

SAS Life Science Analytics Framework 5.4.2

***August 2024***

***Upgrade Instructions***

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## Checklist A: “Backup of Customized LSAF Files”

***Note*:** This document is intended to assist an administrator in installing ***Life Science Analytics Framework (LSAF) 5.4.2*** fromversion ***5.4.x***.

***Installation and Deployment notes:***

* LSAF 5.4.2 was validated against **RHEL 8.10**. The Operating System should be updated to this version prior to executing the checklists below.
* LSAF 5.4.2 was validated against **SAS 9.4 M8**.
* LSAF 5.4.2 was validated against **R 4.4**.
* LSAF 5.4.2 uses **Java 11** on the Web Application and R/SAS Application servers.
* The *hostname* command of each server must resolve to the **FQDN (Fully Qualified Domain Name).** This is required for LSAF session cleanup to work with certificates. If this does not return the FQDN, run:
  + sudo hostnamectl set-hostname <hostname>.vsp.sas.com (ex: hostnamectl set-hostname hls111au.vsp.sas.com)
  + sudo hostnamectl status --static (to verify FQDN is set)
* For LSAF 5.4.2 installs, copy everything in the LSAF\_Setup\_54\542\install\_area directory into /sso/depot.
* For SAS servers, a new order is required to obtain a SAS 9.4 M8 depot. Once this order has been created and SAS depot downloaded, copy the SAS depot to /sso/depot/sas94m8depot.
* Oracle 19c is used in LSAF 5.4.2, so database migration is not required in this upgrade.

| **Checklist A: “Backup of Customized LSAF Files”** | | **Corresponding Document: *None*** | |
| --- | --- | --- | --- |
| ***#*** | ***Activity*** | ***Expected Results*** | ***Actual Results*** |
|  | Login to an admin PC. | Windows display appears. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Using the putty tool, create an **ssh** connection from the admin PC to the web server and login as **webtrust**.  Make sure the Enable X11 forwarding option is not set. Setting this option causes the web application to crash occasionally. | You’re prompted for the password. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Enter the webtrust *password*. | You’re logged into web server. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Use the **script** command to capture commands that are typed in the Unix window. The syntax is **script /var/staging\_logs/<***servername***>\_542upgrade.txt** | System should indicate script has started. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | If any customizations were made to the LSAF 5.4.2 web application, these files should be copied to another location on this server.  **Ex: cp /sso/sfw/tcServer/instances/lsafserver1/webapps/lsaf/WEB-INF/web.xml /sso/sfw/lsaf542\_custom** | Files are copied as a backup. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |

| Implementer Signature below indicates completion of Checklist A, items A1 – A5, above. | | | | |
| --- | --- | --- | --- | --- |
| Completed By: | Signature | Checklist Results | Implementation Date | Signature  Date |
|  |  | ☐ Pass ☐ Fail |  |  |

***Implementer Notes*** (☐ Yes ☐ No):

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## Checklist B: “Shutdown of LSAF 5.4.x Processes”

| **Checklist B: “Shutdown of LSAF 5.4.x Processes”** | | **Corresponding Document: *None*** | |
| --- | --- | --- | --- |
| ***#*** | ***Activity*** | ***Expected Results*** | ***Actual Results*** |
|  | Open a second **ssh** window to this server and log in as **webtrust**.  ***Note:*** For this work, you need your shell to display a full-screen applications from Linux. For example many administrators use MobaXterm. | You are logged on as **webtrust**, in the home directory /home/webtrust. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | **Shutdown tcServers**  Type **cd /sso/sfw/tcServer/instances** | Navigate to that directory. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **tcserver stop lsafserver1** | System displays:  Instance stopped | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **ps –ef | grep lsafserver1** | You should not see the tcserver process running. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **cd lsafserver1/logs** | Navigate to the /sso/sfw/tcServer/instances/lsafserver1/logs directory. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Delete or rename the **lsaf\_info.log** and **catalina.out** files. | Log files are deleted or renamed. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **ls –al** | Verify that log files have been renamed or deleted and the .pid file has been deleted. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Repeat **steps B3 – B7** for the remaining tcServers, including stopping the **lsafserveradmin** tcServer. Repeat this for each physical server that has tcServers installed. | There are no tcServer processes running. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | **Stop LSAF Execution Server for R**  Using the putty tool, create an **ssh** connection from the admin PC to  the SAS OMR/R Server and login as **webtrust.**  ***Note***: If the LSAF Execution server for R is on a separate OMR/R/SAS server, then you will need to execute this step on that server. | You’re prompted for the password. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Enter the webtrust *password*. | You’re logged into the SAS OMR/R Server | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  **cd /sso/sfw/lsafexecution** | Directory is changed. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  **./lxserver.sh stop** | System displays:  Stopped [*pid*] | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **cd logs** | Navigate to the /sso/sfw/lsafexecution/logs directory. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Delete or rename the **lxserver.log** and **lxserver.out** files. | Log files are deleted or renamed. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **ls –al** | Verify that log files have been renamed or deleted. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |

