “ec2-user”:

```
[ec2-user@edgeserver-2707363 bin]$ chown ec2-user:ec2-user edge
[ec2-user@edgeserver-2707363 bin]$ chmod 755 edge
```

3.17 Test Application

This step needs to be done on or after December 17, 2016.

At a minimum, test cases 1-3 should be executed to verify that your upgraded server is functioning properly. CMS also recommends executing test case 4 if enrollment (E), medical claim (M) and/or pharmacy (P) claim files are available.

Table 2 - Upgraded OP Server Test Cases

Test	Action	Expected Result
1	Execute the following command: **edge version**	The latest EDGE version is returned, which should match the version included in the latest "EDGE Server Maintenance Release Notes" as published on REGTAP.
2	Execute the following command: **edge report RA_RS_Transfer_Prelim 2016 prod**	The RA calculations should execute and the corresponding reports should be generated as expected.
3	Execute the following command: **edge report RI_Prelim 2016 prod**	The RI calculations should execute and the corresponding reports should be generated as expected.
4	Submit an E, M, and P record file to your test environment and execute the following command: **edge ingest**	The enrollment and claims should be accepted or rejected according to the EDGE Server Business Rules (ESBR) and outbound reports should be generated.

4. Provision a New OP Server with Upgraded Software Stack

The second approach is to provision a new RHEL 7.3 server and migrate the data and application to the new server from the old server.

The high level steps for this approach are:

Table 3 - Provision a New OP Server with Upgraded Software Steps

Step	Timing
1. Provision a New RHEL 7.3 Server.	On or after November 1, 2016
2. Uninstall MariaDB and Install MySQL 5.7.	On or after November 1, 2016
3. Configure MySQL 5.7.	On or after November 1, 2016
4. Install JDK or JRE 1.8.	On or after November 1, 2016
Note: Issuer cannot submit any data to their EDGE server between step 5 and step 18.	
5. Install EDGE Application v18 – Part 1.	On or after December 17, 2016
6. Configure Hosts and Network Files.	On or after December 17, 2016
7. Set Password Policy.	On or after December 17, 2016
8. Install EDGE Application v18 – Part 2.	On or after December 17, 2016
9. Identify and Backup Schemas.	On or after December 17, 2016

Step	Timing
10. Confirm that the Backup was Successfully Created.	On or after December 17, 2016
11. Save Backup Files.	On or after December 17, 2016
12. Backup Directories.	On or after December 17, 2016
13. Get Record Counts.	On or after December 17, 2016
14. Stop Communication between Old Server and CMS S3 Bucket.	On or after December 17, 2016
15. Restore Data to MySQL.	On or after December 17, 2016
16. Restore Directories.	On or after December 17, 2016
17. Download Latest EDGE Version.	On or after December 17, 2016
18. Test Application.	On or after December 17, 2016

4.1 Provision a New RHEL 7.3 Server

Set up a new server that has RHEL 7.3, JDK or JRE 1.8 and MySQL 5.7 build 16 or later (please do not jump to version 5.8 if it is made available), Community edition. Follow the standards and recommendations in the "DDC On-Premise EDGE Server Guidance Webinar Slides" published on REGTAP when provisioning a new OP server.

> **Note:** CMS has only tested the Community edition of MySQL 5.7.16. While CMS does not foresee any issues using Enterprise edition, CMS will not be able to provide support for the Enterprise edition**.**
>
> **Note:** The same IP address for the old server can be used for the new server, but only after the upgrade on the new server is complete. During the transition period, issuers must assign an interim IP for the new server. Issuers can choose to continue to use the new IP or switch to the old IP once transition is complete and the old server is shut down.
>
> **Note:** The same server name for the new OP server can only be used after the old server is shut down in order to avoid conflicts.

After the upgrade is complete, execute the following command to check the OS version.

cat /etc/redhat-release

```
[ec2-user@PERF-OP-LARGE ~]$ pwd
/home/ec2-user
[ec2-user@PERF-OP-LARGE ~]$ cat /etc/redhat-release
Red Hat Enterprise Linux Server release 7.3 (Maipo)
[ec2-user@PERF-OP-LARGE ~]$
```

4.2 Uninstall MariaDB and Install MySQL 5.7

This step will uninstall MariaDB and install the Community edition of MySQL 5.7 (issuers upgrading their Enterprise edition will need to reach out to MySQL for upgrade support). MySQL has documented the following steps to uninstall MariaDB (which is the default installation with RHEL 7.3) and to install MySQL, which can also be found at the following link: https://dev.mysql.com/doc/mysql-repo-excerpt/5.6/en/replace-third-party-yum.html.

Note: CMS has only tested the Community edition of MySQL 5.7.16. While CMS does not foresee any issues using the Enterprise edition, CMS will not be able to provide support for the Enterprise edition**.**

1. At the command prompt, execute the following commands in sequence for uninstalling MariaDB:
    a. **sudo yum list installed mariadb***
    b. **sudo yum-config-manager --disable mariadb**
    c. **sudo yum remove mariadb* -y**
    d. **sudo rm -rf /var/lib/mysql**
    e. **sudo rm /etc/my.cnf**

2. At the command prompt, execute the following commands in sequence for installing the Community edition of MySQL:
    a. **sudo yum -y localinstall https://dev.mysql.com/get/mysql57-community-release-el7-8.noarch.rpm**
    b. **sudo yum -y install mysql-community-server**
    c. **sudo yum -qy --enablerepo=remi,remi-test list mysql mysql-server**
    d. **sudo yum -qy --enablerepo=remi,remi-test install mysql mysql-server**
    e. **sudo service mysqld start**
    f. **sudo chkconfig --levels 235 mysqld on**
    g. **sudo /sbin/restorecon -R -v /var/lib/mysql**
    h. **sudo service mysqld restart**

4.3 Configure MySQL

This step will configure MySQL 5.7. Please note that this will be the minimal configuration needed to make MySQL 5.7 operational. Issuers may add additional configurations to meet their organizational policies.

1. Issuers must generate a password for the root user that contains at least one (1) lower and upper case letter, a number, a special character and is greater than eight (8) characters long. The password can be generated using OpenSSL and executed from the command line with the following command. Issuers are also free to use a different password generation tool that generates a password meeting the aforementioned criteria.

    openssl rand -base64 10

    Note: This is the MySQL root password. Please make note of it and store it outside of the server in a location accessible only to authorized MySQL administrators.

    ```
    [ec2-user@ip-10-0-1-126 edge]$ openssl rand -base64 10
    Vbuc9NJsMlwy7A==
    ```

2. At the command prompt, execute the following to find the root password MySQL was installed with. Please note that you do not need the password from step 1 for step 2:

    sudo grep 'temporary password' /var/log/mysqld.log

3. At the command prompt, execute the following command to connect to MySQL using the password it was installed with, identified in step 2:

   sudo mysql --user=root -p

4. At the command prompt, execute the following command to change the root user's password to the password that was generated in step 1:

   ALTER USER 'root'@'localhost' IDENTIFIED BY '<insert password generated in step 1>';

   At the command prompt, execute the following command to exit out of MySQL:

   exit;

5. At the command prompt, execute the following command to reconnect with the password set in step 4:

   sudo mysql --user=root -p

```
[ec2-user@ip-10-0-1-126 edge]$ sudo mysql -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 2
Server version: 5.7.16
```

6. Run the following command, which prints the MySQL version. The version should be 5.7.16. Please note that this version check is not applicable to Enterprise editions and only applicable to the Community edition.

   SELECT @@VERSION;

```
[ec2-user@edgeServer-84639 ~]$
[ec2-user@edgeServer-84639 ~]$
[ec2-user@edgeServer-84639 ~]$  mysql --host localhost --user=edgedbuser --password=KFkgIJ9t
mysql: [Warning] Using a password on the command line interface can be insecure.
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 246373
Server version: 5.7.16 MySQL Community Server (GPL)

Copyright (c) 2000, 2016, Oracle and/or its affiliates. All rights reserved.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
mysql>
mysql>
```

   At the command prompt, execute the following command to exit out of MySQL:

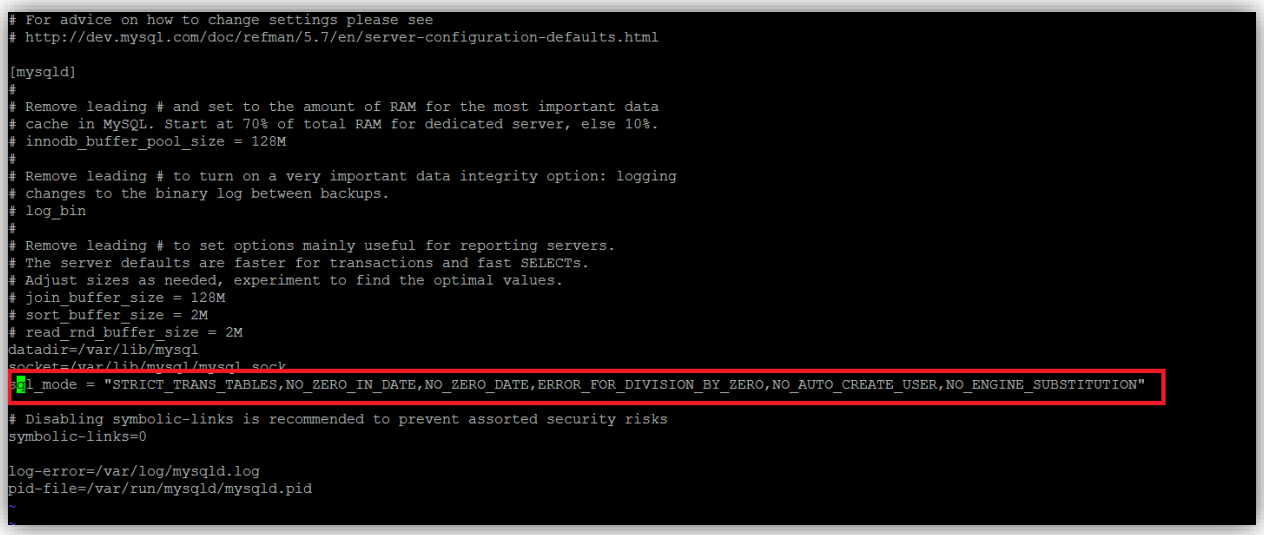
   exit;

7. At the command prompt, execute the following command in order to change the MySQL mode by editing the my.cnf:

   sudo vi /etc/my.cnf

8. Add the following line to the open my.cnf file:

   sql_mode = "STRICT_TRANS_TABLES,NO_ZERO_DATE,ERROR_FOR_DIVISION_BY_ZERO,NO_AUTO_CREATE_USER,NO_ENGINE_SUBSTITUTION"



   Click ESC and type **:wq** to exit the my.cnf file and save changes.

9. At the command prompt, execute the following command to restart MySQL:

   sudo service mysqld restart

4.4 Install JDK or JRE 1.8

This step will install JDK or JRE 1.8 using instructions published by Oracle.

1. Create the /opt/edge directory and grant permissions on it
   a. **sudo mkdir /opt/edge**
   b. **sudo chmod –R 755 /opt/edge**
   c. **cd /opt/edge**

2. At the command prompt, execute the following commands in sequence to install JDK or JRE 1.8:
   a. **sudo yum -y remove java**
   b. **sudo yum install wget –y**

c. **sudo wget --no-cookies --no-check-certificate --header "Cookie: gpw_e24=http%3A%2F%2Fwww.oracle.com%2F; oraclelicense=accept-securebackup-cookie" http://download.oracle.com/otn-pub/java/jdk/8u102-b14/jdk-8u102-linux-x64.rpm**
d. **sudo rpm -ivh /opt/edge/jdk-8u102-linux-x64.rpm***
e. **sudo rm -rf /usr/bin/java**
f. **sudo ln -s /usr/java/jdk1.8.0_102/bin/java /usr/bin/java**

3. Execute the following command to verify that the Java version is now 1.8:

    a. **java –version**

4.5 Install EDGE Application v18 – Part 1

This step needs to be done on or after December 17, 2016.

This step will guide you through setting up Part 1 of the EDGE application by executing steps detailed in the "EDGE Server Job Aid On-Premise EDGE Server Provisioning" document below.

1. Follow the OP provisioning steps from Section 3 up to Section 4.4, Step 15 as detailed in the "EDGE Server Job Aid On-Premise EDGE Server Provisioning" published on REGTAP, to install and configure the EDGE Server application. Please note the following:
    a. Download **only** the installation kit ("Instruction File" as shown in the below screenshot) from the ESM portal. **Do not** download the properties or keys. Downloading the keys will impact the functioning of the existing server.

    Note: Make sure to download (and use) the up-to-date installation kit on or after December 17, 2016 with file size of 52,730kb. Please note that the file size listed on the button is inaccurate.

Also, please note that TPA, submitter and approver users all have roles to get the installation kit.

   b. Get the edge.properties and edge.keys from the existing production server and FTP to this new server.
   c. When working on Section 4.2, upload the installation kit downloaded from ESM and the properties and key files (saved from the existing production server) to this server. The installation kit downloaded can be used for multiple servers in case the issuer has more than one (1) OP server.
   d. Execute steps starting with Section 3 all the way to Section 4.4, Step 15. **Do not execute any steps after that, or the installation will fail**.

2. Edit the /opt/edge/config/edge.properties file and move the following properties to the beginning of the file.

   batch_location=${EDGE_HOME}
   local_file_ingest=${batch_location}/ingest

   Click ESC and type **:wq** to exit the edge.properties file and save changes

   Note: If using a text editor like NotePad++ to edit the properties file, please ensure the EOL conversion is set to UNIX and not Windows. Having a Windows EOL conversion can cause issues while running edge commands. See Appendix B for steps to check/set EOL conversion.

