HP Operations Orchestration Software

Software Version: 7.50

Purging OO Run Histories from MSSQL Databases

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1. Go to the HP Software Product Manuals web site (*http://support.openview.hp.com/selfsolve/manuals*).
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   If you do not have an HP Passport, click **New users – please register** to create an HP Passport, then return to this page and log in.

   If you need help getting an HP Passport, see your HP OO contact.
3. In the **Product** list box, scroll down to and select **Operations Orchestration**.
4. In the **Product Version** list, click the version of the manuals that you're interested in.
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Where to Find Help, Tutorials, and More

The HP Operations Orchestration software (HP OO) documentation set is made up of the following:

- Help for Central

  Central Help provides information to the following:

  - Finding and running flows
  - For HP OO administrators, configuring the functioning of HP OO
  - Generating and viewing the information available from the outcomes of flow runs

  The Central Help system is also available as a PDF document in the HP OO home directory, in the \Central\docs subdirectory.
- Help for Studio

  Studio Help instructs flow authors at varying levels of programming ability.

  The Studio Help system is also available as a PDF document in the HP OO home directory, in the \Studio\docs subdirectory.
- Animated tutorials for Central and Studio

  HP OO tutorials can each be completed in less than half an hour and provide basic instruction on the following:

  - In Central, finding, running, and viewing information from flows
  - In Studio, modifying flows

  The tutorials are available in the Central and Studio subdirectories of the HP OO home directory.
- Self-documentation for operations and flows in the Accelerator Packs and ITIL folders

Self-documentation is available in the descriptions of the operations and steps that are included in the flows.

Support

For support information, including patches, troubleshooting aids, support contract management, product manuals and more, visit one of the two following sites:

- *http://support.openview.hp.com*
- *http://www.hp.com/go/bsaessentialsnetwork*

  This is the **BSA Essentials Network** Web page. To sign in:

  1. Click Login Now.
  2. On the **Sign In** page, enter your BSA Essentials Network user name and password.
  3. If you do not already have a BSA Essential Network account, do the following:
     a. Click **BSA Essentials Network Help and Support.**
     b. On the **BSA Essentials Network Help and Support** page, *sel*ect the **Need an Account** link in the right column.

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About deleting run histories

This document is designed to provide a method for pruning old run history data for Central administrators and DBAs involved in the management of the data stored by Central systems.

This document is divided into three main sections:

1. Descriptions of the tables involved in storing historical run data in the *OO database*.
2. The procedure for *physically deleting old run history data*.
3. *Appendices* that contain information such as a diagram of the tables in the 7.50 **Run** schema, how to upgrade older schemas, and performance implications.

   The code examples shown in the appendices are included in text form in the file **MSSQL_RunHistory_Purge.zip** (which also contains this document). The code files are:

   - For *Appendix B: Upgrading older schemas*—**sqlserver_oo_upgrade_history_schema.sql**
   - For *Appendix C: Example cleanup stored procedure*—**sqlserver_oo_prune_run_history.sql**
   - For *Appendix D: Example scheduling script*—**sqlserver_oo_schedule_prune_run_history.sql**

Before deciding whether to implement the procedures in this document, read the entire document including *Appendix E: Performance implications*.

Required knowledge

Microsoft SQL Server database knowledge is required to use this method.

About the OO database tables

The tables involved in capturing run history information belong to the OO database. See *Appendix A: Tables diagram* for a diagram of these tables. The tables are:

- The *run table*
- The *run_history table*
- The *runstep_history* table
- The *property_history* table
- The *log_record* table
- The *flow_metrics* table

The run table

The **run** table stores information about flows that have not yet finished running. Every time a run performs a checkpoint, its current frame stack (including context variables) is placed into a binary object and written to a row in this table. The primary key of the **run** table is the **run id**. As soon as a run finishes, the entry in the **run** table is removed.

There are no foreign keys between this table and any other table.

The run_history table

The **run_history** table stores run information that is used in reporting. There is one row in this table stored for every execution of a flow. The table stores general information about the run, such as its start time, end time, the number of its steps, and how the run ended.

The runstep_history table

The **runstep_history** table stores reporting information for each step. There is a one-to-many relationship between the **run_history** table and the **runstep_history** table, enforced by a foreign key relationship between the **runstep_history.run_history_id** and **run.oid** fields, which uses cascading deletes.

