PowerExchange Logger: Changing the Size of the Active Logs
Overview

For PowerExchange Change Data Capture (CDC) data sources on MVS, the PowerExchange Logger writes captured change data to active log data sets that it dynamically allocates at startup. The names of these log data sets are registered in the emergency restart data set (ERDS). You might need to increase the log data set size in the following circumstances:

- CDC performance is degraded because the ECCRs must wait for the archiving of active logs to complete.
- Change data volume is high, which causes the PowerExchange Logger to switch and archive active log data sets at an unacceptably high frequency.

This article describes how to increase the size of active log data sets.

You must balance the size of the log data sets with the number of log data sets and the frequency with which these data sets are archived to meet change data logging requirements at your site. The archiving frequency is inversely related to the size of the active log data sets. If you archive log data sets frequently, you might want to increase the size of the log data sets to reduce the archiving frequency.

Prerequisite: Calculate the Required Active Log Data Set Size

Before you change the size of active log data sets, estimate the required data set size. The maximum size of an active log data set is 2,912 cylinders on 3390 DASD or 3,495 cylinders on 3380 DASD. The maximum size of an active log data set is limited by the maximum size of the associated data space. The maximum size of a data space is approximately 2 GB.

Informatica recommends that you use the same size for all log data sets. If the PRILOG and SECLOG data sets in the selected active log pair are not the same size, the amount of data that the PowerExchange Logger writes is limited to the size of the smallest data set in the log pair.

Formulas

Use the following formulas to estimate the size of each active log data set in bytes and then convert that value to tracks and cylinders for space allocation.

- **Formula 1.** To estimate active log data set size in bytes:
  \[
  \text{active log data set size in bytes} = \left( \text{average change record size in bytes} \times \text{number of changes captured per hour} \times \text{hours between archiving} \right) \times (1 + \text{overhead rate})
  \]
  Values in this formula:
  - For the overhead rate, use 5-10 percent. The overhead rate reserves space for control and recovery-related information.
  - For the average change record size, make an estimate. Include the PowerExchange header of 300 bytes plus key length. Consider if the types of change transactions require the capture of before-images, after-images, or both.

- **Formula 2.** To convert the active log data set size from bytes to tracks:
  \[
  \text{active log data set size in tracks} = \frac{\text{active log data set size in bytes}}{\text{number of usable bytes per track}}
  \]

- **Formula 3.** To convert the active log data set size from tracks to cylinders:
  \[
  \text{active log data set size in cylinders} = \frac{\text{active log data set size in tracks}}{\text{tracks per cylinder}}
  \]
Example

This example uses 3390 DASD and the following assumptions:

- Average change record size including the PowerExchange header = 600 bytes
- Number of changes captured per hour = 40,000
- Hours between archiving = 12
- Overhead rate = 5%
- Number of usable bytes per track = 49,152
- Tracks per cylinder = 15

To calculate the total space for each active log data set:

1. Use Formula 1 to calculate the size of each active log data set in bytes:
   \[ 600 \text{ bytes} \times 40,000 \times 12 \times (1 + .05) = 302,400,000 \text{ bytes} \]

2. Use Formula 2 and Formula 3 to estimate the number of tracks or cylinders to allocate for each active log data set:
   \[ 302,400,000 \text{ bytes} \div 49,152 \text{ bytes per track} = 6,152 \text{ tracks} \]
   \[ 6,152 \text{ tracks} \div 15 = 410 \text{ cylinders} \]

Changing the Size of Active Log Data Sets

Before changing the size of the active log data sets, stop all change data capture and extraction processing and then shut down the PowerExchange Logger.

To change the size of active log data sets:

1. Make a copy of the sample #SIZELOG member in the hlq.SAMPLIB library, where hlq is the high-level qualifier that you specified at installation. This member contains JCL for changing the size of log data sets.

2. Edit the JCL statements in the copy of the #SIZELOG member, as needed.

The following table describes the JCL statements for the IBM IDCAMS program:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXEC</td>
<td>Specify the IDCAMS program so that you can run the IDCAMS ALTER, DEFINE, and REPRO commands, which are specified in the SYSIN DD.</td>
</tr>
<tr>
<td>SYSPRINT DD</td>
<td>Specify the output data set for MVS system messages.</td>
</tr>
<tr>
<td>SYSIN DD</td>
<td>Specify the IDCAMS commands ALTER, DEFINE, and REPRO. For more information about these IDCAMS utility commands, see your IBM documentation.</td>
</tr>
</tbody>
</table>