4.6 Configure Hosts and Network Files

This step needs to be done on or after December 17, 2016.

This step will configure hosts and network files on the new server. Please contact the FMCC EDGE mailbox if you have questions about this step.

1. Execute the following steps to configure hosts file:
   a. At the command prompt, execute the following command to edit the hosts file:

      vi /opt/edge/install/hosts

   b. Replace “@EdgeServerId@” in the hosts file with the HIOS ID for the server.
   c. At the command prompt, execute the following command:

      sudo cp /opt/edge/install/hosts /etc/hosts

   d. Verify the contents of /etc/hosts is the same as that of /opt/edge/install/hosts, with the HIOS ID of the server substituted for “@EdgeServerId@”.

      diff /etc/hosts /opt/edge/install/hosts

2. Execute the following steps to configure the network file:
   a. At the command prompt, execute the following command to edit the network file:

      vi /opt/edge/install/network

   b. Replace “@EdgeServerId@” in the network file with the HIOS ID for the server.
   c. At the command prompt, execute the following command:

sudo cp /opt/edge/install/network /etc/sysconfig/network

d. Verify the contents of /etc/sysconfig/network is the same as that of /opt/edge/install/network, with the HIOS ID of the server substituted for "@EdgeServerId@".

diff /etc/sysconfig/network /opt/edge/install/network

3. Execute the following steps to configure the hostname:
   a. At the command prompt, execute the following command to edit the network file:

      vi /opt/edge/install/hostname

   b. Replace "@EdgeServerId@" in the network file with the HIOS ID for the server.
   c. At the command prompt, execute the following command:

      sudo cp /opt/edge/install/hostname /etc/hostname

   d. Verify the contents of /etc/hostname are the same as that of /opt/edge/install/hostname, with the HIOS ID of the server substituted for "@EdgeServerId@".

      diff /etc/hostname /opt/edge/install/hostname

4. Reboot instance
   a. Execute the following command:

      sudo reboot

4.7 Set Password Policy

This step needs to be done on or after December 17, 2016.

1. At the command prompt, execute the following command to connect to MySQL using the password it was installed with:

   sudo mysql --user=root –p

2. At the command prompt, execute the following command to change the password policy

   SET GLOBAL validate_password_policy='LOW';

3. At the command prompt, execute the following command to exit out of MySQL:

   exit;

4.8 Install EDGE Application v18 – Part 2

This step needs to be done on or after December 17, 2016.

This step will guide you through setting up Part 2 of the EDGE application by executing steps detailed in the “EDGE Server Job Aid On-Premise EDGE Server Provisioning” document below, starting at Section 4.4, Step 16 all the way to the end of the document.

1. Follow the OP provisioning steps starting Section 4.4, Step 16 all the way to the end of the document, as detailed in the “EDGE Server Job Aid On-Premise EDGE Server Provisioning” published on REGTAP, to install and configure the EDGE Server application.

   Note: In order to run the Install command in Section 4.4 Step 16, the user should log in as MySQL root user. This should not be the same user as the user in the edge.properties file. If it is the same user as the user in the edge.properties file then you should create a new dbUser with root access.

4.9 Identify and Back up Schemas

This step needs to be done on or after December 17, 2016.

This step will identify the schemas that you will need to back up and later restore on your server.

1. Log in to your old OP server.
2. Identify the schemas to back up. Log in to MySQL to identify the schemas.

Note: You will need to back up all schemas other than the “information_schema” and “test” schema shown below. Please note that you do need to back up and restore the “EDGE_SRVR_TEST” current and archived schemas if you wish to reference them in future. **CMS will not be able to recover the data if the schemas are not backed up.**

```
mysql> show schemas;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| EDGE_SRVR_COMMON   |
| EDGE_SRVR_PROD     |
| EDGE_SRVR_TEST     |
| test               |
+--------------------+
```

3. Exit out of MySQL.

4. At the Linux command prompt, execute the following command in order to navigate to the bin folder:

   cd /opt/edge/bin

5. At the command prompt, execute the following command to back up your schemas:

   ./edge dbbackup

6. Wait for the backup process to complete. The Linux command line will appear when the backup is complete, allowing a user to enter new commands.

4.10 Confirm that the Backup was Successfully Created

This step needs to be done on or after December 17, 2016.

This step will confirm that the backup was successfully created in the backup folder.

1. Log in to the OP server.
2. At the command prompt, execute the following command to navigate to the backup folder:

   cd /opt/edge/ingest/backup

3. Verify that the backup for all of your schemas were created with the following naming convention: *HIOSID.SchemaName.LOCAL_BACKUP.TodayDateandTime.sql*

   ls -ltr

```
[ec2-user@HPT1_OP_80991 backup]$ ll
total 64396
-rw-rw-r--. 1 ec2-user ec2-user      791 Oct  6 13:17 80991_EDGE_SRVR_COMMON_2014.LOCAL_BACKUP.D10062015T011738.sql
-rw-rw-r--. 1 ec2-user ec2-user 22914528 Oct  6 13:17 80991_EDGE_SRVR_COMMON.LOCAL_BACKUP.D10062015T011738.sql
-rw-rw-r--. 1 ec2-user ec2-user      789 Oct  6 13:17 80991_EDGE_SRVR_PROD_2014.LOCAL_BACKUP.D10062015T011738.sql
-rw-rw-r--. 1 ec2-user ec2-user    78009 Oct  6 13:17 80991_EDGE_SRVR_PROD.LOCAL_BACKUP.D10062015T011742.sql
-rw-rw-r--. 1 ec2-user ec2-user      789 Oct  6 13:17 80991_EDGE_SRVR_TEST_2014.LOCAL_BACKUP.D10062015T011738.sql
-rw-rw-r--. 1 ec2-user ec2-user    78009 Oct  6 13:17 80991_EDGE_SRVR_TEST.LOCAL_BACKUP.D10062015T011741.sql
```

Note: The date and time on the backup files should be today's date and time.

4.11 Save Backup Files

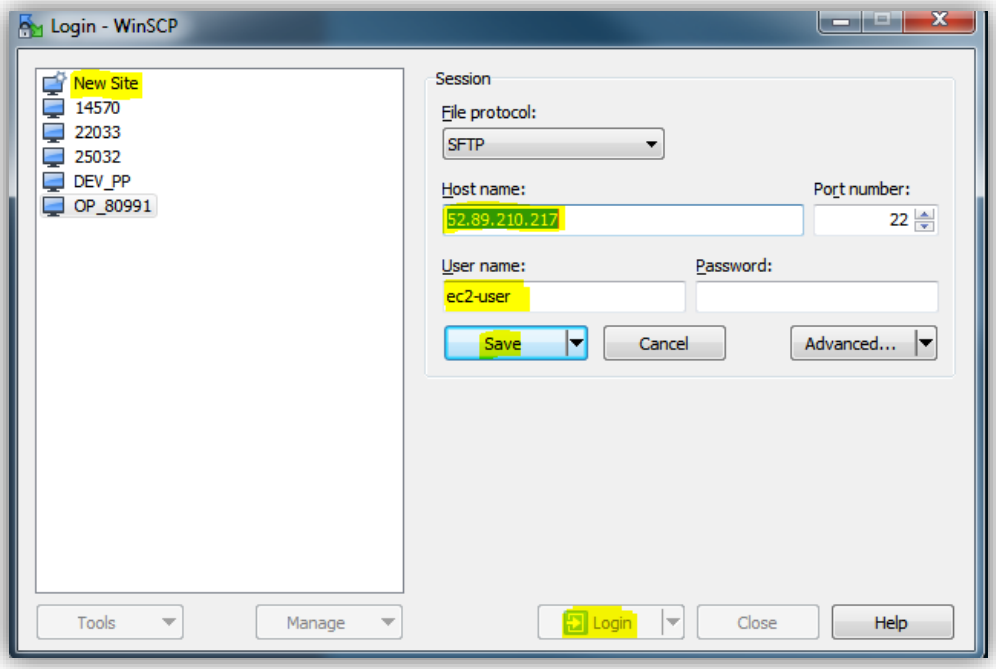
This step needs to be done on or after December 17, 2016.

This step will save your schema backup files outside of your server.

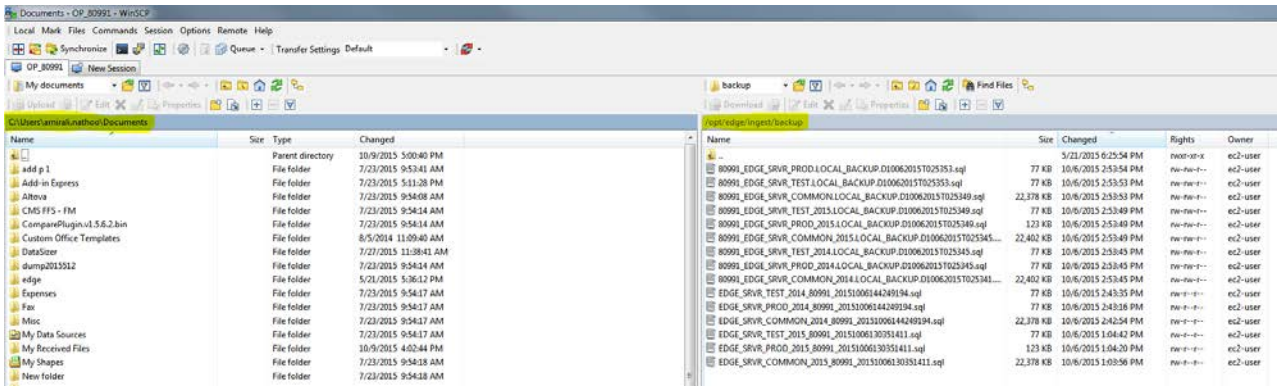
Note: It is important that you download and store the generated backup in a secure location off of your server that meets your internal IT backup policies. Additionally, you should ensure that they meet all CMS' data retention requirements outlined in the "Backup Policy and User Guide for AWS and On-Premise EDGE Servers" published on REGTAP. Only the MySQL schemas are backed up

with the “edge dbbackup” command, which does not include the inbound or outbound XML files. As stated in the backup policy, retention of inbound and outbound data files that contributed to the final calculations is a recommended best practice. Before moving to the next step, CMS recommends that issuers save the inbound XML files to an external location in the event the backup and restore fails and data needs to be resubmitted. The outbound files can additionally be backed up to troubleshoot why data was accepted or rejected, but this is not required. **CMS will not be able to recover the data if the data are not backed up.**

1. Retrieve your IP Address.
2. Login to WinSCP.



3. Select the right panel window that is connected to your server.
4. Navigate to the following directory: /opt/edge/ingest/backup.



5. Select the left panel window that is connected to directories off of your server.
6. Navigate to the location you want to save your files.
7. Drag the files from the right window to the location on the left.

4.12 Backup Directories

This step needs to be done on or after December 17, 2016.

This step will create a backup of the /opt/edge directory on the existing RHEL 6.x server and move the backup to a storage location outside of the OP EDGE Server.

1. At the command prompt, execute the following command to navigate to the backup folder:

   cd /opt/edge

```
[ec2-user@edgeserver-2906515 /]$ cd /opt/edge
[ec2-user@edgeserver-2906515 edge]$
```

2. At the command prompt, execute the following command to back up the EDGE folder:

   tar -cvf <insert HIOS ID>-edge-app.tar *

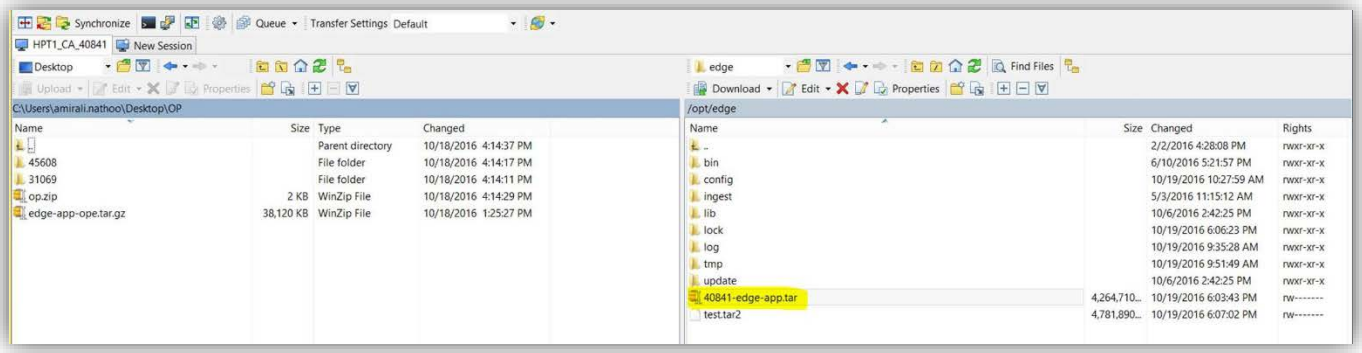
```
[ec2-user@edgeserver-2906515 edge]$ cd /opt/edge
[ec2-user@edgeserver-2906515 edge]$ tar -cvf 40841-edge-app.tar *
```

3. At the command prompt, execute the following command to validate that the backup named "<insert HIOS ID>-edge-app.tar" was created:

   ls -ltr

```
update/sql/common/02_edge_refdata_ddl.sql
update/sql/common/01_edge_batchjob_ddl.sql
update/sql/issuer/
update/sql/issuer/01_edge_appdata_ddl.sql
You have mail in /var/spool/mail/ec2-user
[ec2-user@edgeserver-2906515 edge]$ ls -ltr
total 4264756
drwxr-xr-x. 8 ec2-user ec2-user       4096 May  3 11:15 ingest
drwxr-xr-x. 2 ec2-user ec2-user       4096 Jun 10 17:21 bin
drwxr-xr-x. 2 ec2-user ec2-user      12288 Oct  6 14:42 lib
drwxr-xr-x. 6 ec2-user ec2-user       4096 Oct  6 14:42 update
drwxr-xr-x. 2 ec2-user ec2-user       4096 Oct 19 09:35 log
drwxr-xr-x. 2 ec2-user ec2-user       4096 Oct 19 09:51 tmp
drwxr-xr-x. 2 ec2-user ec2-user       4096 Oct 19 10:27 config
drwxr-xr-x. 2 ec2-user ec2-user       4096 Oct 19 18:28 lock
-rw-------. 1 ec2-user ec2-user 4367063040 Oct 19 18:28 40841-edge-app.tar
[ec2-user@edgeserver-2906515 edge]$
```

4. FTP this tar file to a location outside of the OP EDGE server. FTP utilities like WinSCP can be used as shown in the previous step.