Note: OO versions older than 7.20 require schema altering in order to properly support cascading deletes. See *Appendix B: Upgrading older schemas*.

The property_history table

The **property_history** table stores a row for each input of a step. There is a foreign key relationship between the fields **property_history.runstep_hist_id** and **runstep_history.oid**, with cascading deletes.

The log_record table

The **log_record** table stores a row for each step input that was designated to be recorded for reporting under a domain-term name. Essentially, it stores a subset of the data in the **property_history** table, but there is no foreign key relationship to the **runstep_history** table. If a **run_history** row is deleted, rows will also be deleted from the **runstep_history** and **property_history** tables, but the **log_record** table is left intact.

The data in this table is used to plot dashboard charts.

The flow_metrics table

The **flow_metrics** table stores flow outcome counters. There is one entry for each flow, with counters broken down into Resolved, Error, Diagnosed, No Action Taken, and Failed outcomes, as well as the cumulative time taken by the flows.

This table is used to create flow metrics bars like the one below:

Physically deleting data

To delete run histories, use the following approach

1. Upgrade the database schema if necessary (see *Appendix B: Upgrading older schemas*.)
2. Establish a timestamp (date and time) when run histories older than it are deleted.
3. Determine how many run histories should be deleted.
4. Divide these run histories into batches to minimize the transaction size.
5. Starting with the oldest batch, delete the batches using one transaction per batch as follows:
    a. Begin the transaction.
    b. Delete the run histories.
    c. Delete the rows for the deleted run steps from the **log_record** table, if necessary.
    d. Update the **flow_metrics** table to reflect the deleted rows.
    e. Commit the transaction.

These steps, excluding the first one (upgrading), can be performed on a periodic basis from a scheduled job. An example stored procedure is provided in *Appendix C: Example cleanup stored procedures*.

You can schedule the cleanup job from the SQLAgent graphical UI, or programmatically, as explained in *Appendix D: Example scheduling script*. If you choose to schedule the cleanup job programmatically, note that the scheduling API is different in SQL Server 2005 than in SQL Server 2000. We use the **sp_add_jobschedule** system procedure, which is provided in both versions.

