Self-Service Utility to List and Terminate SAS® grid jobs

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ABSTRACT

SAS® programmers always have difficulty to find their submitted jobs information, and they always depend on SAS® interactive client tools like SAS® EG and Putty sessions to terminate them. In most cases the SAS® administrators have to be involved to terminate unneeded jobs. The solution is to develop a self-service utility, so that the programmer can list and kill the jobs that are no longer required. With this approach users can improve overall performance of their environment and remove the dependency on the SAS® administrators to kill the user jobs.

INTRODUCTION

This paper talks about the solution that has been developed using a SAS® stored process utilizing LSF commands within a SAS® data step and html.
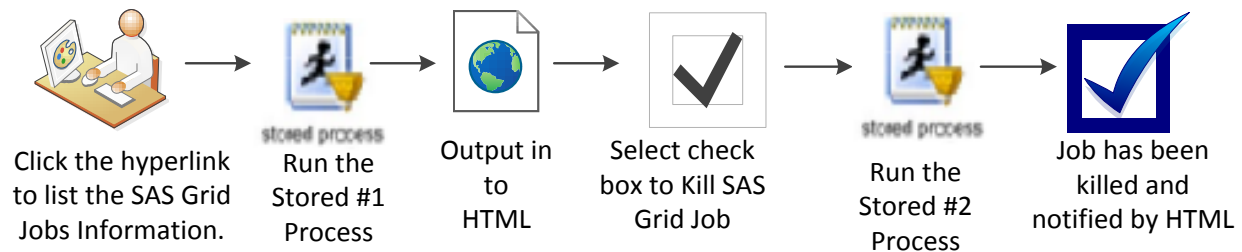
APPROACH

Our SAS® grid environment currently supports 3000+ users spread across various business areas and geographical locations. One of the responsibilities of the SAS® administrator is to identify and help users to clean any of large resource consuming jobs. The current process in place is not a self-service process. The admin team communicates to users with a list of long running processes and guides them on how to kill them.

I have developed a self-service solution that has two-step process

1. List all the processes that are owned by an individual user.
2. An option to terminate a process.

Flow diagram for how to terminate a Grid job using stored process:

| Click the hyperlink to list the SAS Grid Jobs Information. | Run the Stored #1 Process | Output in to HTML | Select check box to Kill SAS Grid Job | Run the Stored #2 Process | Job has been killed and notified by HTML |

SAS® Program:

SAS® Stored process #1:

```
/****Get the user submitted jobs information in to a Data step ****/

options symbolgen mlogic mprint;
%let footnote = email the SAS® Team at noreply@outlook.com for any
questions.;
title "<img src='https://SAS®server01.demo.SAS®/SAS®/images/optum.png'
height=40>";
%let workdir = %sysfunc(pathname(work));
filename jobs pipe "bjobs -w -u &sysuserid";

data jobs (drop=r1 r2 r3 month day time);
     infile jobs firstobs=2 dlm=" " missover;
     length job_id          $20.
            user            $20.
            status          $20.
            queue           $20.
            sub_server      $30.
            ex_server       $30.
            jobname         $100.
            month           $20.
            day             $20.
            time            $20.
            r1              $20.
            r2              $20.
            r3              $20.
     ;
     input job_id           $
           user             $
           status           $
           queue            $
           sub_server       $
           ex_server        $
```

```sas
                jobname           $
                month             $
                day               $
                time $
                r1    $
                r2    $
                r3    $
        ;
        submit_time = compbl(month||day||time);

        if submit_time=: 'enterprise guide' then delete;
run;

/**** Export the user job information In to text file ******/

proc export data=jobs
            outfile="~/jobs.txt"
            dbms=csv
            replace
            ;
run;

/**** Manipulate the Jobs data set as in required format ****/

data jobs(drop= submit_time_month submit_time_day submit_time_timeyr);
        infile "~/jobs.txt" dlm=',' truncover missover firstobs=2;
        attrib from_host length=$30;
        attrib exec_host length=$30;
        attrib job_name length=$200;
        attrib submit_time length=$30;
        input
                jobid $
                user $
                stat $
                queue $
                from_host $
                exec_host $
                job_name $
                submit_time $;
run;

/**** SAS® Html code to surface the jobs information in to html
browser and call another SAS® Stored process to kill active SAS® Grid
sessions ****/

data _null_;
        length line $ 5000;
        file _webout lrecl=32000;
        put "<tr><td><img
src='https://SAS®server01.demo.SAS®/SAS®/images/optum.png'><td><tr>";
        put '<form id="sub_form" action="https:// SAS®server01.demo.SAS®
/SAS®storedprocess/do?_action=form,properties,execute,nobanner,newwind
```

```sas
ow&_program=%2fSAS®server%2fprojects%2fbia_automation%2fjobs%2fkill_ac
tive_process" method="post" enctype="multipart/form-data">';
      put "<table>";
      put  "<table border=1> ";
      put "<tr style='color:blue;bcolor:#ffa500;'>";
      put "<td>jobid</td>";
      put "<td>user</td>";
      put "<td>stat</td>";
      put "<td>queue</td>";
      put "<td>from_host</td>";
      put "<td>exec_host</td>";
      put "<td>job_name</td>";
      put "<td>submit_time</td>";
      put "<td>select to kill</td>"; /** Add select to Kill button in
HTML Page **/
      put "</tr>";
run;

data _null_;
      set jobs;
      length line $ 5000;
      file _webout lrecl=32000;
      put '<tr>';
      put '<td>';
      put jobid;
      put '</td>';
      put '<td>';
      put user;
      put '</td>';
      put '<td>';
      put stat;
      put '</td>';
      put '<td>';
      put queue;
      put '</td>';
      put '<td>';
      put from_host;
      put '</td>';
      put '<td>';
      put exec_host;
      put '</td>';
      put '<td>';
      put job_name;
      put '</td>';
      put '<td>';
      put submit_time;
      put '</td>';
      put '<td>';
      put "<input type='checkbox' name='save_ks_" jobid "'>";
      put '</td>';
      put '</tr>';
run;
```

```
/**** Add Kill button in the HTML Page ****/

data _null_;
      length line $ 5000;
      file _webout lrecl=32000;
      put "<br>";
      put "</table>";
      put "<br>";
      put '<input type="submit" value="kill" align="center">';
      put '<input type="checkbox" name="_debug" value="log">show SAS®
log';
      put '</form>';
      put "<br />";
      put "<br />";

run;
```