4.13 Get Record Counts

This step needs to be done on or after December 17, 2016.

This step will guide you through getting counts of the records on your server, which will be used in step 4.15 to verify that the data was restored successfully.

1. Login into MySQL as root user and get counts of all the tables in the database and extract to a CSV file.
2. FTP the CSV file to a storage location outside of the OP EDGE Server. FTP utilities, like WinSCP, can be used as shown in a previous step. See Appendix A for queries to get counts on the common and application schemas.

4.14 Stop Communication between Old Server and CMS S3 Bucket

This step needs to be done on or after December 17, 2016.

This step will stop the communication of your old server with the CMS S3 Bucket to prevent commands from being sent to multiple servers and receiving duplicate data.

1. At the command prompt, navigate to the “config” folder with the following command:

   cd /opt/edge/config

2. At the command prompt, execute the following command to edit the edge.properties file:

   vi edge.properties

3. Add the following property to the end of the open “edge.properties” file:

   edge_env=test

```
aws_s3_outbox=cms.edge.ingest.outbox.363312733669
aws_s3_archive=cms.edge.ingest.archive.363312733669
aws_s3_logs=cms.edge.ingest.logs.363312733669
aws_s3_backup=cms.edge.ingest.backup.363312733669
showBuildNumber=true
#phoneHomeResponse=phoneHomeResponse_16.0.0.1.json
#edge_type=OP
edge_env=test
~
```

4. Press the ESC key, then colon (:), and then wq to save and exit.

```
    -> (SELECT COUNT(*) FROM ENRLMT_MNT_TYP),
    -> (SELECT COUNT(*) FROM EXCTN_ZN_TYPE),
    -> (SELECT COUNT(*) FROM GNDR_TYPE),
    -> (SELECT COUNT(*) FROM INFANT_DIAG_CODES),
    -> (SELECT COUNT(*) FROM INSRD_MMBR_STUS_TYPE),
    -> (SELECT COUNT(*) FROM INSRNC_PLAN),
    -> (SELECT COUNT(*) FROM INT_CNTRL_RLS_NMBR),
    -> (SELECT COUNT(*) FROM ISSR_ORG),
    -> (SELECT COUNT(*) FROM ISSR_PLCY_RATG_AREA),
    -> (SELECT COUNT(*) FROM MEDICARE_MAX_OUT_OF_POCKET),
    -> (SELECT COUNT(*) FROM ORG_TYPE),
    -> (SELECT COUNT(*) FROM PRCSG_CONFIG_PARM),
    -> (SELECT COUNT(*) FROM PRVDR_QLFYR_TYPE),
    -> (SELECT COUNT(*) FROM RA_REASON_CODE),
    -> (SELECT COUNT(*) FROM REMOTE_CMD_QUEUE),
    -> (SELECT COUNT(*) FROM REV_CD_TYPE),
    -> (SELECT COUNT(*) FROM RISK_ADJSTMT_CLM_FLTRING_STUS_TYPE),
    -> (SELECT COUNT(*) FROM SBMTTING_ORG),
    -> (SELECT COUNT(*) FROM SERVICE_POLICY_TYPE),
    -> (SELECT COUNT(*) FROM SRVC_CD_MDFR_TYPE),
    -> (SELECT COUNT(*) FROM SRVC_CD_TYPE),
    -> (SELECT COUNT(*) FROM SRVC_CD_TYPE_2014),
    -> (SELECT COUNT(*) FROM SRVC_CD_TYPE_2015),
    -> (SELECT COUNT(*) FROM SRVC_PLC_TYPE),
    -> (SELECT COUNT(*) FROM SRVC_TYPE),
    -> (SELECT COUNT(*) FROM STATE_CALC_TYPE_INTR),
    -> (SELECT COUNT(*) FROM SUBMSN_PRCSG_STUS_TYPE),
    -> (SELECT COUNT(*) FROM SUBMSN_STUS_TYPE),
    -> (SELECT COUNT(*) FROM SUBMSN_TYPE),
    -> (SELECT COUNT(*) FROM TOBACCO_USE_TYPE),
    -> (SELECT COUNT(*) FROM USER_FEE_RATE),
    -> (SELECT COUNT(*) FROM VOID_RPLC_IND_TYPE),
    -> (SELECT COUNT(*) FROM ZIP_CD)
    -> INTO OUTFILE '/tmp/edge_srvr_common_dbcounts_results.csv'
    -> FIELDS TERMINATED BY ',' OPTIONALLY ENCLOSED BY '"'
    -> LINES TERMINATED BY '\N';
Query OK, 1 row affected (0.02 sec)
```

4.15 Restore Data to MySQL

This step needs to be done on or after December 17, 2016.

Issuers can use custom or default schema names. This step will restore both to MySQL. The current default schema names include EDGE_SRVR_COMMON, EDGE_SRVR_PROD, and EDGE_SRVR_TEST, and default archive schema names include EDGE_SRVR_COMMON_YYYY, EDGE_SRVR_PROD_YYYY, and EDGE_SRVR_TEST_YYYY. Schemas that were altered in the “edge.properties” file on the EDGE server may have different names (ex. EDGE_SRVR_COMMON_12345), but will be restored via the same steps.

Note: All prior year data that was archived on the prior server must be restored to the new server.

On the new server, perform the following steps for all schemas.

1. Using WinSCP or any file transfer utility, transfer the saved backup files from Step 4.11 to this new server under {TMP_DIR}. {TMP_DIR} could be either /tmp or any location which is outside of /opt/edge, depending upon space allocation

2. Identify the list of all schemas that were backed up on the old server.

3. Access default MySQL 'root' credentials:
   cd /opt/edge/config
   ls –lart
   cat .edge.root file to get MySQL root account password.

```
[ec2-user@edgeServer-45515 config]$ cd /opt/edge/config
[ec2-user@edgeServer-45515 config]$ ls -lart
total 28
-rwxr-xr-x.  1 ec2-user ec2-user   98 Dec  4 15:35 edge.keys
-rwxr-xr-x.  1 ec2-user ec2-user    0 Dec  4 15:47 completeConfiguration
-rwxr-xr-x.  1 ec2-user ec2-user   12 Dec  4 15:50 .edge.root
-rwxr-xr-x.  1 ec2-user ec2-user 2246 Dec  4 15:54 logback.xml.bak
-rwxr-xr-x.  1 ec2-user ec2-user 1145 Dec  5 02:25 edge.properties
-rw-r--r--.  1 ec2-user ec2-user 2246 Dec 12 10:25 logback.xml
drwxr-xr-x. 13 ec2-user ec2-user 4096 Dec 12 10:27 ..
drwxr-xr-x.  2 ec2-user ec2-user 4096 Dec 13 08:13 .
[ec2-user@edgeServer-45515 config]$
```

4. Login into MySQL using 'root' user account using the following command and entering MySQL 'root' password:

   mysql -u root –p

```
[ec2-user@edgeServer-45515 config]$ mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 137323
Server version: 5.7.16 MySQL Community Server (GPL)

Copyright (c) 2000, 2016, Oracle and/or its affiliates. All rights reserved.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```

5. Provide grants to {db_user} defined in edge.properties to the archive schemas by executing the following SQL(s):

   Note: In the below example, default DB User ID (edgedbuser) is used as an example.

GRANT ALL PRIVILEGES ON `EDGE_SRVR_COMMON_2014`.* TO 'edgedbuser'@'localhost' ;

GRANT ALL PRIVILEGES ON `EDGE_SRVR_TEST_2014`.* TO 'edgedbuser'@'localhost' ;

GRANT ALL PRIVILEGES ON `EDGE_SRVR_PROD_2014`.* TO 'edgedbuser'@'localhost' ;

GRANT ALL PRIVILEGES ON `EDGE_SRVR_COMMON_2015`.* TO 'edgedbuser'@'localhost' ;

GRANT ALL PRIVILEGES ON `EDGE_SRVR_TEST_2015`.* TO 'edgedbuser'@'localhost' ;

GRANT ALL PRIVILEGES ON `EDGE_SRVR_PROD_2015`.* TO 'edgedbuser'@'localhost' ;

```
mysql>  GRANT ALL PRIVILEGES ON `EDGE_SRVR_COMMON_2014`.* TO 'edgedbuser'@'localhost' ;
 GRANT ALL PRIVILEGES ON `EDGE_SRVR_TEST_2014`.* TO 'edgedbuser'@'localhost' ;
Query OK, 0 rows affected (0.00 sec)

mysql>  GRANT ALL PRIVILEGES ON `EDGE_SRVR_TEST_2014`.* TO 'edgedbuser'@'localhost' ;
Query OK, 0 rows affected (0.01 sec)

mysql>  GRANT ALL PRIVILEGES ON `EDGE_SRVR_PROD_2014`.* TO 'edgedbuser'@'localhost' ;
Query OK, 0 rows affected (0.00 sec)

mysql>
mysql>  GRANT ALL PRIVILEGES ON `EDGE_SRVR_COMMON_2015`.* TO 'edgedbuser'@'localhost' ;
 GRANT ALL PRIVILEGES ON `EDGE_SRVR_TEST_2015`.* TO 'edgedbuser'@'localhost' ;
Query OK, 0 rows affected (0.00 sec)

mysql>  GRANT ALL PRIVILEGES ON `EDGE_SRVR_TEST_2015`.* TO 'edgedbuser'@'localhost' ;
Query OK, 0 rows affected (0.00 sec)

mysql>  GRANT ALL PRIVILEGES ON `EDGE_SRVR_PROD_2015`.* TO 'edgedbuser'@'localhost' ;
Query OK, 0 rows affected (0.00 sec)

mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.00 sec)
```

The following steps are applicable ONLY to the issuers, who have defined {CUSTOM} schemas in edge.properties.

GRANT ALL PRIVILEGES ON `EDGE_SRVR_COMMON_{CUSTOM}_2014`.* TO 'edgedbuser'@'localhost' ;

GRANT ALL PRIVILEGES ON `EDGE_SRVR_TEST_{CUSTOM}_2014`.* TO 'edgedbuser'@'localhost' ;

GRANT ALL PRIVILEGES ON `EDGE_SRVR_PROD_{CUSTOM}_2014`.* TO 'edgedbuser'@'localhost' ;

GRANT ALL PRIVILEGES ON `EDGE_SRVR_COMMON_{CUSTOM}_2015`.* TO 'edgedbuser'@'localhost' ;

GRANT ALL PRIVILEGES ON `EDGE_SRVR_TEST_{CUSTOM}_2015`.* TO 'edgedbuser'@'localhost' ;

GRANT ALL PRIVILEGES ON `EDGE_SRVR_PROD_{CUSTOM}_2015`.* TO 'edgedbuser'@'localhost' ;

6. Login into MySQL with {db_user}, by default it would be 'edgedbuser'.

7. At the command prompt, execute the following command for all schemas to drop any schemas created by the application setup.

   DROP SCHEMA <insert schema name>;

8. At the command prompt, execute the following command to create a shell schema for each schema:

   CREATE SCHEMA <insert schema name>;

9. At the command prompt, execute the following commands to restore data to the schemas from the backup files of the old server using the saved .sql files.

   USE <insert schema name>;
   source /tmp/<HIOSID.SchemaName.LOCAL_BACKUP.TodayDateandTime.sql>

10. Execute record counts again using queries in Appendix A.

11. Compare the record counts from step 10 to the counts prior to the upgrade. All table counts MUST match.

Note: If the counts do not match, issuers should reach out to the FMCC for troubleshooting at EDGE_Server_Data@cms.hhs.gov and include a subject line of "RHEL 7.3 Upgrade – Server Type <*insert AWS or OP*> – HIOS ID <*insert one (1) of your HIOS IDs*>".

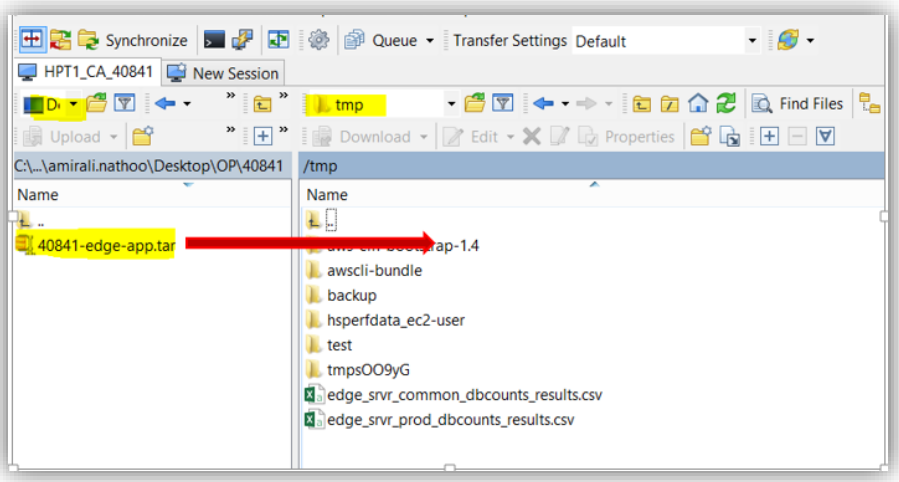
4.16 Restore Directories

This step needs to be done on or after December 17, 2016.

Note: This step must be performed before files are ingested on the new server.

This step will restore ingest and tmp directories under /opt/edge from the old server to the new server. After this step, the new server will pick up any remote command released.

1. FTP the /opt/edge **<insert HIOS ID>-edge-app.tar** file from the old server to the new server under the {TMP_DIR}/**<issuer-id>** directory using WinSCP. {TMP_DIR} could be either /tmp or any location which is outside of /opt/edge, depending upon space allocation



2. Extract the tar to the {TMP_DIR}/<issuer-id> location. {TMP_DIR} could be either /tmp or any location which is outside of /opt/edge, depending upon space allocation.

   tar –xvf <insert HIOS ID>-edge-app.tar