The following table describes the JCL statements for the PowerExchange EDMUTIL0 program:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXEC</td>
<td>Specify the EDMUTIL0 program. This program formats the expanded portion of the active log data sets for the PowerExchange Logger.</td>
</tr>
<tr>
<td>STEPLIB DD</td>
<td>Add the PowerExchange CDC LOAD library to the STEPLIB DD concatenation unless you added the LOAD library to the system LNKLST concatenation.</td>
</tr>
<tr>
<td>PRILOG DD</td>
<td>Specify the active log data set name that you used to create the log data sets.</td>
</tr>
</tbody>
</table>

For an example of a customized member, see “Example #SIZELOG Member.”
3. Stop all PowerExchange jobs and tasks for which the PowerExchange Logger writes data to or reads data from the log data sets. These jobs and tasks include the PowerExchange Listener, all associated ECCRs, PowerExchange Condense tasks, and PowerExchange Netport jobs.

4. After all log reader and writer threads stop, stop the PowerExchange Logger.

5. Customize and run the JCL in the sample #DISPLOG member of the hlq.SAMPLIB library. This JCL uses the PowerExchange Logger batch interface to display the "in-use" active log data sets.

   If you want to display only the active log data sets, without the archive data sets, include the following TYPE parameter in the DISPLAY OBJECT=LOG command:
   
   ```
   DISPLAY OBJECT=LOG, TYPE=ACTIVE, DSNAME=* END
   ```

   When you run the batch job, the following output is written to the EDMMSG data set:

   ```
   LOG START
   PWXEDM1725021 EDM Logger BATCH initialization in-progress product level V2.4.04 10/15/2003
   PWXEDM172638I EDM Logger system timestamp for ERDS = 2008.241 16:08:25.95
   DISPLAY OBJECT=LOG,TYPE=ACTIVE,DSNAME=* END
   PWXEDM172572I EDM Logger input commands accepted execution started
   PWXEDM172679I EDM Logger LOG ACTIVE report follows:
   *Start RBA   End RBA          Log Dsname             Status
   000001FA4000 000002A2FFFF EDMUSR.PWX.PRILOG.DS01 REUS
   000002A30000 0000034BBFFF EDMUSR.PWX.PRILOG.DS02 REUS,IN-USE
   000001518000 000001FA3FFF EDMUSR.PWX.PRILOG.DS03 REUS
   000001FA4000 000002A2FFFF EDMUSR.PWX.SECLOG.DS01 REUS
   000002A30000 0000034BBFFF EDMUSR.PWX.SECLOG.DS02 REUS,IN-USE
   000001518000 000001FA3FFF EDMUSR.PWX.SECLOG.DS03 REUS
   PWXEDM1725061 EDM Logger BATCH shutdown in progress
   PWXEDM172508I EDM Logger ### TASK EDMLIPC0 COMPLETE RC=00
   PWXEDM172508I EDM Logger ### TASK EDMLCKP0 COMPLETE RC=00
   PWXEDM172508I EDM Logger ### TASK EDMLRLM0 COMPLETE RC=00
   PWXEDM172508I EDM Logger ### TASK EDMLLLG0 COMPLETE RC=00
   PWXEDM172509I EDM Logger BATCH shutdown complete
   ```

6. To change the size of the active log data sets, run the customized #SIZELOG job.

7. Review the specifications for ARCHIVE_OPTIONS in the SETUPCC2 member. Make any necessary adjustment for the increased size of the active log data sets.

   An archive log data set consumes the same amount of space as the active log from which it is created. If you increase the size of the active log data sets and you archive these logs to disk, you might also need to increase the space for the archive log data sets. You specify the primary and secondary space amounts for archive log data sets in the ARCHIVE_OPTIONS parameter of the EDMUPARM module options. If you change these space amounts, update the corresponding values in the SETUPCC2 member in the RUNLIB library.

   Tip: To change the archive log data set size, run only the first step of the job in the SETUPCC2 member. You do not need to run the second step, which defines the active log data sets to the PowerExchange Logger.

8. Restart the PowerExchange Logger.

9. Restart all of the PowerExchange tasks that you stopped in step 3.

   Note: If you issue the PowerExchange Logger DISPLAY OBJECT=LOG command immediately after this procedure, the RBA range that is displayed for the active log data sets might not reflect the increased data set size. The PowerExchange Logger does not adjust the RBA ranges to account for the additional space until it nears the end of the in-use active log data sets.
Example #SIZELOG Member