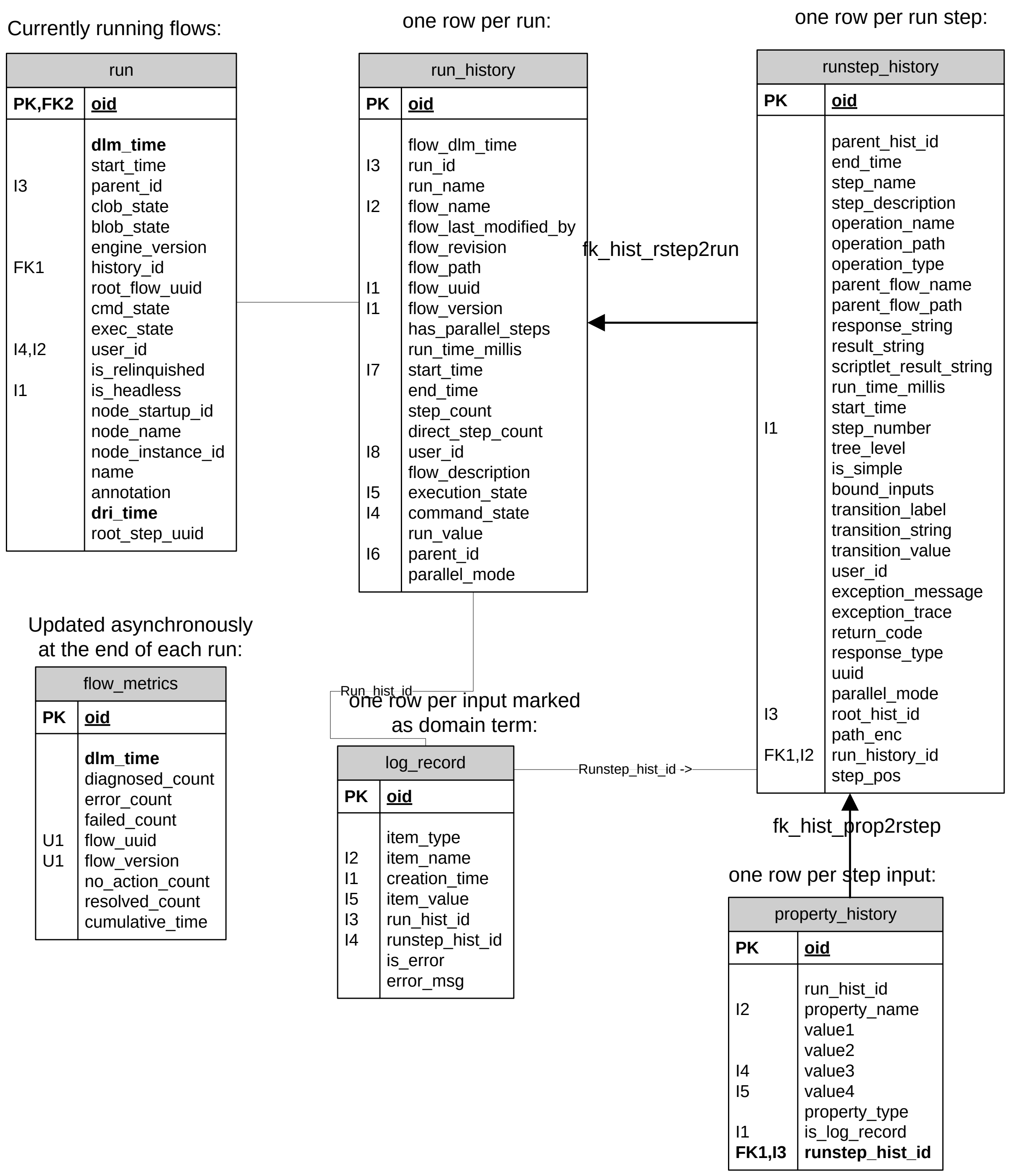
Appendices

The appendices in this section are meant to help you perform the necessary tasks involved in deleting run histories.

- *Appendix A: Tables diagram*
- *Appendix B: Upgrading older schemas*
- *Appendix C: Example cleanup stored procedure*
- *Appendix D: Example scheduling script*
- *Appendix E: Performance implications*

Appendix A: Tables diagram

7.50 Run Schema



run	
PK,FK2	**<u>oid</u>**
	dlm_time
	start_time
I3	parent_id
	clob_state
	blob_state
	engine_version
FK1	history_id
	root_flow_uuid
	cmd_state
	exec_state
I4,I2	user_id
	is_relinquished
I1	is_headless
	node_startup_id
	node_name
	node_instance_id
	name
	annotation
	dri_time
	root_step_uuid

run_history	
PK	**<u>oid</u>**
	flow_dlm_time
I3	run_id
	run_name
I2	flow_name
	flow_last_modified_by
	flow_revision
	flow_path
I1	flow_uuid
I1	flow_version
	has_parallel_steps
	run_time_millis
I7	start_time
	end_time
	step_count
	direct_step_count
I8	user_id
	flow_description
I5	execution_state
I4	command_state
	run_value
I6	parent_id
	parallel_mode

runstep_history	
PK	**<u>oid</u>**
	parent_hist_id
	end_time
	step_name
	step_description
	operation_name
	operation_path
	operation_type
	parent_flow_name
	parent_flow_path
	response_string
	result_string
	scriptlet_result_string
	run_time_millis
	start_time
I1	step_number
	tree_level
	is_simple
	bound_inputs
	transition_label
	transition_string
	transition_value
	user_id
	exception_message
	exception_trace
	return_code
	response_type
	uuid
	parallel_mode
I3	root_hist_id
	path_enc
FK1,I2	run_history_id
	step_pos

flow_metrics	
PK	**<u>oid</u>**
	dlm_time
	diagnosed_count
	error_count
	failed_count
U1	flow_uuid
U1	flow_version
	no_action_count
	resolved_count
	cumulative_time

log_record	
PK	**<u>oid</u>**
	item_type
I2	item_name
I1	creation_time
I5	item_value
I3	run_hist_id
I4	runstep_hist_id
	is_error
	error_msg

property_history	
PK	**<u>oid</u>**
	run_hist_id
I2	property_name
	value1
	value2
I4	value3
I5	value4
	property_type
I1	is_log_record
FK1,I3	**runstep_hist_id**