```
[ec2-user@edgeserver-2906515 edge]$ tar -xvf 40841-edge-app.tar .
```

3. Execute the following copy commands to copy the ingest and tmp directories to the new installation.

   cp –R {TMP_DIR}/<issuer-id>/ingest/* /opt/edge/ingest
   cp –R {TMP_DIR}/<issuer-id>/tmp/* /opt/edge/tmp

4.17 Download Latest EDGE Version

This step needs to be done on or after December 17, 2016.

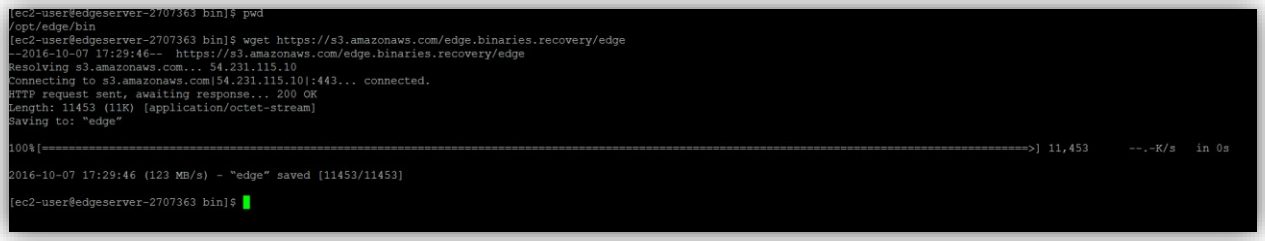
This step will download the latest EDGE version from the CMS AWS S3 bucket. There is a possibility of corruption if the file is stored on Windows and uploaded to Linux, which is addressed in the steps below.

1. At the command prompt, execute the following command:

   cd /opt/edge/bin

2. At the command prompt, execute the following command:

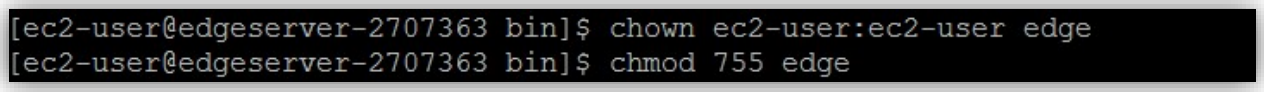
sudo wget https://s3.amazonaws.com/edge.binaries.recovery/edge



3. Change the ownership to the user under which the EDGE application runs. Normally, it would be “edgeadm” for an OP server or ‘ec2-user’ for AWS server. Check with your Linux Admin, the OS user name under which the EDGE application runs, before running the following command.

   chown <insert user>:<insert user> edge
   chmod 755 edge

   Example with “ec2-user”:



4.18 Test Application

This step needs to be done on or after December 17, 2016.

At a minimum, test cases 1-3 should be executed to verify that your upgraded server is functioning properly. CMS also recommends executing test case 4 if enrollment (E), medical claim (M) and/or pharmacy (P) claim files are available.

Table 4 - Newly Provisioned OP Server Test Cases

Test	Action	Expected Result
1	Execute the following command: **edge version**	The latest EDGE version is returned, which should match the version included in the latest “EDGE Server Maintenance Release Notes” as published on REGTAP.
2	Execute the following command: **edge report RA_RS_Transfer_Prelim 2016 prod**	The RA calculations should execute and the corresponding reports should be generated as expected.
3	Execute the following command: **edge report RI_Prelim 2016 prod**	The RI calculations should execute and the corresponding reports should be generated as expected.
4	Submit an E, M and P record file to your test environment and execute the following command: **edge ingest**	The enrollment and claims should be accepted or rejected according to the Business Rules and outbound reports should be generated.

5. Upgrade an Existing AWS EDGE Server

The first approach is to upgrade an existing AWS instance:

- RHEL 6.x server to RHEL 7.3
- MySQL 5.x to 5.7
- JDK 1.x to 1.8

The high level steps for this approach are:

Table 5 - Upgrade an Existing AWS EDGE Server

Step	Timing
Note: Issuer cannot submit any data to their EDGE server between step 1 and step 10.	
1. Back up Schemas.	On or after December 17, 2016
2. Confirm the Backup was Successfully Created.	On or after December 17, 2016
3. Save your Backup Files from an AWS Server.	On or after December 17, 2016
4. Back up Directories.	On or after December 17, 2016
5. Get Record Counts.	On or after December 17, 2016
6. Un-provision Instance	On or after December 17, 2016
7. Confirm Newly Provisioned EDGE Instance.	On or after December 17, 2016
8. Restore Directories.	On or after December 17, 2016
9. Restore Data to MySQL.	On or after December 17, 2016
10. Test Application.	On or after December 17, 2016

5.1 Back up Schemas

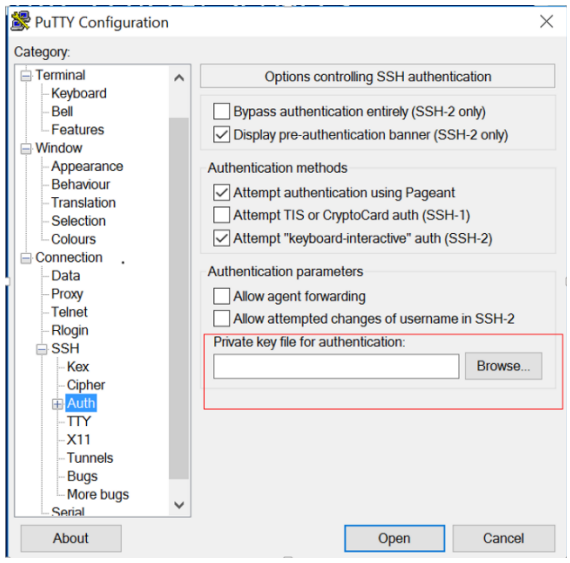
This step needs to be done on or after December 17, 2016.

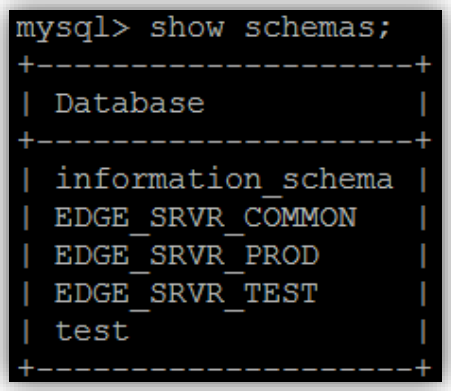
This step will guide you through executing the local backup command.

1. Log in to your AWS instance.
2. Identify the schemas to backup.
   At the Linux command prompt, execute the following command: **show schemas**

Note: You will need to back up all schemas other than the “information_schema” and “test” schema shown below. Please note that you do need to back up and restore the “EDGE_SRVR_TEST” current and archived schemas if you wish to reference them in future. **CMS will not be able to recover the data if the schemas are not backed up.**

Note: Please make sure to capture the file path below from PuTTY as this location stores the PPK file that you will need again after the server is re-provisioned. (Section 5.7)





3. At the Linux command prompt, execute the following command: **edge dbbackup**
4. Wait for the backup process to complete (the Linux command line will appear when the backup is complete, allowing a user to enter new commands).

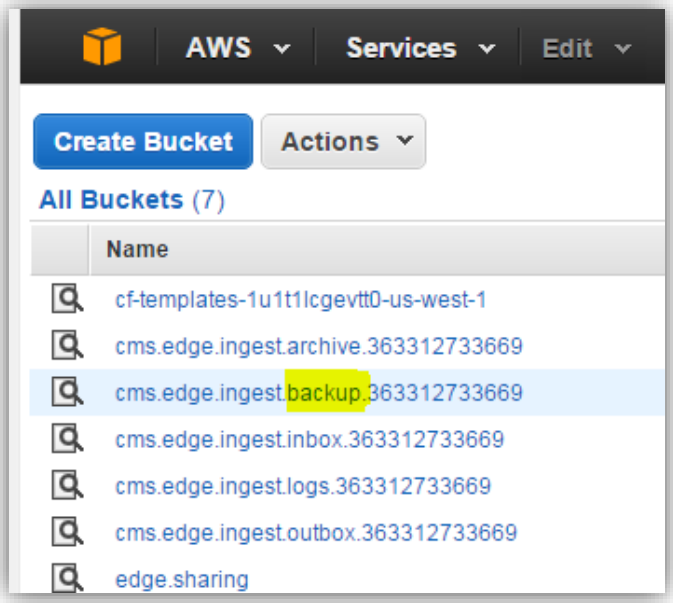
5.2 Confirm the Backup was Successfully Created

This step needs to be done on or after December 17, 2016.

This step will guide you through confirming that the backup was successfully created in the AWS Backup folder in S3.

1. Log in to the AWS Website. The link will be the same one (1) used to ingest your XML files.
2. Navigate to the S3 folder on the home page.

3. Inside the S3 folder, navigate to the backup folder link.



4. Select your server ID to enter the folder.
5. Verify that your backup is visible inside the folder.

   Verify the backup for all your schemas are created with the following naming convention: *IssuerID.SchemaName.LOCAL_BACKUP.TodayDateandTime.sql*

Note: The date and time on the backup files should be today's date and time.

5.3 Save your Backup Files from an AWS Server

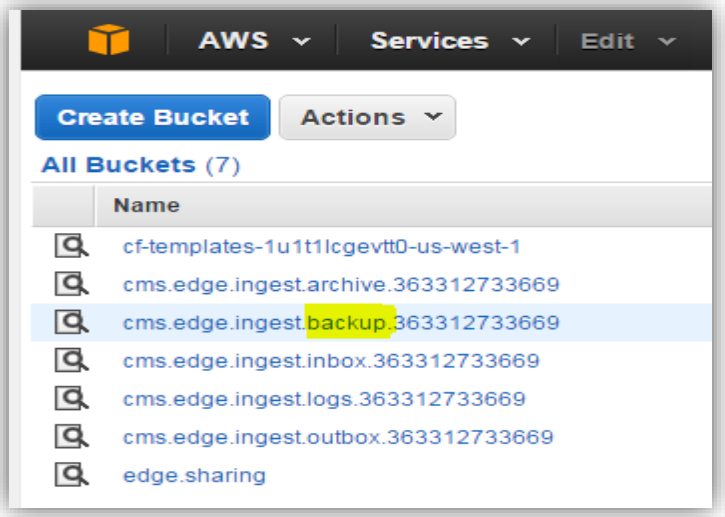
This step needs to be done on or after December 17, 2016.

Note: It is important that issuers download and store the generated backup in a secure location that meets their internal IT backup policies. Additionally, issuers should ensure that they meet all data retention requirements outlined in the "Backup Policy and User Guide for AWS and On-Premise EDGE Servers" published on REGTAP. Only the MySQL schemas are backed up with the **edge dbbackup** command. **CMS will not be able to recover the data if the data is not backed up.**

This step will guide you through saving the backup files that are generated.

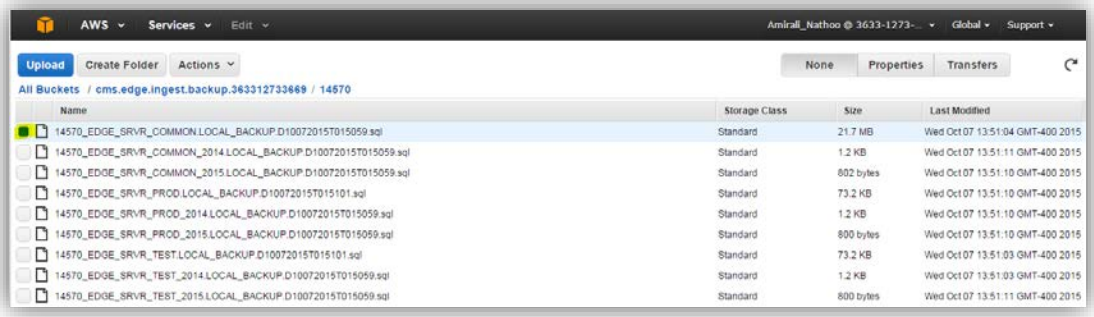
1. Login to the AWS website. The link will be the same one (1) used to ingest your XML files.
2. Navigate to the S3 folder on the home page.

3. Inside the S3 folder, navigate to the backup folder link.

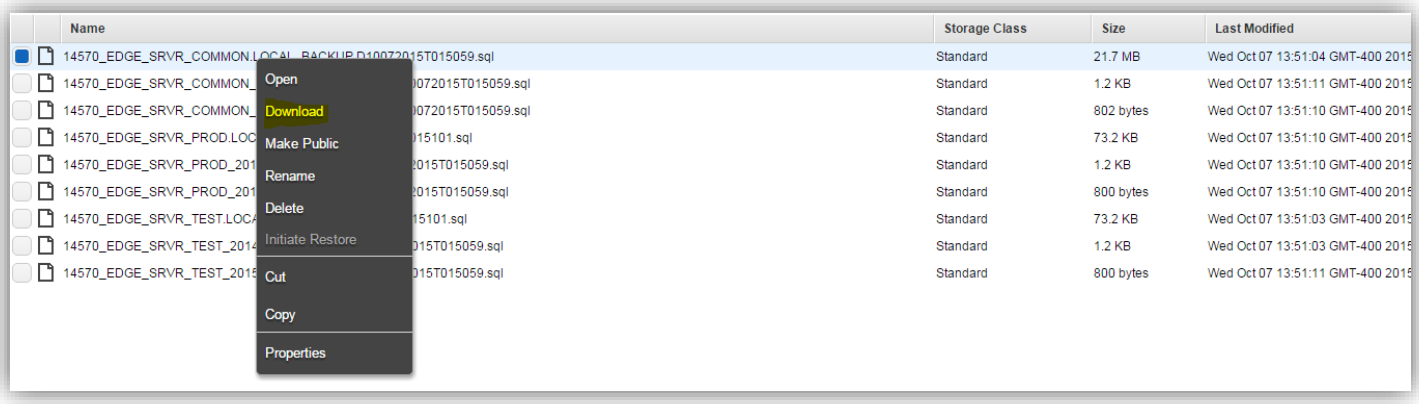


4. Select your server ID to enter the folder.
5. Select the backup file by selecting the square box on the left hand corner in front of the files.

Note: In this step, all files cannot be downloaded at once. Files must be selected and downloaded individually.

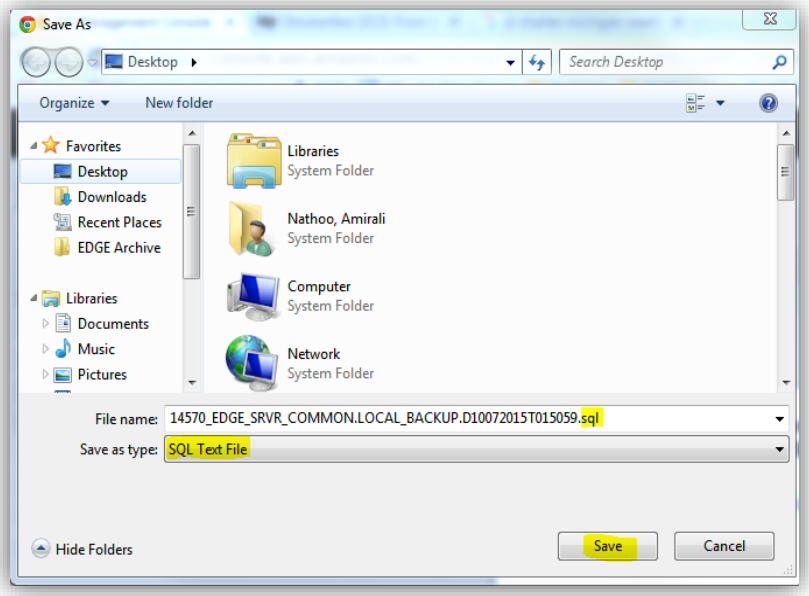


6. Right-click the selected file and select the “Download” link.



7. Right-click the “Download” link displayed and select “Save link as...”.

8. A window prompt will be displayed to save your file in the secure location of your choice. Select the location and select save. Make sure the file is saved as a .sql type.



5.4 Back up Directories

This step needs to be done on or after December 17, 2016.

This step will create a backup of the /opt/edge directory on the existing RHEL 6.x server and move the backup to a storage location outside of the AWS EDGE Server.

1. At the command prompt, execute the following command to navigate to the backup folder:

   cd /opt/edge