| Implementer Signature below indicates completion of Checklist B, items B1 – B15, above. | | | | |
| --- | --- | --- | --- | --- |
| Completed By: | Signature | Checklist Results | Implementation Date | Signature  Date |
|  |  | ☐ Pass ☐ Fail |  |  |

***Implementer Notes*** (☐ Yes ☐ No):

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## Checklist C: “Update to SAS 9.4 M8”

| **Checklist C: “Update to SAS 9.4 M8”** | | **Corresponding Document: *None*** | |
| --- | --- | --- | --- |
| ***#*** | ***Activity*** | ***Expected Results*** | ***Actual Results*** |
|  | Using the putty tool, create an **ssh** connection from the admin PC to the SAS compute server or single SAS server and login as **sasadmin**. | You’re prompted for the password. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Enter the sasadmin *password*. | You’re logged into SAS server. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Use the **script** command to capture commands that are typed in the Unix window. The syntax is **script /var/staging\_logs/<***servername***>\_sas\_m8\_update.txt** | System should indicate script has started. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | **Stop ObjectSpawner and (Metadata Server)**  Stop the SAS server processes by typing one of the example commands below. If this is a single SAS server system, type **/sso/biconfig/940/Lev1/sas.servers stop** to stop the Metadata Server and Object Spawner.  Otherwise, to stop the Object Spawner process type **/sso/biconfig/940/Lev1/ObjectSpawner/ObjectSpawner.sh stop**  or type **/sso/biconfig/940/Lev1/ObjectSpawner***<servername>***/ObjectSpawner.sh stop** | The SAS processes are stopped. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  **/sso/biconfig/940/Lev1/sas.servers status** | System displays:  SAS servers status:  SAS Metadata Server 1 is NOT up  SAS Object Spawner 1 is NOT up | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | **Backup of SAS**  This update to SAS 9.4 M8 is an upgrade in place. It is highly recommended to create a copy of the **/sso/biconfig/940** and **/sso/sfw/sas/940** directories to keep a copy of SAS 9.4 M7. | A backup of SAS 9.4 M7 is taken. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | **Verify System and Hardware Requirements**  Type the following:  cat /etc/redhat-release | The system displays:  Red Hat Enterprise Linux Server release 8.10 (Ootpa)  If this is not listed open a ServiceNow ticket to have it resolved. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Verify the following packages are installed as required by SAS 9.4 M8. Type the following:  **rpm -qa | grep libXp**  *Note*: To install the package run the following:  sudo yum install libXp  Then run the original rpm command to verify. | The minimum version of the following must be displayed:  libXp-1.0.3-3.el8.x86\_64  You may see more than one line returned, which is acceptable. | Pass Fail N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  **rpm** -qa | grep libXmu  *Note*: To install the package run the following:  sudo yum install libXmu  Then run the original rpm command to verify. | The minimum version of the following must be displayed:  libXmu-1.1.3-1.el8.x86\_64  There may be more than one line returned, which is acceptable. | Pass Fail N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  **rpm** -qa | grep glibc  *Note*: To install the package run the following:  sudo yum install glibc  Then run the original rpm command to verify. | The minimum version of the following must be displayed:  glibc-2.28-151.el8.x86\_64  There may be more than one line returned, which is acceptable. | Pass Fail N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  rpm -qa | grep numactl  *Note*: To install the package run the following:  sudo yum install numactl  Then run the original rpm command to verify. | The minimum version of the following must be displayed:  numactl-2.0.12-11.el8.x86\_64  There may be more than one line returned, which is acceptable. | Pass Fail N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  rpm -qa | grep libpng15  *Note*: To install the package run the following:  sudo yum install libpng15  Then run the original rpm command to verify. | The minimum version of the following must be displayed:  **libpng15-1.5.30-7.el8.x86\_64**  There may be more than one line returned, which is acceptable. | Pass Fail N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  rpm -qa | grep xauth  *Note*: To install the package run the following:  sudo yum install xauth  Then run the original rpm command to verify. | The minimum version of the following must be displayed:  **xorg-x11-xauth-1.0.9-12.el8.x86\_64**  There may be more than one line returned, which is acceptable. | Pass Fail N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  rpm -qa|grep ncurses-compat-libs  *Note*: To install the package run the following:  sudo yum install ncurses-compat-libs  Then run the original rpm command to verify. | The minimum version of the following must be displayed:  **ncurses-compat-libs-6.1-10.20180224.el8.x86\_64**  There may be more than one line returned, which is acceptable. | Pass Fail N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | **Upgrade SAS**  Type the following:  **cd /sso/depot** | Navigate to that directory | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following (root privs may be required):  chown –R sasadmin:sasadmin sas94m8depot | Ownership is updated for directory and files. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following (root privs may be required):  chmod –R 755 sas94m8depot | Permissions are updated for directory and files. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  ls –al sas94M8depot | You see several directories and files such as:  cd.id  depotsummary.html  hot\_fix  install\_doc  media\_data  order\_data  plan\_files  product\_data  products  sassd.txt  setup.dat  setup.exe  setup.rexx  setup.sh  sid\_files  utilities  vjr | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Navigate to [LSAF\_Setup\_54]/542/SAS/plans path. Select the plan file from the **lsaf\_94m8** directory.  Make sure the selected directory has a plan file in it. If not, copy one to this directory. Type the following:  **ls –al sas94m8depot/plan\_files** | There is a plan.xml file in the directory. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  umask 022 | The umask is set. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  cd sas94M8depot | Navigate to that directory. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  ./setup.sh -record -deploy -nohotfix -responsefile /home/sasadmin/staging\_logs/<server\_name>\_94m8\_response.properties | The Choose Language window displays. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Select **English** and click **OK**. | The Select Deployment Task page displays. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Select **Install SAS software** and click **Next**. | The Specify SAS Home page displays. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | The **Select a previously created SAS Home** radio button should be selected with the location highlighted. Click **Next**.  For example:  **/sso/sfw/sas/940** | The Review Required Updates page displays. Review the list of products that will be updated to the latest release contained in the SAS Software Depot you are installing from. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Click **Next** | The Specify Remote Communication Configuration page displays. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Keep the defaults and click **Next**. | The SAS Deployment Wizard does a system check and then the displays the results in the Checking System page. In the middle of the screen, you should see, “Unwritable files: 0.” | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Click **Next.** | The Deployment Summary page displays. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Click **Start**. | The deployment of SAS 9.4 M8 completes. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Click **Next**. | The Specify Configuration Directory/Level page displays. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Select the check box next to the Configuration Directory and Level if not selected and click **Start**.  For example:  **/sso/biconfig/940** | The SAS Deployment Manager wizard displays with the Specify Connection Information page. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Enter in the password for the admin User ID that connects to the SAS Metadata Server and click **Next**.  ***Note***: If you get an error page that the host name “\*\*\*.vsp.sas.com” does not match the host name value “omrhost” that was provided by the operating system, you must edit the /etc/hosts file and put the FQDN of the host **before** the **omrhost** entry.  Ex:  10.100.200.30 hlsrd10011auv.vsp.sas.com hlsrd10011auv omrhost | The Automatic Script Execution page displays. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Leave the check box deselected and click **Next**. | The SAS Deployment Manager Summary page displays. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Click **Start**. | The Insufficient Permissions page displays. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | In the original **ssh** window as **your account**, type:  sudo /sso/sfw/sas/940/SASFoundation/9.4/utilities/bin/setuid.sh | The system displays:  Performing the User Authentication setup step required by SAS.  Attempting to setuid bit and change ownership of files:sasperm sasauth elssrv , to root  User Authentication setup has successfully completed. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | In the Insufficient Permissions window, click **Retry**. | The SAS Deployment Manager continues and the Deployment Complete page displays. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Click **Next**. | The Additional Resources window displays. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Click **Finish**. | The SAS Deployment Manager window closes, and the SAS Deployment Wizard displays showing the Configuration Directory has been updated. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Click **Next**. | The Additional Resources window displays. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Click **Finish.** | The SAS Deployment Wizard closes. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Stop the SAS processes by typing:  **/sso/biconfig/940/Lev1/sas.servers stop** | System displays:  **Stopping SAS servers** | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Verify that the SAS processes have stopped by typing:  **/sso/biconfig/940/Lev1/sas.servers status** | System displays:  **SAS servers status:**  **SAS Metadata Server 1 is NOT up** (if a single server system)  **SAS Object Spawner 1 is NOT up** | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | **Apply SAS hotfixes**  You will need to copy all the LSAF 5.4.2 SAS 9.4 M8 hot fix ZIP files from the R&D setup area to the **/sso/sfw/sas/940/InstallMisc/HotFixes/New** directory. Make sure this directory is empty before coping the LSAF 5.4.2 SAS 9.4 M8 hotfixes. | Hot fix files are copied. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  **cd /sso/sfw/sas/940/SASDeploymentManager/9.4** | Directory is changed. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  **./sasdm.sh –silenthotfix –alwaysoverwrite –reinstallhotfix** **-hotfixdir /sso/sfw/sas/940/InstallMisc/HotFixes/New** | The hot fixes are applied in silent mode. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  **cd /sso/sfw/sas/940/deploymntreg** | The directory is changed. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  **java -jar sas.tools.viewregistry.jar**  ***Note*:** If this an additional SAS compute server and java is not installed, the command is /sso/sfw/sas/940/SASPrivateJavaRuntimeEnvironment/9.4/jre/bin/java -jar sas.tools.viewregistry.jar | The DeploymentRegistry files are created. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  **grep Hotfix DeploymentRegistry.txt | sort** | All the hot fixes that are applied are listed in ascending sort order. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  **grep Hotfix DeploymentRegistry.txt | wc -l** | The number of hot fixes should be at least **99**.  If this is an additional compute server, the number of hot fixes should be at least 98. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | **Configure SASAUTH**  Type the following:  cd /sso/sfw/sas/940/SASFoundation/9.4/utilities/bin | The directory is changed. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Backup the sasauth.conf file by typing:  cp –p sasauth.conf sasauth.conf**.<*today’s date*>** | The file is backed up. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  vi sasauth.conf | The file opens in vi for editing. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Find the following line:  methods=pam  and change it to look like:  methods=pam pw | The file is modified. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Select **Esc** and type :x to save the file. | The file is saved with changes made. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  diff sasauth.conf sasauth.conf.**<*today’s date*>** | Verify that changes have been saved. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | **Update SASHELP.REGISTRY**  Back up the SAS registry file by typing:  **cd /sso/sfw/sas/940/SASFoundation/9.4/nls/u8/sascfg** | Navigate to that directory. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  cp regstry.sas7bitm regstry.sas7bitm.<*today’s date*>  For example, type the following:  cp regstry.sas7bitm regstry.sas7bitm.19aug2024 | File is backed up. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  cd ../../.. | Navigate to the /sso/sfw/sas/940/SASFoundation/9.4 directory. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  ls -alh sas | SAS is linked to bin/SAS\_u8 as shown by:  sas -> bin/sas\_u8   1. If SAS is not linked to bin/sas\_u8, then fix it with the following commands:   rm sas  ln -s bin/sas\_u8 sas  ls -alh sas (to verify) | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  ./sas | The SAS Display Manager windows display. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | In the SAS: Program Editor window, enter the following SAS code:  proc registry startat="CORE\PRINTING\PDF\DBCS" list;  run;  filename source '/tmp/temp.sasxreg';  data \_null\_;  file source;  put '[CORE\PRINTING\PDF\DBCS]';  put ' "Searchable" = "Yes"';  run;  /\*------------------------------------\*/  /\* Change the SAS registry \*/  /\*------------------------------------\*/  proc registry import=source usesashelp;  run;  proc registry startat="CORE\PRINTING\PDF\DBCS" list;  run;   1. Copy and paste this command from the sas\_pdf\_search\_fix.txt file in our staging area.   Press the **F3** key or select **Run 🡪 Submit** from the menu bar. | Toward the beginning of the SAS: Log window, you should see:  NOTE: Contents of SASHELP REGISTRY starting at subkey [CORE\PRINTING\PDF\DBCS]  [ CORE\PRINTING\PDF\DBCS]  Searchable="No"  At the end of the SAS: Log window, after the data \_null\_ section, you should see:  NOTE: Contents of SASHELP REGISTRY starting at subkey [CORE\PRINTING\PDF\DBCS]  [ CORE\PRINTING\PDF\DBCS]  Searchable="Yes"  This confirms that the Searchable option has been changed from **No** to **Yes**. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | In the SAS: Program Editor window, select **File 🡪 Exit**. | The Exit… dialog displays asking if you are sure you want to terminate the SAS Session. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Click **OK**. | The SAS Display Manager windows close. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  **cd /sso/biconfig/940/Lev1** | Navigate to that directory. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  **cp –p sas.servers sas.servers**.<*today’s date*> | The file is backed up | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  **vi sas.servers** | The file opens in vi for editing. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Add language parameters below the section of text listed:  #\*\*\*\*\*  # To avoid protection issues with installs mounted over NFS, this  # script has to run under the same UID as that which owns the installed  # SAS code. Define that UID here.  #\*\*\*\*\*  SERVERUSER=sasadmin  Add:  # language settings per SAS tech support  export LANG=en\_US.utf8  export LC\_ALL=en\_US.utf8 | File is updated  #\*\*\*\*\*  # To avoid protection issues with installs mounted over NFS, this  # script has to run under the same UID as that which owns the installed  # SAS code. Define that UID here.  #\*\*\*\*\*  SERVERUSER=sasadmin  # language settings per SAS tech support  export LANG=en\_US.utf8  export LC\_ALL=en\_US.utf8 | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  **diff sas.servers sas.servers**.<*today’s date*> | The file is modified | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  ./sas.servers start | System displays:  **Starting SAS servers**  **SAS Metadata Server 1 is UP** (if a single server system)  SAS Object Spawner 1 is UP | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Hit **Ctrl-D** to stop the script command. | System indicates script stopped running. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **exit** | You’re logged off the SAS server. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Repeat **Checklist C** for each SAS compute server that is installed. | Additional SAS compute servers updated. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |

| Implementer Signature below indicates completion of Checklist C, items C1 – C72, above. | | | | |
| --- | --- | --- | --- | --- |
| Completed By: | Signature | Checklist Results | Implementation Date | Signature  Date |
|  |  | ☐ Pass ☐ Fail |  |  |

***Implementer Notes*** (☐ Yes ☐ No):

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## Checklist D: “Upgrade to R 4.4”

| **Checklist D: “Upgrade to R 4.4”** | | | **Corresponding Document:** *None* | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***#*** | ***Activity*** | | ***Expected Results*** | | | ***Actual Results*** | |
|  | Log in to your admin PC. This is normally the VDI/TS. | | Implementer is logged in to the installer PC. | | | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ | |
|  | Using the PuTTY tool (or equivalent), create an **ssh** connection from the admin PC to the OMR R SAS Compute server and log in as your account. | | Implementer is logged into the server, in their home directory. | | | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ | |
|  | Use the **script** command to capture commands that are typed in the Unix window. The syntax is **script /var/staging\_logs/<***servername***>\_r44\_update.txt** | | System should indicate script has started. | | | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ | |
|  | **Verify System and Hardware Requirements**  Type the following:  cat /etc/redhat-release | | The system displays:  Red Hat Enterprise Linux Server release 8.10 (Ootpa)  If this is not listed open a ServiceNow ticket to have it resolved. | | | Pass Fail N/A  Exception No: \_\_\_\_\_\_\_\_\_ | |
|  | As part of the update to RHEL 8.10, the R server packages are also upgraded. To verify the packages have been upgraded, type the following:  **rpm -qa|grep R-** | | The system displays:  **R-java-devel-4.4.0-1.el8.x86\_64**  **R-core-4.4.0-1.el8.x86\_64**  **R-rpm-macros-1.1.0-2.el8.noarch**  **R-java-4.4.0-1.el8.x86\_64**  **R-4.4.0-1.el8.x86\_64**  **R-core-devel-4.4.0-1.el8.x86\_64**  **R-devel-4.4.0-1.el8.x86\_64** | | | Pass Fail N/A  Exception No: \_\_\_\_\_\_\_\_\_ | |
|  | Type the following:  rpm -qa | grep libcurl-devel  *Note*: To install the package run the following:  sudo yum install libcurl-devel  Then run the original rpm command to verify. | | The minimum version of the following must be displayed:  libcurl-devel-7.61.1-18.el8.x86\_64  There may be more than one line returned, which is acceptable. | | | Pass Fail N/A  Exception No: \_\_\_\_\_\_\_\_\_ | |
|  | Type the following:  rpm -qa | grep libxml2-devel  *Note*: To install the package run the following:  sudo yum install libxml2-devel  Then run the original rpm command to verify. | | The minimum version of the following must be displayed:  libxml2-devel-2.9.7-9.el8\_4.2.x86\_64  There may be more than one line returned, which is acceptable. | | | Pass Fail N/A  Exception No: \_\_\_\_\_\_\_\_\_ | |
|  | Type the following:  rpm -qa | grep cmake  *Note*: To install the package run the following:  sudo yum install cmake  Then run the original rpm command to verify. | | The minimum version of the following must be displayed:  cmake-3.26.5-2.el8.x86\_64  There may be more than one line returned, which is acceptable. | | | Pass Fail N/A  Exception No: \_\_\_\_\_\_\_\_\_ | |
|  | Type the following:  rpm -qa | grep harfbuzz-devel  *Note*: To install the package run the following:  sudo yum install harfbuzz-devel  Then run the original rpm command to verify. | | The minimum version of the following must be displayed:  harfbuzz-devel-1.7.5-4.el8.x86\_64  There may be more than one line returned, which is acceptable. | | | Pass Fail N/A  Exception No: \_\_\_\_\_\_\_\_\_ | |
|  | Type the following:  rpm -qa | grep fribidi-devel  *Note*: To install the package run the following:  sudo yum install fribidi-devel  Then run the original rpm command to verify. | | The minimum version of the following must be displayed:  fribidi-devel-1.0.4-9.el8.x86\_64  There may be more than one line returned, which is acceptable. | | | Pass Fail N/A  Exception No: \_\_\_\_\_\_\_\_\_ | |