Appendix B: Upgrading older schemas

The following script detects older versions of the schema (OO versions 7.0 and earlier) and alters the appropriate tables in order to support cascading deletes. We recommend that you use the text copy of this script contained in the file **sqlserver_oo_upgrade_history_schema.sql** instead of copying the code below, which has line breaks to make reading easier.

```
USE <your_db_here>
GO

/* find out the build version so we know if we need to do some schema altering */
DECLARE @need_alters INTEGER ;
SET @need_alters = 0;

SELECT @need_alters=1
  FROM dbo.build_info
 WHERE dri_time IN (SELECT max(dri_time) FROM dbo.build_info)
   AND ((version LIKE '7.0%') OR (version LIKE '7.10%'));

/* only do this if version is < 7.11 !!! */
IF (@need_alters <> 0)
BEGIN

    RAISERROR('Preparing old schema for pruning ...', 0,1) WITH NOWAIT;

    /* this may fail if the constraint has already been dropped – that's ok*/
    ALTER TABLE dbo.runstep_history DROP CONSTRAINT fk_hist_rstep2parent;

    /** create index if not there already */
    CREATE INDEX idx_hist_prop_runhist_id
        ON dbo.property_history(run_hist_id);

    /* replace some of the foreign keys generated by hibernate
      with the same foreign keys, but with DELETE CASCADE */
    ALTER TABLE dbo.runstep_history
          DROP CONSTRAINT fk_hist_rstep2run;

    ALTER TABLE dbo.runstep_history
          ADD CONSTRAINT fk_hist_rstep2run
          FOREIGN KEY(run_history_id)
          REFERENCES run_history
          ON DELETE CASCADE;

    ALTER TABLE dbo.property_history
          DROP CONSTRAINT fk_hist_prop2rstep ;
    ALTER TABLE dbo.property_history
          ADD CONSTRAINT fk_hist_prop2rstep
          FOREIGN KEY (runstep_hist_id)
          REFERENCES runstep_history(oid)
          ON DELETE CASCADE;
END
GO
```