```
[ec2-user@edgeserver-2906515 /]$ cd /opt/edge
[ec2-user@edgeserver-2906515 edge]$
```

2. At the command prompt, execute the following command to back up the EDGE folder:

   tar -cvf <insert HIOS ID>-edge-app.tar *

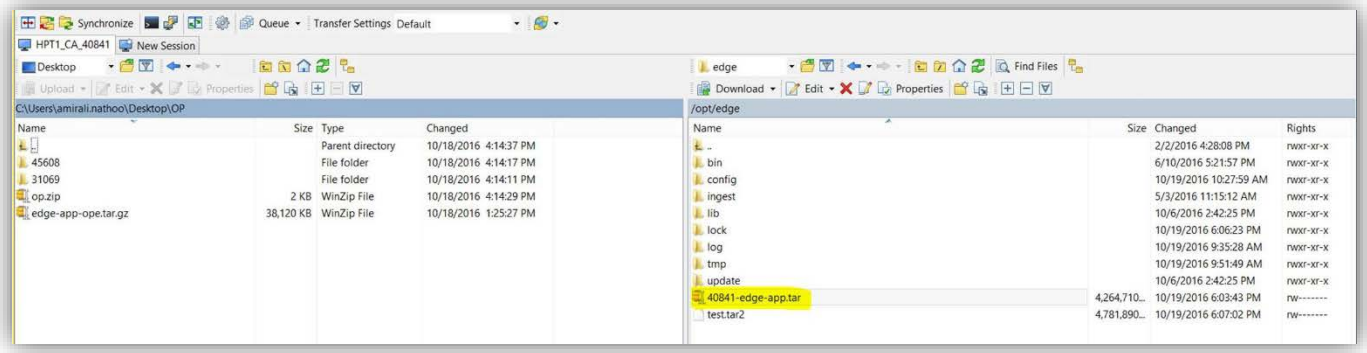
```
[ec2-user@edgeserver-2906515 edge]$ cd /opt/edge
[ec2-user@edgeserver-2906515 edge]$ tar -cvf 40841-edge-app.tar *
```

3. At the command prompt, execute the following command to validate that the backup named "<insert HIOS ID>-edge-app.tar" was created:

   ls -ltr

