Utilizing /RETAIN=ERROR to Make Life Easier

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Overview

The /RETAIN=ERROR qualifier is a useful tool to identify problem batch and print jobs. This article discusses how to deploy the qualifier to your advantage as part of OpenVMS system maintenance and monitoring.

Now I am certain that none of the fine, intelligent, good looking people that read this august publication ever submitted a batch or print job that would generate an error. Sadly, the world is full of lesser mortals that do and when this happens, we need to know about it.

Flattery aside, I am continually astonished at how few OpenVMS sites implement /RETAIN=ERROR on their queues, particularly batch queues. I have audited sites where a review of log files reveals that some jobs have not successfully run to completion for years. Since no one ever goes back and checks the logs, no one is aware of the problem. This situation often leads to painful and expensive long term data corruption.

One of the easiest ways to impress users is to contact them when a job goes bad before they become aware of it. Proactive maintenance of this sort will make you lots of long term friends and result in a smooth running system. The goal is less work for you and /RETAIN=ERROR can help you achieve it.

How it Helps

/RETAIN=ERROR retains job information on a queue if the job ends abnormally. The primary cause of an abnormal job termination for a batch job is an error within the job. Retaining the job information tells us what job failed and what parameters were used to invoke it. Reviewing the log file tells us where the job failed which helps identify the root cause of the problem.

For print jobs, a job being retained on error can signify an invalid PRINT statement, corrupted print file, or problem with the printer. As with batch jobs, knowing a problem exists is the first step towards eliminating the problem.

Retaining Log Files

A quick aside here: I strongly recommend retaining batch job log files. The /NOPRINT and /KEEP qualifiers ensure a log file is retained after a job completes. OpenVMS's default behavior is to delete a log file if a job completes successfully unless /KEEP or /NOPRINT are specified.

I like retaining several versions of a log file. Having a complete log file from a valid run to compare to a log file from a failed run is a useful troubleshooting tool. An appropriately tuned PURGE command following the SUBMIT command ensures log files do not pile up unnecessarily.

```
$ SUBMIT /NOPRINT /LOG=LOGS: DOWNLOADS:5_MINUTE_CHK.COM
$ PURGE /KEEP=12 LOGS:5_MINUTE_CHK.LOG
```

Figure 1: Retain the last 12 log files for the procedure 5_MINUTE_CHK.

```
$ SUBMIT /NOPRINT /LOG=PAYLOGS: PAYROLL:MONTH_END.COM
$ PURGE / BEFORE="TODAY-365-00" PAYLOGS:MONTH_END.LOG
```

Figure 2: Retain the last year's worth of Month End payroll logs. How does this retain 12 months of logs? Should AFTER include a parameter?

/RETAIN=ERROR Set Up for a Queue

Configuring a queue to enable /RETAIN=ERROR is easy. Simply add the /RETAIN=ERROR qualifier to the INITIALIZE command when creating the queue.

```
$ INITIALIZE /QUEUE /RETAIN=ERROR /BATCH PAYROLL_BATCH
```

Figure 3: Create a queue with /RETAIN=ERROR.

You can also add the /RETAIN=ERROR qualifier to an exiting queue with the START or SET queue commands.

```
$ START /QUEUE /RETAIN=ERROR SYS$BATCH
```

Figure 4: Adding /RETAIN=ERROR on queue start up.

```
$ SET QUEUE /RETAIN=ERROR SYS$BATCH
```

Figure 5: Adding /RETAIN=ERROR to a running queue.

For my money, using /RETAIN=ERROR at the queue level is the way to go. I want to know when any job fails so I can determine the root cause and eliminate the problem. However, /RETAIN=ERROR usage can be refined to the job level if so desired.

/RETAIN=ERROR Set Up for a Job

/RETAIN=ERROR can be specified for individual jobs. Be advised that /RETAIN settings on generic and execution queues to which the job is submitted can override the local job setting. To quote directly from OpenVMS Help:

"Although you can specify job retention options for your own jobs, the job retention option you specify may be overridden by the job retention option of the queue on which your job executed. If you submit or print a job to a generic queue, the generic queue's job retention setting may also override the job retention option you specify. This section describes how job retention is determined.

An execution queue's job retention setting takes precedence over a generic queue's job retention setting; however, if the job's completion status does not match the job retention setting (if any) on the execution queue, then the generic queue's job retention setting attempts to control job retention. If the job's completion status does not match the job retention setting (if any) on the generic queue, then the user-specified job retention setting is used. Jobs submitted directly to execution queues are not affected by job retention settings on generic queues.

> If the execution queue's retention setting applies, the job is retained on the execution queue. Likewise, if the generic queue's retention setting applies, the job is retained on the generic queue. If the user-specified setting applies, the job is retained in the queue to which it was submitted."

Have a look at the SUBMIT command description in the HP OpenVMS DCL Dictionary for a comprehensive description of /RETAIN precedence rules.

Using /RETAIN=ERROR at the job level allows you monitor specific jobs. If the queues upon which the jobs run do not have a conflicting /RETAIN policy, the job will be retained if it completes unsuccessfully.

```
$ PRINT /RETAIN=ERROR /QUEUE=LASER_21 RPT:FS3302.LIS
```

Figure 6: Print job FS3302 is retained on queue LASER_21 if it fails to print.

```
$ SUBMIT /RETAIN=ERROR /LOG=LOGS: /KEEP INVENTORY:INV906.COM
```

Figure 7: Job INV906 will be retained on queue SYS$BATCH if it fails to complete successfully.

Checking Job Status

Presuming your user account has the correct privileges or access controls, checking for retained jobs is as easy as issuing a SHOW QUEUE statement. Use the /BY_JOB_STATUS=RETAIN qualifier to limit the display to retained jobs.

```
$ SHOW QUEUE /BY_JOB_STATUS=RETAIN SYS$BATCH
```

Figure 8: Display retained jobs on SYS$BATCH queue.

Now, given that computers are intended to simplify our lives via automation of mundane tasks, it makes sense to have OpenVMS check for retained jobs automatically and notify you of any found. You will find a DCL procedure called BATCHQ_CHECK.COM in our article *Using OpenVMS to Meet a Sarbanes-Oxley Mandate Part 2: The DCL* that accomplishes this assignment.

Conclusion

So there you have it. The /RETAIN=ERROR feature provides another simple method to proactively monitor an OpenVMS system while impressing end users and management with your skill and acumen. Start using it today to identify and correct problem jobs on your OpenVMS system.

About the author: Mr. Bruce Claremont has been working with OpenVMS since 1983. Mr. Claremont has extensive programming, project management, and system management experience. He founded Migration Specialties in 1992 and continues to deliver OpenVMS and application migration services along with hardware emulation solutions. More information about Migration Specialties products and services can be found at *www.MigrationSpecialties.com*.

For more information

More on DCL development:

- *Using OpenVMS to Meet a Sarbanes-Oxley Mandate Part 2: The DCL*
  http://www.migrationspecialties.com/pdf/Using%20OpenVMS%20to%20Meet%20a%20Sarbanes-Oxley%20Mandate2.pdf

- *Simplification Thru Symbols*
  http://h71000.www7.hp.com/openvms/journal/v10/simplificationthrusymbols.html

- *Simplifying Maintenance with DCL*
  http://h71000.www7.hp.com/openvms/journal/v9/simplifying_maintenance_with_dcl.html

- F$GETQUI to the Rescue
  http://h71000.www7.hp.com/openvms/journal/v11/F$GETQUI.html

For the latest issue of the OpenVMS Technical Journal, go to:
http://www.hp.com/go/openvms/journal.