Appendix C: Example cleanup stored procedure

The following stored procedure illustrates the points made in the deletion algorithm. We recommend that you use the text copy of this stored procedure contained in the file **sqlserver_oo_prune_run_history.sql** instead of copying the code below, which has line breaks to make reading easier.

```
USE <your_db_here>
GO

DROP PROCEDURE dbo.oo_prune_run_history
GO

CREATE PROCEDURE dbo.oo_prune_run_history
    @keep_this_many_hours INTEGER = 2160, -- 90 days
    @prune_batch_size INTEGER = 1000,
    @prune_dashboards VARCHAR(5) = 'true',
    @recompute_flow_metrics VARCHAR(5) = 'true',
    @verbose INTEGER = 1
/*
* This procedure attempts to prune the run histories whose start_time
* was prior to a specified date. Please configure the parameters below
* according to your needs.
*
* The procedure will recompute the counters in the flow_metrics table.
*
* The script will execute a series of batch deletes to minimize the
* size of the transaction. The default size of the batch is 1000 histories
* at one time (note the records deleted is a lot more than 1000 as the
* associated run steps and their dependents are also deleted -- in other
* words, the script deletes 1000 history trees at a time).
*
* PARAMETERS:
*
* @keep_this_many_hours: sets the number of hours of history retained, relative to
the last known start time.
* Histories for runs whose start_time is less than (max(run_history.start_time) -
@keep_this_many_hours)
* will be deleted, unless their runs have not completed.
* Defaults to 2160 (90 days).
*       Example: @keep_this_many_hours = 24 -- keep only the last day.
*
* @prune_batch_size (default 1000): the batch size for pruning, in terms
* of number of run histories being deleted.
*       Example: @prune_batch_size = 1000
*
* @prune_dashboards: if set to 'true', the script will also delete data
* that supports dashboards. Otherwise it will leave the data in place,
* but because the supporting histories are deleted, links from the dashboards
* may not always produce the proper reports.
*      Example: @prune_dashboards = 'false'
*
* @recompute_flow_metrics: if set to 'true', after each batch of run histories
* is deleted, the flow_metrics table is update to reflect the new counts.
*      Example: @recompute_flow_metrics = 'false'
*
* @verbose: if set to a value greater than 0, the script will output messages
* about the progress of deletion, as follows:
*       if @verbose = 1, it outputs basic information at startup
*       if @verbose = 2, it also outputs information about each batch being
*                        deleted
*       if @verbose >= 3, it also outputs detailed information about flow
*                        metrics update
*
* RESULT: how many histories were pruned (an integer).
*/
AS
    SET NOCOUNT ON;


    /* set the deadlock priority for this session to low such that in case
       we disturb real runs, we're the losing party  */
    SET DEADLOCK_PRIORITY LOW;

    -- validate input params
    IF (@prune_batch_size < 2) BEGIN
        RAISERROR('Invalid pruning batch size, must be at least 2 rows',0,1)
           WITH NOWAIT;
    END;
    IF (@keep_this_many_hours < 1) BEGIN
        RAISERROR('Invalid time window, must be at least 1hr',0,1)
           WITH NOWAIT;
    END;

    DECLARE @msg VARCHAR(1000),
            @prune_start_time DATETIME,
            @batch_start_time DATETIME,
            @seconds INTEGER,
             @max_start_time DATETIME,
             @last_start_time DATETIME;

    SET @prune_start_time = GETDATE();

    /* declare local table variable to store the ids for what
       we want deleted. */
    DECLARE @oo_pruning_table TABLE (
        oid integer identity not null primary   key,
        run_id numeric(19,0),
        flow_uuid varchar(255) COLLATE DATABASE_DEFAULT,
        execution_state int,
        run_time_millis numeric(19,0));

    /* populate the pruning table with increasing id's taken from the
     * run_history table. Exclude histories whose runs are still active
     * inside the run table
     */
    SELECT @max_start_time = max(start_time) from run_history with (nolock);

    SET @last_start_time = DATEADD(hour, (-1 *  @keep_this_many_hours),
@max_start_time);

    IF (@verbose > 0)
    BEGIN
        SET @msg = 'Preparing pruning table. Will delete histories where start_time
<= '
            + CAST (@last_start_time AS VARCHAR);
        RAISERROR(@msg, 0,1) WITH NOWAIT;
    END;

    INSERT INTO @oo_pruning_table (run_id, flow_uuid,
          execution_state, run_time_millis)
     SELECT h.oid, h.flow_uuid, h.execution_state,
          cast(h.run_time_millis as numeric(19,0))
       FROM dbo.run_history h (nolock)
      WHERE h.start_time  <= @last_start_time
        AND NOT EXISTS (SELECT 1 FROM dbo.run r (nolock)
                        WHERE r.history_id = h.oid)
      ORDER BY h.oid ASC;

    /* this is how many records we try to prune (total) */
    DECLARE @prune_size INTEGER;
    SELECT @prune_size=COUNT(*) FROM @oo_pruning_table;

    IF (@verbose > 0)
    BEGIN
        SET @msg = 'Pruning set size is: ' + CAST (@prune_size as VARCHAR);
        RAISERROR(@msg, 0,1) WITH NOWAIT;
    END;

    DECLARE @batch_start INTEGER;
    SET @batch_start = 1;

    DECLARE @min_id INTEGER;