```
update/sql/common/02_edge_refdata_ddl.sql
update/sql/common/01_edge_batchjob_ddl.sql
update/sql/issuer/
update/sql/issuer/01_edge_appdata_ddl.sql
You have mail in /var/spool/mail/ec2-user
[ec2-user@edgeserver-2906515 edge]$ ls -ltr
total 4264756
drwxr-xr-x. 8 ec2-user ec2-user       4096 May  3 11:15 ingest
drwxr-xr-x. 2 ec2-user ec2-user       4096 Jun 10 17:21 bin
drwxr-xr-x. 2 ec2-user ec2-user      12288 Oct  6 14:42 lib
drwxr-xr-x. 6 ec2-user ec2-user       4096 Oct  6 14:42 update
drwxr-xr-x. 2 ec2-user ec2-user       4096 Oct 19 09:35 log
drwxr-xr-x. 2 ec2-user ec2-user       4096 Oct 19 09:51 tmp
drwxr-xr-x. 2 ec2-user ec2-user       4096 Oct 19 10:27 config
drwxr-xr-x. 2 ec2-user ec2-user       4096 Oct 19 18:28 lock
-rw-------. 1 ec2-user ec2-user 4367063040 Oct 19 18:28 40841-edge-app.tar
[ec2-user@edgeserver-2906515 edge]$
```

4. FTP this tar file to a location outside of the AWS EDGE server. FTP utilities like WinSCP can be used as shown in the previous step.



5.5 Get Record Counts

This step needs to be done on or after December 17, 2016.

This step will guide you through getting counts of the records on your server, which will be used in step 5.9 to verify that the data was restored successfully.

1. Log in to MySQL as root user and get counts of all the tables in the database and extract to a CSV file.
2. FTP the CSV file to a storage location outside of the EDGE Server. FTP utilities like WinSCP can be used to save the CSV file out of the AWS space. See Appendix A for queries to get counts on the common and application schemas.

5.6 Un-provision Instance

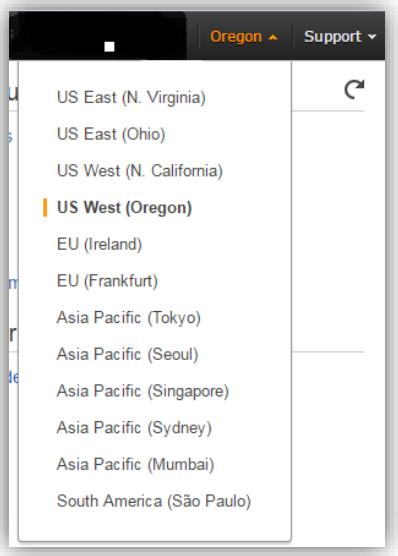
This step needs to be done on or after December 17, 2016.

This step will guide you through un-provisioning the instance.

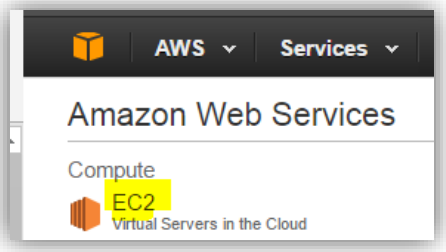
Caution: If you have not confirmed the backup was successful and you stop the instance, you will not be able to recover any data previously submitted or archived. **CMS will not be able to retrieve this information for you**.

CMS will reach out a day prior to your scheduled upgrade to ensure that you will be ready to re-provision the server. Please note you cannot submit data from the date the data is backed up until the re-provisioning occurs.

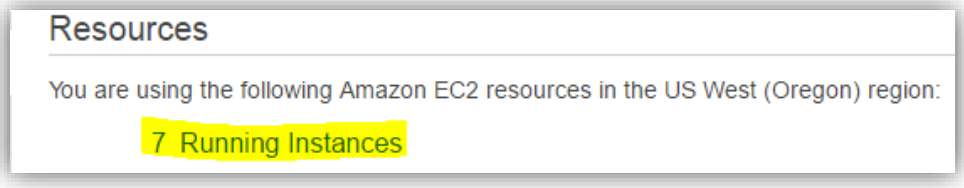
1. Stop Instance
    a. Log in to the AWS website.
    b. Navigate to the correct region where your server is located.



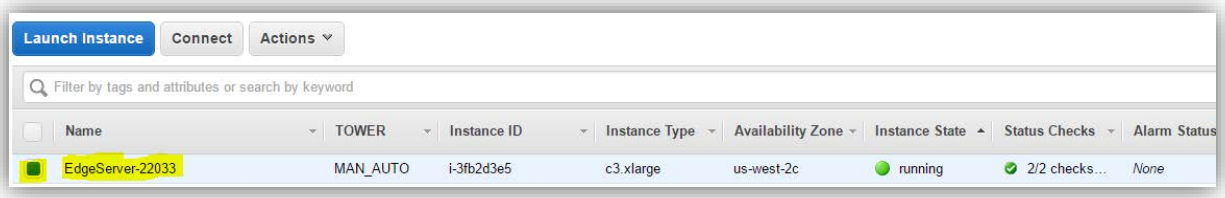
c. Select “EC2” under “Compute”.



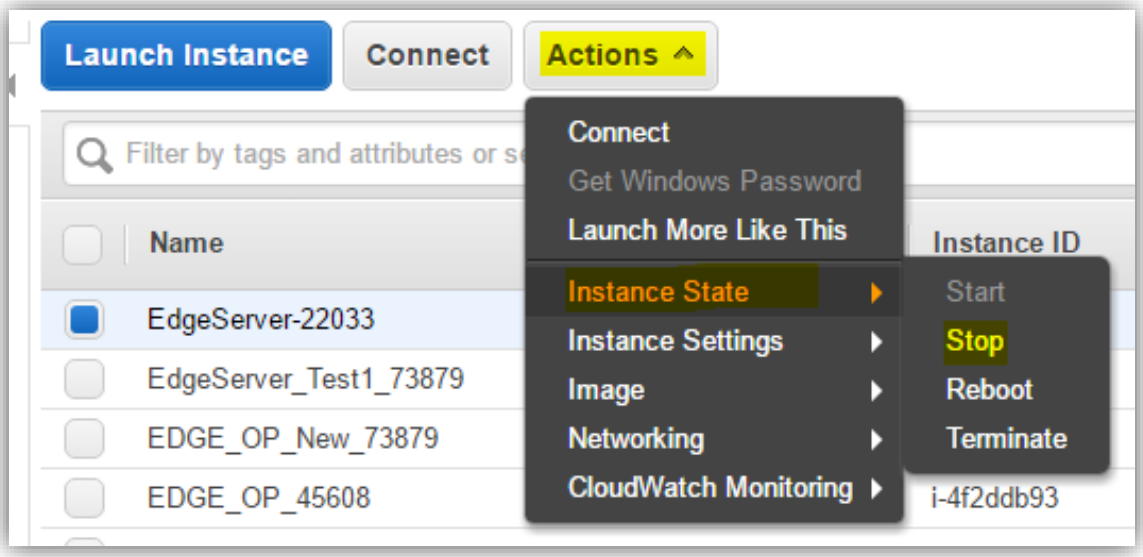
d. Under “Resources”, select “Running Instances”.



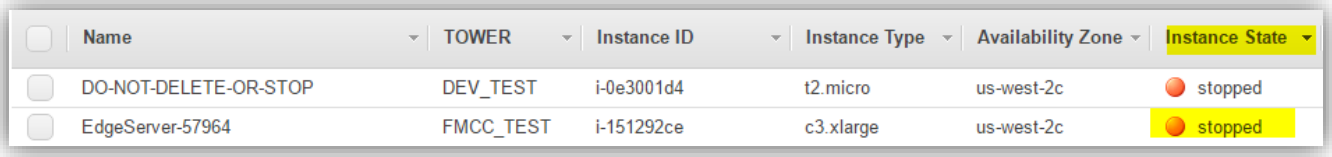
e. Select your server.



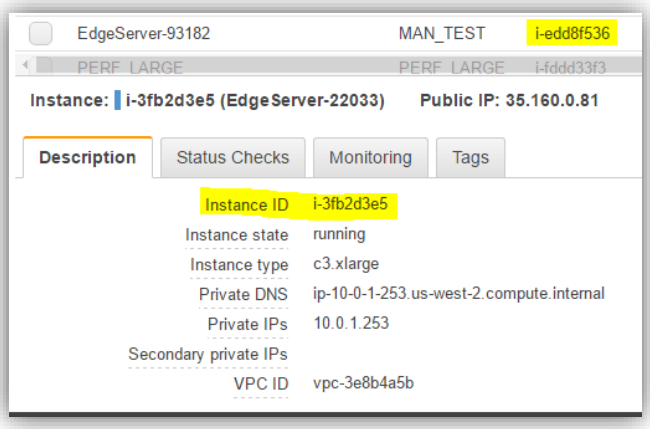
f. Stop the existing instance by selecting “Actions”, “Instance State” and “Stop”.



g. Verify the Instance has stopped under “Instance State”.

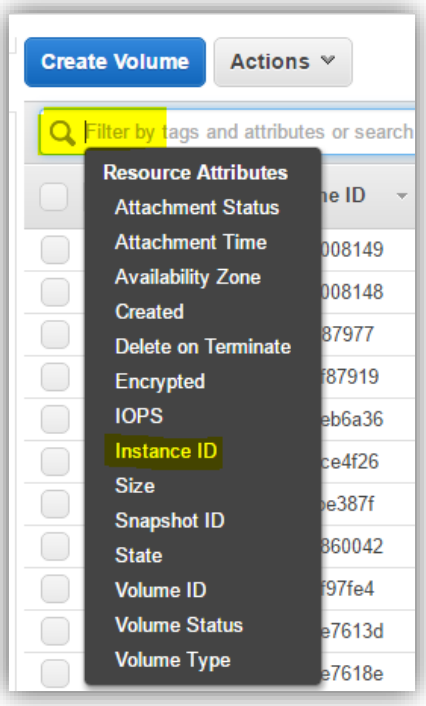


h. Write down the Instance ID under “Instance ID” for your server.



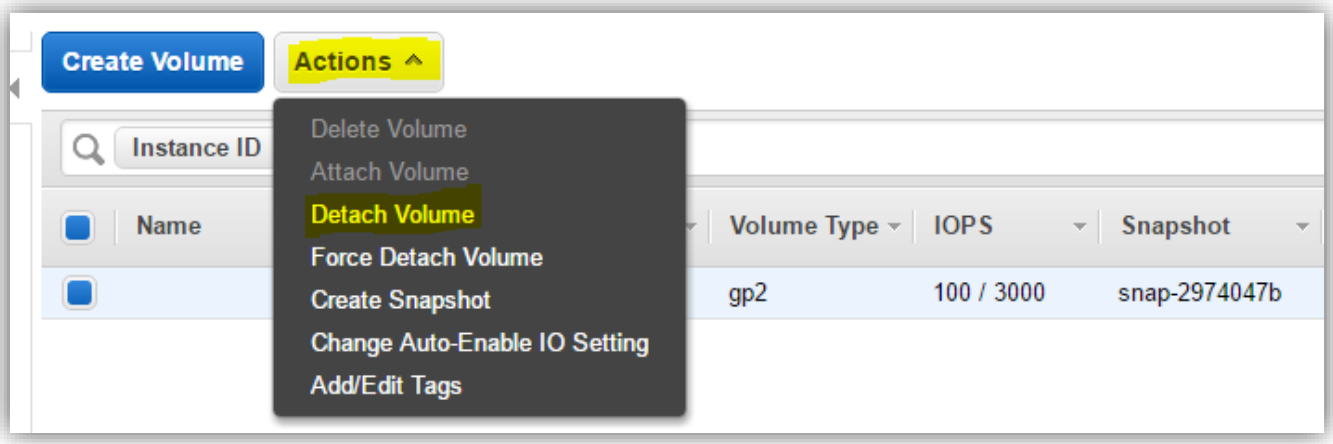
2. Detach the data volume from the existing AWS instance:
    a. Select “Volumes” in the left hand column under “Elastic Block Store”.

    b. Select the “Instance ID” filter.

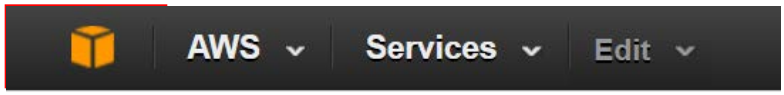


c. Enter the Instance ID you saved above:

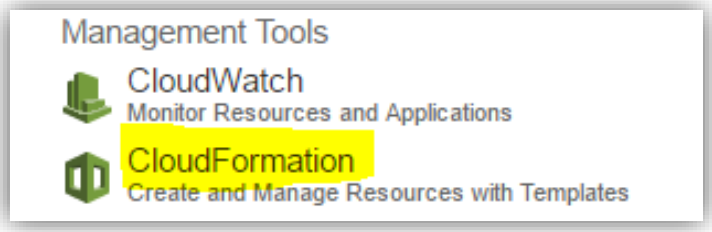
d. Select “Volume”, “Actions” and “Detach Volume”. Record volume IDs before detaching so you can identify which volumes are associated with the current instance to be able to restore data. Make sure not to detach the root volume/standard volume. Only detach gp2 volume and any other volumes listed.



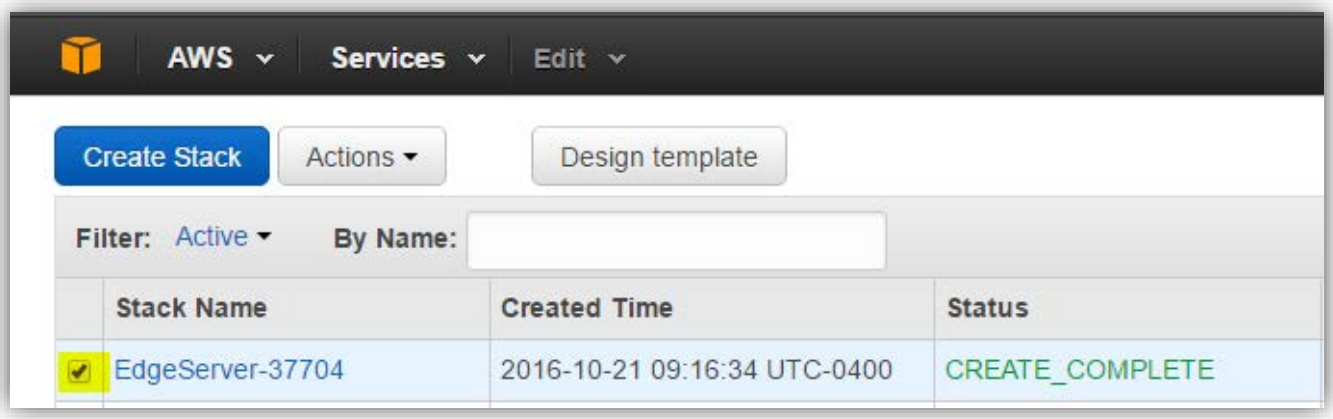
3. Delete the stack corresponding to the instance:
    a. Go to the home page in AWS.



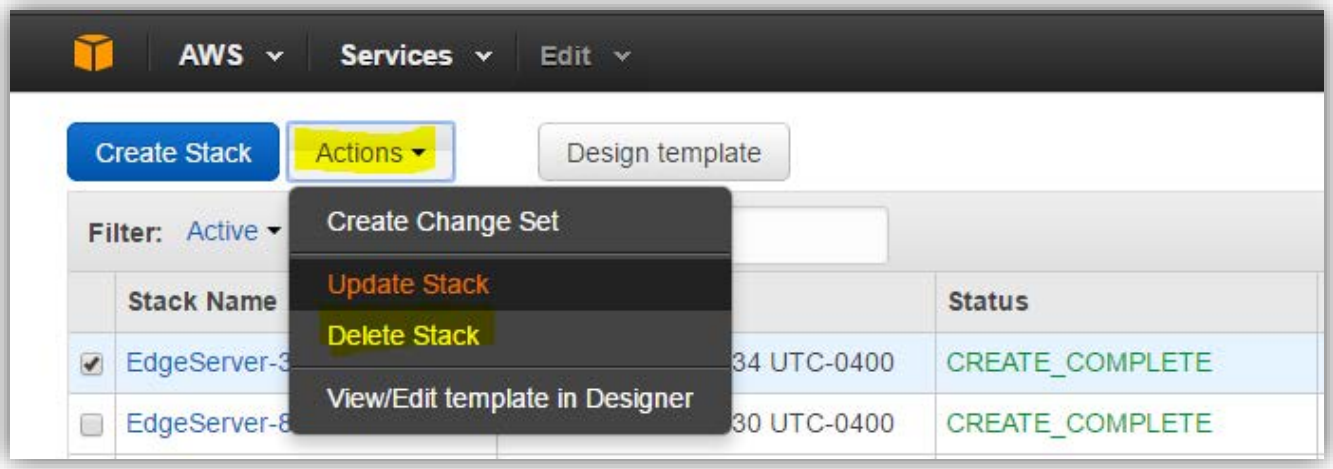
    b. Select "Cloud Formation" under “Management Tools”.

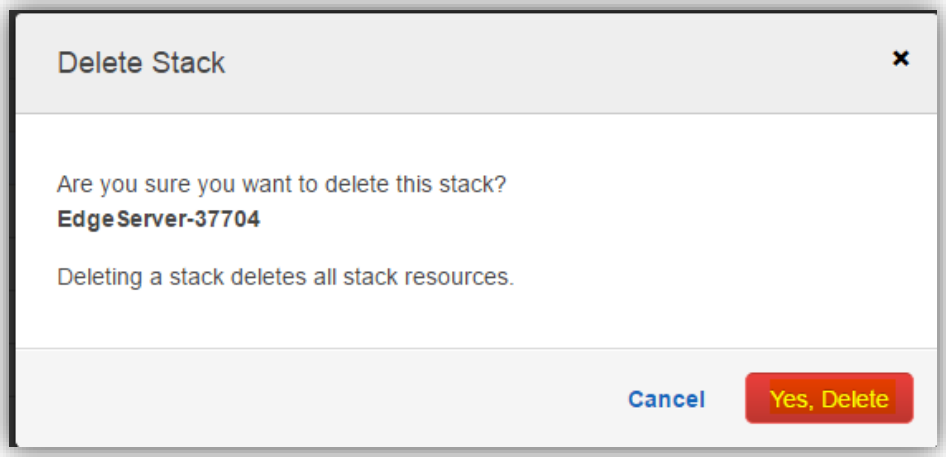


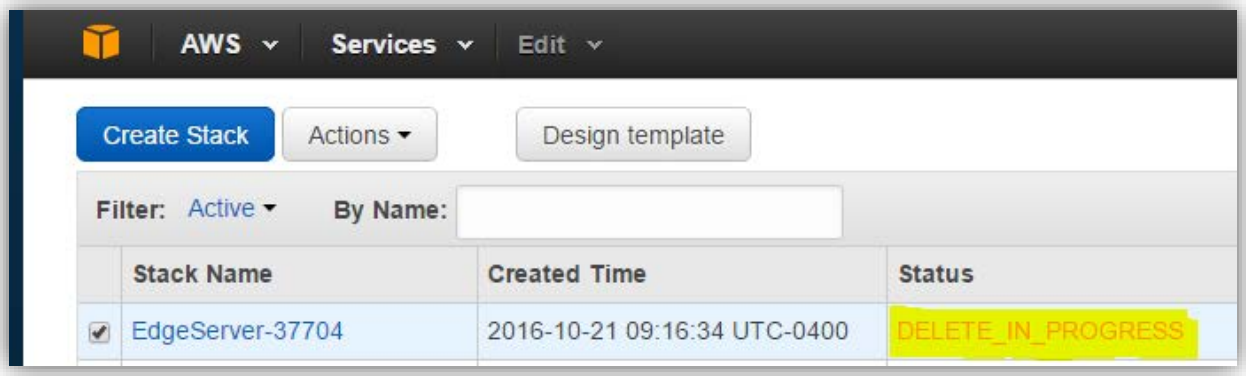
    c. Select the stack associated with your server.



d. Select “Actions” and select “Delete Stack” to delete the stack.







e. Notify the FMCC that your AWS instance(s) have been un-provisioned by sending an email to EDGE_Server_Data@cms.hhs.gov, including a subject line of "RHEL 7.3 Upgrade – Server Type <*insert AWS or OP*> – HIOS ID <*insert one (1) of your HIOS IDs*>" and an email body including all HIOS IDs requiring an upgrade that have been un-provisioned.

CMS will re-provision the EDGE servers and the FMCC will reply, indicating that you can proceed to the next step.

5.7 Confirm Newly Provisioned EDGE Instance

This step needs to be done on or after December 17, 2016.

This step will guide you through verifying that CMS has provisioned a new instance with the RHEL 7.3, MySQL 5.7, and JDK 1.8 configuration.

1. Log in to the ESM console via Enterprise Identify Management (EIDM) portal as the Issuer Submitter, Issuer Approver or TPA Submitter.

   Note: When logging into the server for the first time, you will need to enter the following password: "edgeserver". You will then need to enter and then retype a new password for your server for future logins. After entering your new password, the PuTTY session will close automatically.

2. Search for your server and verify the status is "Provisioned". TPA, submitter, and approver all have roles to check if they are provisioned.

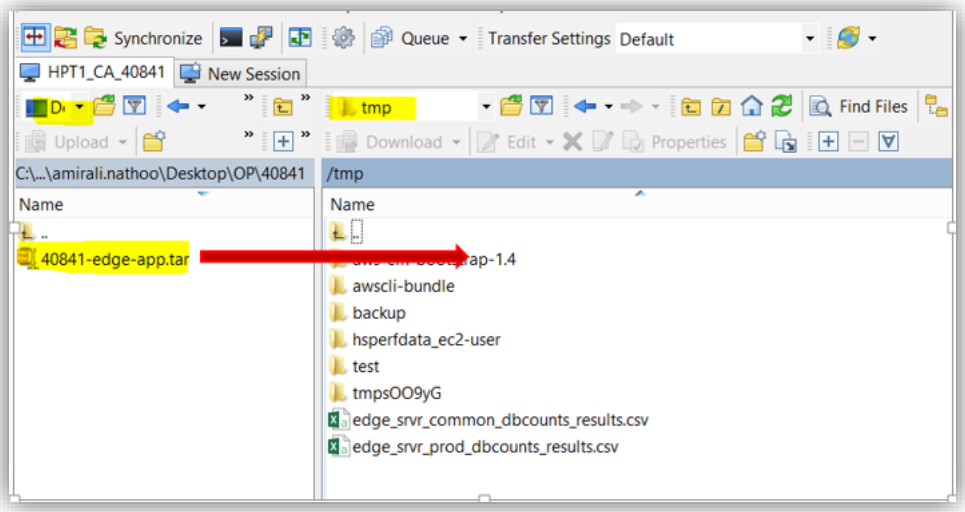
Note: Wait 60 minutes after server is in "provisioned" status before proceeding to the next step.

5.8 Restore Directories

This step needs to be done on or after December 17, 2016.

This step will restore the backup, archives and the tmp directories under /opt/edge from the old server to the new server.

1. FTP the /opt/edge **<insert HIOS ID>-edge-app.tar** file from the old server to the new server under the {TMP_DIR}/**<issuer-id>** directory using WinSCP. {TMP_DIR} could be either /tmp or any location, which is outside of /opt/edge, depending upon space allocation.



2. Extract the tar to the {TMP_DIR}/<issuer-id> location. {TMP_DIR} could be either /tmp or any location which is outside of /opt/edge, depending upon space allocation.

   tar –xvf <insert HIOS ID>-edge-app.tar