|  | Type the following:  rpm -qa | grep libtiff-devel  *Note*: To install the package run the following:  sudo yum install libtiff-devel  Then run the original rpm command to verify. | | The minimum version of the following must be displayed:  libtiff-devel-4.0.9-31.el8\_8.x86\_64  There may be more than one line returned, which is acceptable. | | | Pass Fail N/A  Exception No: \_\_\_\_\_\_\_\_\_ | |
|  | Type the following:  rpm -qa | grep libjpeg-turbo-devel  *Note*: To install the package run the following:  sudo yum install libjpeg-turbo-devel  Then run the original rpm command to verify. | | The minimum version of the following must be displayed:  libjpeg-turbo-devel-1.5.3-12.el8.x86\_64  There may be more than one line returned, which is acceptable. | | | Pass Fail N/A  Exception No: \_\_\_\_\_\_\_\_\_ | |
|  | Type the following:  rpm -qa | grep cairo-devel  *Note*: To install the package run the following:  sudo yum install cairo-devel  Then run the original rpm command to verify. | | The minimum version of the following must be displayed:  cairo-devel-1.15.12-6.el8.x86\_64  There may be more than one line returned, which is acceptable. | | | Pass Fail N/A  Exception No: \_\_\_\_\_\_\_\_\_ | |
|  | **Install R libraries**  Type the following:  **sudo mkdir /sso/sfw/r44\_packages**  **sudo cp /sso/depot/R\_files/r\_44\_packages.tar /sso/sfw/r44\_packages/.**  **Note:** This assumes that the R\_files directory has been copied from the LSAF 5.4 install\_area to /sso/depot/R\_files. This should have been done before the installation was started. | | The tar file is copied. | | | Pass Fail N/A  Exception No: \_\_\_\_\_\_\_\_\_ | |
|  | Type the following:  **cd /sso/sfw/r44\_packages** | | Navigate to that folder. | | | Pass Fail N/A  Exception No: \_\_\_\_\_\_\_\_\_ | |
|  | Type the following:  **sudo tar xf r\_44\_packages.tar** | | The r\_44\_packages.tar is extracted. | | | Pass Fail N/A  Exception No: \_\_\_\_\_\_\_\_\_ | |
|  | Type the following:  **ls -l** | | The system displays:  makefile  pkg-source-files  r\_44\_packages.tar | | | Pass Fail N/A  Exception No: \_\_\_\_\_\_\_\_\_ | |
|  | Type the following to install the set of R packages found in pkg-source-files:  **sudo make -f makefile**  ***Note***: This step is a long running process to install all the R packages recommended for use with LSAF. It can take an hour or longer to install.  ***Note***: To verify the packages have been installed do the following:  **cd /usr/lib64/R/bin**  **./R**  **R version 4.4.0 (2024-04-24) -- "Puppy Cup"**  **==============================**  **> rownames(installed.packages())**  You’ll see a list of packages installed, 220 in total:  [1] "abind" "askpass" "backports"  [4] "base" "base64enc" "BBmisc"  …  [217] "xml2" "xtable" "yaml"  [220] "zip" "zoo"  **q()**  **Save workspace image? [y/n/c]: n**  To exit R. Do not save the workspace image, enter “n”. | | The system displays output similar to the following:  R CMD INSTALL pkg-source-files/zoo\_1.8-12.tar.gz  \* installing to library ‘/usr/lib64/R/library’  \* installing \*source\* package ‘zoo’ ...  \*\* package ‘zoo’ successfully unpacked and MD5 sums checked  \*\* using staged installation  \*\* libs  make[1]: Entering directory `/tmp/RtmpaNYF5w/R.INSTALL11272937f759/zoo/src'  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  \*\* building package indices  \*\* installing vignettes  \*\* testing if installed package can be loaded from temporary location  \*\* checking absolute paths in shared objects and dynamic libraries  \*\* testing if installed package can be loaded from final location  \*\* testing if installed package keeps a record of temporary installation path  \* DONE (ZOO)  Making 'packages.html' ... done | | | Pass Fail N/A  Exception No: \_\_\_\_\_\_\_\_\_ | |
| Implementer Signature below indicates completion of Checklist D, items D1 – D18, above. | | | | | | | |
| Completed By: | | Signature | | Checklist Results | Implementation Date | | Signature  Date |
|  | |  | | ☐ Pass ☐ Fail |  | |  |