    DECLARE @max_id INTEGER;

    WHILE (@prune_size > 0 AND @batch_start <= @prune_size)
    BEGIN
            SET @batch_start_time = GETDATE();
            SET @min_id = @batch_start;
            SET @max_id = @batch_start + @prune_batch_size - 1;

            IF (@verbose > 1)
            BEGIN
              SET @msg = 'Deleting chunk: '
                + CAST(@min_id AS VARCHAR) + ' to '
                + CAST(@max_id AS VARCHAR);
              RAISERROR(@msg, 0,1) WITH NOWAIT;
            END;

            BEGIN TRANSACTION;

               IF (LOWER(@prune_dashboards) = 'true')
               BEGIN

                  IF (@verbose > 1)
                   RAISERROR('Deleting dashboard data...' , 0,1) WITH NOWAIT;

                  DELETE dbo.log_record
                    FROM dbo.log_record l
                  INNER JOIN @oo_pruning_table p
                     ON ((p.oid BETWEEN @min_id AND @max_id)
                         AND (l.run_hist_id = p.run_id))

               END;

               IF (@verbose > 1)
                RAISERROR('Deleting run history...' , 0,1) WITH NOWAIT;
               DELETE dbo.run_history
                 FROM dbo.run_history r
                INNER JOIN @oo_pruning_table p
                   ON ((p.oid BETWEEN @min_id AND @max_id)
                      AND (r.oid = p.run_id))

               IF (@verbose > 1)
                RAISERROR('Updating flow metrics...' , 0,1) WITH NOWAIT;

               -- update flow metrics if required:
               IF (LOWER(@recompute_flow_metrics) = 'true')
               BEGIN

                    IF (@verbose > 2)
                    BEGIN
                      RAISERROR('BEFORE:' , 0,1) WITH NOWAIT;
                      SELECT * from flow_metrics with (nolock);
                    END;

                    -- update the flow metrics table to subtract the
                    -- counts for the run history rows that we
                    -- have just deleted.
                    UPDATE dbo.flow_metrics
                      SET diagnosed_count=diagnosed_count-d.diagnosedCount,
                          error_count=error_count - d.errorCount,
                          failed_count=failed_count - d.failedCount,
                          no_action_count=no_action_count - d.noActionCount,
                          resolved_count=resolved_count - d.resolvedCount,
                          cumulative_time=cumulative_time - d.cumulativeTime,
                          dlm_time = GETDATE()
                     FROM dbo.flow_metrics
                    INNER JOIN (
                     SELECT flow_uuid,
                            sum(case when execution_state = 0
                                then 1 else 0 end) as diagnosedCount,
                            sum(case when execution_state = 1
                                then 1 else 0 end) as resolvedCount,
                            sum(case when execution_state = 2
                                then 1 else 0 end) as noActionCount,
                            sum(case when execution_state = 3
                                then 1 else 0 end) as errorCount,
                            sum(case when execution_state = 2147483647
                                then 1 else 0 end) as failedCount,
                            sum(run_time_millis) as cumulativeTime
                       FROM @oo_pruning_table
                      WHERE oid BETWEEN @min_id AND @max_id
                      GROUP BY flow_uuid
```

```
                   ) AS d
                   ON dbo.flow_metrics.flow_uuid = d.flow_uuid
                   AND dbo.flow_metrics.flow_version = 0;

                   -- now delete the metrics for those flows that are
                   -- left with 0 counts across the board
                   DELETE FROM dbo.flow_metrics
                         WHERE diagnosed_count = 0
                           AND failed_count = 0
                           AND no_action_count = 0
                           AND resolved_count = 0
                           AND error_count = 0
                           AND EXISTS (SELECT 1 FROM @oo_pruning_table p
                                        WHERE oid BETWEEN @min_id AND @max_id
                                          AND flow_uuid = p.flow_uuid);


                 IF (@verbose > 2)
                 BEGIN
                   RAISERROR('AFTER:' , 0,1) WITH NOWAIT;
                   SELECT * from flow_metrics with (nolock);
                 END;

            END; -- update flow metrics

            COMMIT TRANSACTION;

            SET @batch_start = @batch_start + @prune_batch_size ;

            IF (@verbose > 1)
            BEGIN
               SELECT @seconds = DATEDIFF(second,
                   @batch_start_time, GETDATE());
               SET @msg = 'Batch pruning time was: '
                    + CAST(@seconds as VARCHAR) + ' seconds';
               RAISERROR(@msg, 0,1) WITH NOWAIT;
            END;
    END;

    IF (@verbose > 0)
    BEGIN
        SELECT @seconds = DATEDIFF(second, @prune_start_time, GETDATE());
        SET @msg = 'Total pruning time was: '
                + CAST(@seconds as VARCHAR) + ' seconds';
        RAISERROR(@msg, 0,1) WITH NOWAIT;
    END;
    RETURN @prune_size

-- END PROCEDURE

GO
```