SAS®® Stored process #1:

```
%put _global_;

*check values;
data abc;
      set SAS®help.vmacro;

      *pull list of macro names;
      where name like "save_ks_%";
      call symput ('kjobid',substr(name,9));
run;

proc sql;
      select substr(name,9) into :kjobid separated by ' ' from  abc;
quit;

%put --->&kjobid.;
x "bkill &kjobid.";

data _null_;
      length line $ 5000;
      file _webout lrecl=32000;
      put "<table width=100%><tr><td colspan=2><img
src="'"https://SAS®server01.demo.com/SAS®/images/optum.png"'"align=lef
t></td></tr>";;
      put "<tr><td> </td></tr> ";
      put "<tr><td> </td></tr> ";
      put "<tr><td> </td></tr> ";
      put "<tr><td> </td></tr> ";
      put "<tr><td> </td></tr> ";
      put "<tr><td> </td></tr> ";
      put "<tr><td> </td></tr> ";
```

```
        put "<tr><td> </td></tr> ";
        put "<tr><td>odm SAS® team </td></tr> ";
        put "<tr><td colspan=2><hr color=black></td></tr>";
        put "<td>your SAS® job(s) has been killed &kjobid. </td>";
        put "</tr>";
        put "<tr><td colspan=2><hr color=black></td></tr>";
        put "</tr>";
        put "<tr><td> </td></tr> ";
        put "<tr><td> </td></tr> ";
        put "<tr><td> </td></tr> ";
        put "<tr><td> </td></tr> ";
        put "<tr><td> </td></tr> ";
        put "<tr><td> </td></tr> ";
        put "<tr><td> </td></tr> ";
        put "<tr><td> </td></tr> ";
        put "<tr><td> </td></tr> ";
        put "<table width=100%><tr><td></td></tr><tr><td colspan=2>email
the SAS®team at SAS®team@noreply.com for any
questions</td></tr></table>";
run;
```

Sample output to list of all Grid job list for SAS® user and select kill check box that is no longer needed.

JOBID	USER	STAT	QUEUE	FROM_HOST	EXEC_HOST	JOB_NAME	SUBMIT_TIME	SELECT TO KILL
375859	sasuser	RUN	normal	sasserver01.demo.com	sasserver03.demo.com	DEMOTEST_A	Apr 29 04:37	☑
375869	sasuser	RUN	normal	sasserver01.demo.com	sasserver04.demo.com	DEMOTEST_SLEEP	Apr 29 04:44	☐
375863	sasuser	RUN	normal_B	sasserver02.demo.com	sasserver04.demo.com	normal_Studio	Apr 29 04:40	☐
375864	sasuser	RUN	normal_B	sasserver02.demo.com	sasserver04.demo.com	normal_Studio	Apr 29 04:40	☐

[KILL] ☐ Show SAS Log

Output when you click on KILL tab:

General   Reset to Default
_webin_file_count
[0]

save_ks_375859
[on]

[Run]

You Grid job have been terminated (One active session):

ODM SAS TEAM

Your SAS Job(s) has been killed 375859

Email the Optum SAS Team at ████████████████████ for any questions

Sample output if you terminate multiple Grid job sessions:

ODM SAS TEAM

Your SAS Job(s) has been killed 375863 375864 375869

Email the Optum SAS Team at ████████████████ for any questions

CONCLUSION:

Having a user open SAS® EG or Putty from desktop tool to see a list of jobs and terminate if needed is a difficult request to users. So this solution makes the administrator's life easy by allowing the user to use a browser based tool to see list of jobs submitted and terminate if they are longer needed..

REFERENCES:

https://www.w3schools.com/css/css_boxmodel.asp

http://support.SAS®.com/documentation/cdl/en/stpug/61271/HTML/default/viewer.htm#httphead.htm

http://support.SAS®.com/documentation/cdl/en/stpug/61271/HTML/default/viewer.htm#datapass.htm

ACKNOWLEDGMENTS

I would like to thank Misba Rehman, Bill Trantina, Whit Box and Ravi Gottumukkala for their constant support and encouragement. I will also like to thank Mcneely Kai D of his valuable input and support during above code development.

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