The following example shows customized JCL from the #SIZELOG member of the SAMPLIB library. This JCL resizes two pairs of active log data sets.

```mlist
//PWXLOGR JOB (MYJOB), 'EXPAND LOGS', CLASS=A, MSGCLASS=X,
// MSGLEVEL=(1,1), NOTIFY=&SYSUID
//*--------------------------------------------------------------------*
//RENAME EXEC PGM=IDCAMS,REGION=0M
//SYSPRINT DD SYSOUT=* 
//SYSIN DD *
ALTER PWX.PRILOG.DS01 - NEWNAME(PWX.TEMPLOG1.DS01)
ALTER PWX.PRILOG.DS01.DATA - NEWNAME(PWX.TEMPLOG1.DS01.DATA)
ALTER PWX.SECLOG.DS01 - NEWNAME(PWX.TEMPLOG2.DS01)
ALTER PWX.SECLOG.DS01.DATA - NEWNAME(PWX.TEMPLOG2.DS01.DATA)
ALTER PWX.PRILOG.DS02 - NEWNAME(PWX.TEMPLOG1.DS02)
ALTER PWX.PRILOG.DS02.DATA - NEWNAME(PWX.TEMPLOG1.DS02.DATA)
ALTER PWX.SECLOG.DS02 - NEWNAME(PWX.TEMPLOG2.DS02)
ALTER PWX.SECLOG.DS02.DATA - NEWNAME(PWX.TEMPLOG2.DS02.DATA)
/*
//*--------------------------------------------------------------------*
//ALLOCLOG EXEC PGM=IDCAMS,REGION=OM,COND=(0,LT)
//SYSPRINT DD SYSOUT=* 
//SYSIN DD *
DEFINE CLUSTER - (NAME(PWX.PRILOG.DS01) - LINEAR - STORCLAS(SMSPOOL) - CYL(300)) - DATA -
       (NAME(PWX.PRILOG.DS01.DATA) )
DEFINE CLUSTER - (NAME(PWX.SECLOG.DS01) - LINEAR - STORCLAS(SMSPOOL) - CYL(300)) - DATA -
       (NAME(PWX.SECLOG.DS01.DATA) )
DEFINE CLUSTER - (NAME(PWX.PRILOG.DS02) - LINEAR - STORCLAS(SMSPOOL) - CYL(300)) - DATA -
       (NAME(PWX.PRILOG.DS02.DATA) )
DEFINE CLUSTER - (NAME(PWX.SECLOG.DS02) - LINEAR - STORCLAS(SMSPOOL) - CYL(300)) - DATA -
       (NAME(PWX.SECLOG.DS02.DATA) )
/*
//*--------------------------------------------------------------------*
//REPROLOG EXEC PGM=IDCAMS,REGION=OM,COND=(0,LT)
//SYSPRINT DD SYSOUT=* 
//SYSIN DD *
```
REPRO INDATASET(PWX.TEMPLOG1.DS01) - OUTDATASET(PWX.PRILOG.DS01)
REPRO INDATASET(PWX.TEMPLOG2.DS01) - OUTDATASET(PWX.SECLOG.DS01)
REPRO INDATASET(PWX.TEMPLOG1.DS02) - OUTDATASET(PWX.PRILOG.DS02)
REPRO INDATASET(PWX.TEMPLOG2.DS02) - OUTDATASET(PWX.SECLOG.DS02)
/*
**-------------------------------------------------------------------*
** NOTE:
** THE FOLLOWING STEPS WILL *NOT* DESTROY THE DATA THAT WAS JUST
** COPIED INTO THE LOG DATASETS. INSTEAD, THE UTILITY DETECTS
** WHETHER ANY PART OF THE DATASETS HAVE BEEN ALLOCATED BUT NOT
** YET FORMATTED, AND ONLY FORMATS *THOSE* PARTS OF THE DATASETS.
**-------------------------------------------------------------------*
//FORMATP EXEC PGM=EDMLUTL0,REGION=0M,COND=(0,LT)
//STEPLIB DD DISP=SHR,DSN=PWX.LOAD
//PRILOG DD DISP=OLD,DSN=PWX.PRILOG.DS01
//FORMATS EXEC PGM=EDMLUTL0,REGION=0M,COND=(0,LT)
//STEPLIB DD DISP=SHR,DSN=PWX.LOAD
//PRILOG DD DISP=OLD,DSN=PWX.SECLOG.DS01
//FORMATP EXEC PGM=EDMLUTL0,REGION=0M,COND=(0,LT)
//STEPLIB DD DISP=SHR,DSN=PWX.LOAD
//PRILOG DD DISP=OLD,DSN=PWX.PRILOG.DS02
//FORMATS EXEC PGM=EDMLUTL0,REGION=0M,COND=(0,LT)
//STEPLIB DD DISP=SHR,DSN=PWX.LOAD
//PRILOG DD DISP=OLD,DSN=PWX.SECLOG.DS02

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