```
[ec2-user@edgeserver-2906515 edge]$ tar -xvf 40841-edge-app.tar .
```

3. Execute the following copy commands to copy the ingest and tmp directories to the new installation.

   cp –R {TMP_DIR}/<issuer-id>/ingest/* /opt/edge/ingest
   cp –R {TMP_DIR}/<issuer-id>/tmp/* /opt/edge/tmp

5.9 Restore Data to MySQL

This step needs to be done on or after December 17, 2016.

This step will guide you through restoring data to MySQL.

1. Using WinSCP or any file transfer utility, transfer the saved backup files from Step 5.3 to this new instance under {TMP_DIR}. {TMP_DIR} could be either /tmp or any location which is outside of /opt/edge, depending upon space allocation.

2. Accessing default MySQL ‘root’ credentials:

cd /opt/edge/config
ls –lart
cat .edge.root file to get MySQL root account password.

```
[ec2-user@edgeServer-45515 config]$ cd /opt/edge/config
[ec2-user@edgeServer-45515 config]$ ls -lart
total 28
-rwxr-xr-x.  1 ec2-user ec2-user   98 Dec  4 15:35 edge.keys
-rwxr-xr-x.  1 ec2-user ec2-user    0 Dec  4 15:47 completeConfiguration
-rwxr-xr-x.  1 ec2-user ec2-user   12 Dec  4 15:50 .edge.root
-rwxr-xr-x.  1 ec2-user ec2-user 2246 Dec  4 15:54 logback.xml.bak
-rwxr-xr-x.  1 ec2-user ec2-user 1145 Dec  5 02:25 edge.properties
-rw-r--r--.  1 ec2-user ec2-user 2246 Dec 12 10:25 logback.xml
drwxr-xr-x. 13 ec2-user ec2-user 4096 Dec 12 10:27 ..
drwxr-xr-x.  2 ec2-user ec2-user 4096 Dec 13 08:13 .
[ec2-user@edgeServer-45515 config]$
```

3. Login into MySQL using ‘root’ user account using the following command and entering MySQL ‘root’ password:

   mysql -u root –p

```
[ec2-user@edgeServer-45515 config]$ mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 137323
Server version: 5.7.16 MySQL Community Server (GPL)

Copyright (c) 2000, 2016, Oracle and/or its affiliates. All rights reserved.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```

4. Provide grants to {db_user} defined in edge.properties to the archive schemas by executing the following SQL(s):

   In the below example, default DB User ID (edgedbuser) is used as an example.

   GRANT ALL PRIVILEGES ON `EDGE_SRVR_COMMON_2014`.* TO 'edgedbuser'@'localhost' ;

   GRANT ALL PRIVILEGES ON `EDGE_SRVR_TEST_2014`.* TO 'edgedbuser'@'localhost' ;

   GRANT ALL PRIVILEGES ON `EDGE_SRVR_PROD_2014`.* TO 'edgedbuser'@'localhost' ;

GRANT ALL PRIVILEGES ON `EDGE_SRVR_COMMON_2015`.* TO 'edgedbuser'@'localhost' ;

GRANT ALL PRIVILEGES ON `EDGE_SRVR_TEST_2015`.* TO 'edgedbuser'@'localhost' ;

GRANT ALL PRIVILEGES ON `EDGE_SRVR_PROD_2015`.* TO 'edgedbuser'@'localhost' ;

```
mysql>  GRANT ALL PRIVILEGES ON `EDGE_SRVR_COMMON_2014`.* TO 'edgedbuser'@'localhost' ;
 GRANT ALL PRIVILEGES ON `EDGE_SRVR_TEST_2014`.* TO 'edgedbuser'@'localhost' ;
Query OK, 0 rows affected (0.00 sec)

mysql>  GRANT ALL PRIVILEGES ON `EDGE_SRVR_TEST_2014`.* TO 'edgedbuser'@'localhost' ;
Query OK, 0 rows affected (0.01 sec)

mysql>  GRANT ALL PRIVILEGES ON `EDGE_SRVR_PROD_2014`.* TO 'edgedbuser'@'localhost' ;
Query OK, 0 rows affected (0.00 sec)

mysql>
mysql>  GRANT ALL PRIVILEGES ON `EDGE_SRVR_COMMON_2015`.* TO 'edgedbuser'@'localhost' ;
 GRANT ALL PRIVILEGES ON `EDGE_SRVR_TEST_2015`.* TO 'edgedbuser'@'localhost' ;
Query OK, 0 rows affected (0.00 sec)

mysql>  GRANT ALL PRIVILEGES ON `EDGE_SRVR_TEST_2015`.* TO 'edgedbuser'@'localhost' ;
Query OK, 0 rows affected (0.00 sec)

mysql>  GRANT ALL PRIVILEGES ON `EDGE_SRVR_PROD_2015`.* TO 'edgedbuser'@'localhost' ;
Query OK, 0 rows affected (0.00 sec)

mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.00 sec)
```

The following steps are applicable ONLY to the issuers, who have defined {CUSTOM} schemas in edge.properties.

GRANT ALL PRIVILEGES ON `EDGE_SRVR_COMMON_{CUSTOM}_2014`.* TO 'edgedbuser'@'localhost' ;

GRANT ALL PRIVILEGES ON `EDGE_SRVR_TEST_{CUSTOM}_2014`.* TO 'edgedbuser'@'localhost' ;

GRANT ALL PRIVILEGES ON `EDGE_SRVR_PROD_{CUSTOM}_2014`.* TO 'edgedbuser'@'localhost' ;

GRANT ALL PRIVILEGES ON `EDGE_SRVR_COMMON_{CUSTOM}_2015`.* TO 'edgedbuser'@'localhost' ;

GRANT ALL PRIVILEGES ON `EDGE_SRVR_TEST_{CUSTOM}_2015`.* TO 'edgedbuser'@'localhost' ;

GRANT ALL PRIVILEGES ON `EDGE_SRVR_PROD_{CUSTOM}_2015`.* TO 'edgedbuser'@'localhost' ;

5. Exit from MySQL shell

   exit;

6. On the new AWS instance, login into Linux and MySQL as ‘edgedbuser’.

7. Create shell schemas for all the backed up schemas on the old instance identified in step 5.1 by running the following command:

   CREATE SCHEMA <insert schema name>;

8. Restore data to these schemas from the backed-up files using the backup files that were saved on the old instance.

   USE EDGE_SRVR_COMMON_2015;
   source {TMP_DIR}/<IssuerID.SchemaName.LOCAL_BACKUP.TodayDateandTime.sql>

   Example for an “EDGE_SRVR_COMMON_2015” schema:

   CREATE SCHEMA EDGE_SRVR_COMMON_2015;
   USE EDGE_SRVR_COMMON_2015;
   source
   /tmp/<12345.EDGE_SRVR_COMMON_2015.LOCAL_BACKUP.D10242016T200012.sql>

9. Check that the data exists and matches the previous counts.

5.10 Test Application

This step needs to be done on or after December 17, 2016.

At a minimum, test cases 1-3 should be executed to verify that your upgraded server is functioning properly. CMS also recommends executing test case 4 if enrollment (E), medical claim (M) and/or pharmacy (P) claim files are available.

Table 6 - Upgraded AWS Server Test Cases

Test	Action	Expected Result
1	Execute the following command: **edge version**	The latest EDGE version is returned, which should match the version included in the latest “EDGE Server Maintenance Release Notes” as published on REGTAP.
2	Execute the following command: **edge report RA_RS_Transfer_Prelim 2016 prod**	The RA calculations should execute and the corresponding reports should be generated as expected.
3	Execute the following command: **edge report RI_Prelim 2016 prod**	The RI calculations should execute and the corresponding reports should be generated as expected.
4	Submit an E, M, and P record file to your test environment and execute the following command: **edge ingest**	The enrollment and claims should be accepted or rejected according to the Business Rules and outbound reports should be generated.

6. Provision a New AWS Server

If you do not have an AWS instance and would like to provision a new EDGE server, please refer to the "EDGE Server Amazon and On-premise Provisioning Process Flow Guide", published on REGTAP.

7. APPENDIX

Appendix A

Query to get common schema record counts

Use this query to get record counts for Common schema(s). Change the name of the CSV output file at the end to indicate the schema name.

```
USE EDGE_SRVR_COMMON
SELECT
(SELECT COUNT(*) FROM BATCH_JOB_EXECUTION),
(SELECT COUNT(*) FROM BATCH_JOB_EXECUTION_CONTEXT),
(SELECT COUNT(*) FROM BATCH_JOB_EXECUTION_PARAMS),
(SELECT COUNT(*) FROM BATCH_JOB_EXECUTION_SEQ),
(SELECT COUNT(*) FROM BATCH_JOB_INSTANCE),
(SELECT COUNT(*) FROM BATCH_JOB_SEQ),
(SELECT COUNT(*) FROM BATCH_STEP_EXECUTION),
(SELECT COUNT(*) FROM BATCH_STEP_EXECUTION_CONTEXT),
(SELECT COUNT(*) FROM BATCH_STEP_EXECUTION_SEQ),
(SELECT COUNT(*) FROM BNFT_YR),
(SELECT COUNT(*) FROM CLAIM_BILL_TYPE),
(SELECT COUNT(*) FROM CLAIM_FORM_TYPE),
(SELECT COUNT(*) FROM CLAIM_STUS_TYPE),
(SELECT COUNT(*) FROM CLAIM_TRANS_TYPE),
(SELECT COUNT(*) FROM CLAIM_TYPE),
(SELECT COUNT(*) FROM DATABASECHANGELOG),
(SELECT COUNT(*) FROM DATABASECHANGELOGLOCK),
(SELECT COUNT(*) FROM DGNS_CD_QLFYR),
(SELECT COUNT(*) FROM DGNS_CD_TYPE),
(SELECT COUNT(*) FROM DRVD_SRVC_CLM_TYPE),
(SELECT COUNT(*) FROM DSCHRG_STUS_TYPE),
(SELECT COUNT(*) FROM DSPNSNG_STUS_TYPE),
(SELECT COUNT(*) FROM ENRL_ADLT_MDL_FACTOR),
(SELECT COUNT(*) FROM ENRL_AFF_CARE_ACT_AGE_RATE),
(SELECT COUNT(*) FROM ENRL_AGE_TYPE_HCC_GCC_MTL_LVL_ASSOC),
(SELECT COUNT(*) FROM ENRL_CMMNTY_RTNG_STATE),
(SELECT COUNT(*) FROM ENRL_CNDTN_CTGRY_CD),
(SELECT COUNT(*) FROM ENRL_COST_SHARE_RDCTN),
(SELECT COUNT(*) FROM ENRL_DEMOGRAPHIC_FACTOR),
(SELECT COUNT(*) FROM ENRL_DGNS_CD_TO_CC_CD_ASSOC),
(SELECT COUNT(*) FROM ENRL_GRP_CD_HCC_CD_ASSOC),
(SELECT COUNT(*) FROM ENRL_HCC_CC_TO_EXCLUDE_ASSOC),
(SELECT COUNT(*) FROM ENRL_HCC_GC_SVRTY_ASSOC),
(SELECT COUNT(*) FROM ENRL_HCC_INFNT_MATURITY_TYP),
(SELECT COUNT(*) FROM ENRL_INFNT_CC_MATURITY_ASSOC),
(SELECT COUNT(*) FROM ENRL_INFNT_HCC_SVRTY_ASSOC),
(SELECT COUNT(*) FROM ENRL_INFNT_SVRTY_MTRTY_FACTOR),
(SELECT COUNT(*) FROM ENRL_MTL_LVL_INTRNL),
(SELECT COUNT(*) FROM ENRL_RA_TRANSFER),
(SELECT COUNT(*) FROM ENRL_RISK_REINSRNC_ATTR),
(SELECT COUNT(*) FROM ENRL_RISK_RIAR_ATTR),
```

```
(SELECT COUNT(*) FROM ENRL_SVRTY_TYP_INTRNL),
(SELECT COUNT(*) FROM ENRLMT_MNT_TYP),
(SELECT COUNT(*) FROM EXCTN_ZN_TYPE),
(SELECT COUNT(*) FROM GNDR_TYPE),
(SELECT COUNT(*) FROM INFANT_DIAG_CODES),
(SELECT COUNT(*) FROM INSRD_MMBR_STUS_TYPE),
(SELECT COUNT(*) FROM INSRNC_PLAN),
(SELECT COUNT(*) FROM INT_CNTRL_RLS_NMBR),
(SELECT COUNT(*) FROM ISSR_ORG),
(SELECT COUNT(*) FROM ISSR_PLCY_RATG_AREA),
(SELECT COUNT(*) FROM MEDICARE_MAX_OUT_OF_POCKET),
(SELECT COUNT(*) FROM ORG_TYPE),
(SELECT COUNT(*) FROM PRCSG_CONFIG_PARM),
(SELECT COUNT(*) FROM PRVDR_QLFYR_TYPE),
(SELECT COUNT(*) FROM RA_REASON_CODE),
(SELECT COUNT(*) FROM REMOTE_CMD_QUEUE),
(SELECT COUNT(*) FROM REV_CD_TYPE),
(SELECT COUNT(*) FROM RISK_ADJSTMT_CLM_FLTRING_STUS_TYPE),
(SELECT COUNT(*) FROM SBMTTING_ORG),
(SELECT COUNT(*) FROM SERVICE_POLICY_TYPE),
(SELECT COUNT(*) FROM SRVC_CD_MDFR_TYPE),
(SELECT COUNT(*) FROM SRVC_CD_TYPE),
(SELECT COUNT(*) FROM SRVC_CD_TYPE_2014),
(SELECT COUNT(*) FROM SRVC_CD_TYPE_2015),
(SELECT COUNT(*) FROM SRVC_PLC_TYPE),
(SELECT COUNT(*) FROM SRVC_TYPE),
(SELECT COUNT(*) FROM STATE_CALC_TYPE_INTR),
(SELECT COUNT(*) FROM SUBMSN_PRCSG_STUS_TYPE),
(SELECT COUNT(*) FROM SUBMSN_STUS_TYPE),
(SELECT COUNT(*) FROM SUBMSN_TYPE),
(SELECT COUNT(*) FROM TOBACCO_USE_TYPE),
(SELECT COUNT(*) FROM USER_FEE_RATE),
(SELECT COUNT(*) FROM VOID_RPLC_IND_TYPE),
(SELECT COUNT(*) FROM ZIP_CD)
INTO OUTFILE '/tmp/edge_srvr_common_dbcounts_results.csv'
FIELDS TERMINATED BY ',' OPTIONALLY ENCLOSED BY ""
LINES TERMINATED BY '\N';
```