Appendix D: Example scheduling script

The following script creates a schedule and job to run the database pruning script on a recurring basis. We recommend that you use the text copy of this script contained in the file **sqlserver_oo_schedule_prune_run_history.sql** instead of copying the code below, which has line breaks to make reading easier.

```
USE <your_db_here>
GO

/*
 * This script attempts to schedule a run of the oo_prune_run_history stored
procedure.
 * Please set the parameters to your preference.
 */
DECLARE @dbName VARCHAR(128),
        @dbUser VARCHAR(32),
        @jobName VARCHAR(128),
        @jobScheduleName VARCHAR(128),
        @jobDesc VARCHAR(512),
        @jobID UNIQUEIDENTIFIER,
        @jobStartTime VARCHAR(12),
        @ooCommand VARCHAR(1024),
        @hours_retained INTEGER,
        @log_file VARCHAR(1024)


/* how many hours to keep (calculated from the last known start_time in the table
run_history) */
SET @hours_retained = 2;

/* what user do you want the job to run as, defaults to current user */
SELECT @dbUser = CURRENT_USER;

/* what is the database you want pruned, defaults to current database */
SET @dbName = DB_NAME(DB_ID());

/* how to call the job */
SET @jobName = 'oo_prune_run_history_job' ;

SET @jobScheduleName = 'schedule for ' + @jobName;

SET @jobDesc = 'Purge run histories older than '
        + CAST(@hours_retained AS VARCHAR)
        + ' hours';

/*
 * where to log the output of the job (you can also see this output if you view the
detailed job history in SQLAgent)
 *
 * Note that the success of writing this log file depends on
 * how the user that runs the procedure may be set up (i.e
 * what type of system user is it associated with, and what
 * type of permissions are there for the file).
 */
SET @log_file = 'C:\tmp\oo_prune_history_job.log';

/* check if SQLAgent is running */
IF (SELECT count(*)
      FROM Master.dbo.SysProcesses
     WHERE Program_Name = 'SQLAgent - Generic Refresher') = 0
BEGIN
    RAISERROR('Could not schedule procedure oo_prune_run_history: SQLAgent is not
running!', 0, 1)
         WITH NOWAIT
    RETURN;
END

SET @ooCommand = 'EXEC dbo.oo_prune_run_history '
        + '@keep_this_many_hours = '
        + CAST(@hours_retained AS VARCHAR)
        + ', @verbose = 2';

/* create a job */
EXEC msdb..sp_add_job
    @job_name = @jobName,
    @enabled = 1,
    @description = @jobDesc,
    @job_id = @jobID OUTPUT;


/* add target server to the job */
EXEC msdb..sp_add_jobserver
    @job_id = @jobID,
    @server_name = @@SERVERNAME;

-- create step1, actual command
EXEC msdb..sp_add_jobstep
    @job_id = @jobID,
    @step_name = 'Run procedure oo_prune_run_history',
    @subsystem = 'TSQL',
    @command = @ooCommand,
    @database_name = @dbName,
    @database_user_name = @dbUser,
    @output_file_name = @log_file,
    @flags = 2; -- append to output file.

-- start the job 10 minutes from now.
-- Schedule proc requires HHMMSS. CONVERT(8) returns HH:MM:SS
--SET @jobStartTime = REPLACE(CONVERT(VARCHAR, DATEADD(minute, 10, GETDATE()), 8),
':', '');

-- schedule the job
EXEC msdb..sp_add_jobschedule
    @job_id = @jobID,
    @name = @jobScheduleName,
    @enabled = 1,
    @freq_type = 4, -- daily
    @freq_interval = 1,
    @freq_subday_type = 8, -- hourly
    @freq_subday_interval = 2; -- every 2 hours

GO
```

Appendix E: Performance implications

Here are some recommendations for using the pruning code:

- Choose a pruning set size that is appropriate to your particular situation. This is important for maintaining the well being of your OO system. The number of hours retained should be calculated so that the pruning stored procedure deletes small amounts of history while allowing Central to make progress in running flows.
- The stored procedure uses a local table variable, which is allocated out of the temporary tablespace**.** The table contains IDs for the whole set size, not just for one individual batch. Make sure that there is enough space for it.
- In general, it is better to run the pruning procedure run more often with small batches, than less frequently with larger batches. This helps both Central and SQL Server’s throughput, as the pruning jobs can be interleaved with normal processing jobs.
- Although beyond the scope of this document, note that proper allocation of disk space is important when considering the performance of the database. Having separate physical drives for the database file and the transaction log (separate from the operating system) is a good start. Use the **perfmon** tool and the SQL Server counters to monitor the disk activity during pruning to establish the impact on the disk resource.