Query to get application schema (prod/test) record counts

Use this query to get record counts for either Prod or Test schema(s). Change the name of the CSV output file at the end to indicate the schema name.

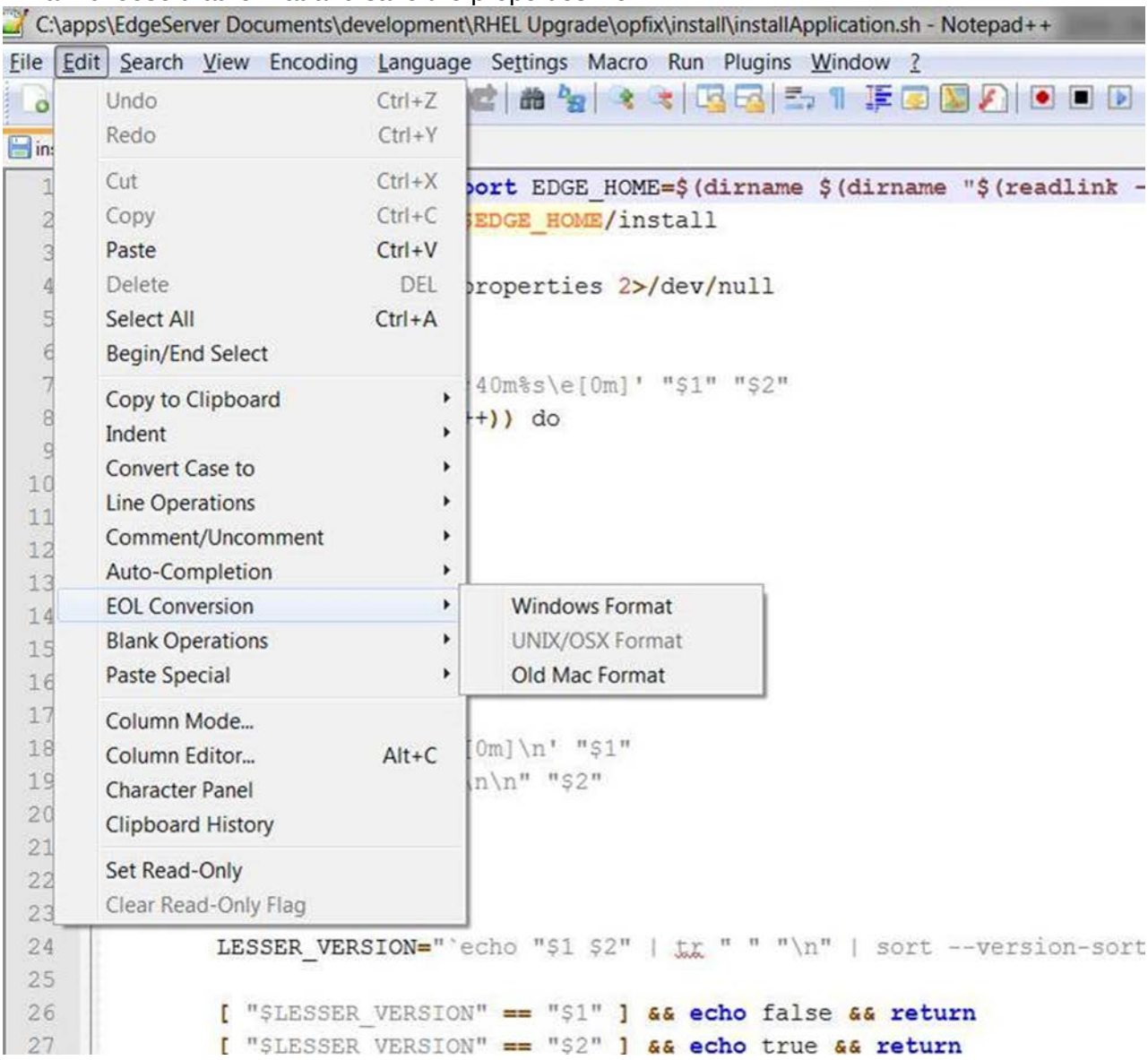
```
USE EDGE_SRVR_PROD (or USE EDGE_SRVR_TEST)
SELECT
(SELECT COUNT(*) FROM EDGE_ERROR_LOG) AS EDGE_ERROR_LOG_COUNT,
(SELECT COUNT(*) FROM EDGE_EVENT_LOG) AS EDGE_EVENT_LOG_COUNT,
(SELECT COUNT(*) FROM INSRD_MMBR) AS INSRD_MMBR_COUNT,
(SELECT COUNT(*) FROM MDCL_CLM_DGNS_CD_ASCTN) AS
MDCL_CLM_DGNS_CD_ASCTN_COUNT,
(SELECT COUNT(*) FROM MEDICAL_CLAIM) AS MEDICAL_CLAIM_COUNT,
(SELECT COUNT(*) FROM MEDICAL_CLAIM_SRVC_LINE) AS
MEDICAL_CLAIM_SRVC_LINE_COUNT,
```

```
(SELECT COUNT(*) FROM MEDICAL_CLAIM_SRVC_MDFR_ASCTN) AS
MEDICAL_CLAIM_SRVC_MDFR_ASCTN_COUNT,
(SELECT COUNT(*) FROM MMBR_INSRNC_PLCY_CVRG) AS
MMBR_INSRNC_PLCY_CVRG_COUNT,
(SELECT COUNT(*) FROM MMBR_INSRNC_PLCY_CVRG_CRSS_YR_HSTY) AS
MMBR_INSRNC_PLCY_CVRG_CRSS_YR_HSTY_COUNT,
(SELECT COUNT(*) FROM MMBR_INSRNC_PLCY_CVRG_PROFILE_ASCTN) AS
MMBR_INSRNC_PLCY_CVRG_PROFILE_ASCTN_COUNT,
(SELECT COUNT(*) FROM PHARMACY_CLAIM) AS PHARMACY_CLAIM_COUNT,
(SELECT COUNT(*) FROM PRM_STBLZTN_SUBMSN_STUS) AS
PRM_STBLZTN_SUBMSN_STUS_COUNT,
(SELECT COUNT(*) FROM RECORD_LEVEL_HIER) AS RECORD_LEVEL_HIER_COUNT,
(SELECT COUNT(*) FROM RISKSCORE) AS RISKSCORE_COUNT,
(SELECT COUNT(*) FROM RISKSCORE_REMOTE) AS RISKSCORE_REMOTE_COUNT,
(SELECT COUNT(*) FROM STNG_ENRLMT_SUBMSN) AS STNG_ENRLMT_SUBMSN_COUNT,
(SELECT COUNT(*) FROM STNG_INSRD_MMBR_CC_ASSOC) AS
STNG_INSRD_MMBR_CC_ASSOC_COUNT,
(SELECT COUNT(*) FROM STNG_INSRD_MMBR_DGNS_ASSOC_ACCEP) AS
STNG_INSRD_MMBR_DGNS_ASSOC_ACCEP_COUNT,
(SELECT COUNT(*) FROM STNG_INSRD_MMBR_DGNS_UTI_ASSOC) AS
STNG_INSRD_MMBR_DGNS_UTI_ASSOC_COUNT,
(SELECT COUNT(*) FROM STNG_INSRD_MMBR_DROP_HCC_ASSOC) AS
STNG_INSRD_MMBR_DROP_HCC_ASSOC_COUNT,
(SELECT COUNT(*) FROM STNG_INSRD_MMBR_HCC_ASSOC) AS
STNG_INSRD_MMBR_HCC_ASSOC_COUNT,
(SELECT COUNT(*) FROM STNG_INSRD_MMBR_HCC_GROUP_ASSOC) AS
STNG_INSRD_MMBR_HCC_GROUP_ASSOC_COUNT,
(SELECT COUNT(*) FROM STNG_MDCL_SUBMSN) AS STNG_MDCL_SUBMSN_COUNT,
(SELECT COUNT(*) FROM STNG_MMBR_INSRNC_PLCY_CVRG_CRSS_YR) AS
STNG_MMBR_INSRNC_PLCY_CVRG_CRSS_YR_COUNT,
(SELECT COUNT(*) FROM STNG_MMBR_INSRNC_PLCY_CVRG_PROFILE_ASCTN) AS
STNG_MMBR_INSRNC_PLCY_CVRG_PROFILE_ASCTN_COUNT,
(SELECT COUNT(*) FROM STNG_PHRMCY_SUBMSN) AS STNG_PHRMCY_SUBMSN_COUNT,
(SELECT COUNT(*) FROM STNG_RADV_POPULATION) AS STNG_RADV_POPULATION_COUNT,
(SELECT COUNT(*) FROM STNG_RADV_SAMPLE) AS STNG_RADV_SAMPLE_COUNT,
(SELECT COUNT(*) FROM STNG_REINSURANCE) AS STNG_REINSURANCE_COUNT,
(SELECT COUNT(*) FROM STNG_RIAR) AS STNG_RIAR_COUNT,
(SELECT COUNT(*) FROM STNG_SPLMNTL_SUBMSN) AS STNG_SPLMNTL_SUBMSN_COUNT,
(SELECT COUNT(*) FROM SUB_PLCY) AS SUB_PLCY_COUNT,
(SELECT COUNT(*) FROM SUB_PLCY_CLM_ASSOC) AS SUB_PLCY_CLM_ASSOC_COUNT,
(SELECT COUNT(*) FROM SUB_PLCY_CLM_ASSOC_RIAR) AS
SUB_PLCY_CLM_ASSOC_RIAR_COUNT,
(SELECT COUNT(*) FROM SUB_PLCY_RIAR) AS SUB_PLCY_RIAR_COUNT,
(SELECT COUNT(*) FROM SUP_CLM_DGNS_CD_ASCTN) AS
SUP_CLM_DGNS_CD_ASCTN_COUNT,
(SELECT COUNT(*) FROM SUPPLEMENTAL_CLAIM) AS SUPPLEMENTAL_CLAIM_COUNT
INTO OUTFILE '/tmp/edge_srvr_prod_dbcounts_results.csv'
FIELDS TERMINATED BY ',' OPTIONALLY ENCLOSED BY ""
LINES TERMINATED BY '\n';
```

Appendix B

EOL Conversion Check

1. Download the edge.properties from the server using any FTP client.
2. Open this properties file in NotePad++.
3. Go to Edit → EOL Conversion in the menu.
4. “UNIX/OSX Format” should be disabled (indicating that it is chosen).
5. If “UNIX/OSX Format” is not chosen,
    a. choose that format and save the properties file.



    b. Upload the saved edge.properties to the server.

8. Acronyms and Abbreviations

Table 7 - Acronyms and Abbreviations

Acronym / Abbreviation	Literal Translation
AWS	Amazon Web Services
CMS	Centers for Medicare & Medicaid Services
EDGE	External Data Gathering Environment
FTP	File Transfer Protocol
OP	On-Premise
RHEL	Red Hat Enterprise Linux