***Implementer Notes*** (☐ Yes ☐ No):

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## Checklist E: “Complete the LSAF 5.4.2 Deployment and Upgrade”

***Prerequisites:***

* The following VSP certificates have been copied to the **/sso/sfw/installers** staging area:
* **tcserver542\_vsp.cert**
* **tcserver542\_vsp.keystore**
* **tcserver542\_vsp.pem**
* The installation binary for Java 11, **zulu11.72.19-ca-jdk11.0.23-linux.x86\_64.rpm**, has been copied to the **/sso/sfw/installers** staging area.
* The **LSAF 5.4.2** production zip file, **lsaf-core-5.4.2.PROD.46.20240827.140312.zip**, has been copied to the staging are in **/sso/sfw/installers** on the web application server. This file can ***only***be obtained through Technical Support Hot Fix site.
* In **LSAF 5.4.2**, the job health status feature will be disabled by default. Customers can opt to enable this feature, if desired. For more details on the steps to enable this feature, see the Optional Checklist F below.

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| **Checklist E: “Complete the LSAF 5.4.2 Deployment and Upgrade”** | | **Corresponding Document:** *None* | |
| --- | --- | --- | --- |
| ***#*** | ***Activity*** | ***Expected Results*** | ***Actual Results*** |
|  | Using the PuTTY tool (or equivalent), create an ssh connection from the admin PC to the SAS mid-tier server and login using your account. | User is logged into the server, in the home directory. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Use the script command to capture commands that are typed in the UNIX window. The syntax is:  **script /var/staging\_logs/<***servername***>\_lsaf542\_upgrade \_DDMMMYYYY.txt**  For example:  script /var/staging\_logs/ ssosdd04auv\_lsaf542\_ \_18AUG24.txt | System indicates that the script has started. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | **Install Java 11**  Type the following:  **cd /sso/sfw/java** | The directory is changed. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type sudo mkdir -p jdk11.0.23 | The directory is created. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type cd /sso/sfw/installers | The directory is changed. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following to install the **JDK** into the **jdk11.0.23** directory:  **sudo rpm -ivh --prefix=/sso/sfw/java/jdk11.0.23 zulu11.72.19-ca-jdk11.0.23-linux.x86\_64.rpm** | System displays:  Verifying... ################################# [100%]  Preparing... ################################# [100%]  Updating / installing...  1:zulu-11-11.72+19-1 ################################# [100%] | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **ls -al /sso/sfw/java/jdk11.0.23** | System displays contents of **JDK 11** installation. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **cd /usr/local/bin** | Directory is changed. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **ls -al java** to show that an existing symbolic link to **Java 8** exists. | System displays:  **java -> /sso/sfw/java/jdk1.8.0\_292/bin/java** | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following to delete the **Java 8** symbolic link:  **sudo** **rm java** | The **java** symbolic link is deleted. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following to create a new symbolic link for **Java 11**:  **sudo ln -s /sso/sfw/java/jdk11.0.23/bin/java java**  Type **ls -al java** to verify new link. | System displays:  **java -> /sso/sfw/java/jdk11.0.23/bin/java** | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following to verify that the default **Java** version is now **Java 11**:  **java -version** | System displays:  **openjdk version "11.0.23" 2024-04-16 LTS**  **OpenJDK Runtime Environment Zulu11.72+19-CA (build 11.0.23+9-LTS)**  **OpenJDK 64-Bit Server VM Zulu11.72+19-CA (build 11.0.23+9-LTS, mixed mode)** | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | In the ssh window as **webtrust**, update the JAVA\_HOME environment variable in the **/home/webtrust/.zshrc** profile with **/sso/sfw/java/jdk11.0.23** and then **source .zshrc** to pick up the changes. | The .zshrc is updated and initialized. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **echo $JAVA\_HOME** | The system displays:  /sso/sfw/java/jdk11.0.23 | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Repeat **steps E3-E15** to install **JDK 11** if the LSAF Execution server for R is installed on a separate server and not an AIO. Additionally, repeat these steps for each additional Web server. | If necessary, JDK 11 is installed on the separate LSAF Execution for R server and each additional Web server. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | The Production ZIP file should be copied from the LSAF 5.4.2 staging area to the /home/webtrust/Installs directory on this Web server. | The Life Science Analytics Framework ZIP file is copied to the Installs directory. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | **Install certificates**  Copy the tcserver542\_vsp.keystore cert file from /sso/sfw/installers to the **/sso/sfw/tcServer/instances/lsafserver1/conf** directory.  Repeat the cert copy to any additional nodes.  cp /sso/sfw/installers/tcserver542\_vsp.keystore **/sso/sfw/tcServer/instances/lsafserver1/conf/**  cp /sso/sfw/installers/tcserver542\_vsp.keystore **/sso/sfw/tcServer/instances/lsafserver2/conf/** | Certs are copied to lsafserver1, lsafserver2 and any additional nodes that are created. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  **cd /sso/sfw/tcServer/Instances/lsafserver1/conf** | Directory is changed. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Edit the **server.xml** file and modify the **keystoreFile** property in the Connector block to point to the new certificate:  **keystoreFile="conf/tcserver542\_vsp.keystore"** Save the file with edits. | File is saved with changes made. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |  |
|  | Type the following command to verify the content of the keystore:  **/sso/sfw/java/jdk11.0.23/bin/keytool -list -v -keystore /sso/sfw/tcServer/instances/lsafserver1/conf/tcserver542\_vsp.keystore** | System displays:  Enter keystore password: | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Enter the keystore password  ***Note:*** This can be found in /sso/depot/thirdparty/keytool\_commands.txt. | System displays the contents of the SAS issued certificate containing:  Enter keystore password:  Keystore type: PKCS12  Keystore provider: SUN  Your keystore contains 1 entry  Alias name: tcserver542  Creation date: Jul 11, 2024  Entry type: PrivateKeyEntry  Certificate chain length: 1  Certificate[1]:  Owner: CN=\*.vsp.sas.com, OU=Unknown, O=SAS Institute, L=Cary, ST=NC, C=US  Issuer: CN=\*.vsp.sas.com, OU=Unknown, O=SAS Institute, L=Cary, ST=NC, C=US | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | In the ssh window as the user with **root** privileges, type the following:  **sudo cp /sso/sfw/java/jdk11.0.23/lib/security/cacerts /sso/sfw/java/jdk11.0.23/lib/security/cacerts.original**  This can be found in /sso/depot/thirdparty/keytool\_commands.txt. | A backup of the cacerts file is created. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | In the ssh window as the user with **root** privileges, type the following:  **sudo /sso/sfw/java/jdk11.0.23/bin/keytool -importcert -trustcacerts -cacerts -file** /sso/sfw/installers**/tcserver542\_vsp.cert -alias tcserver542**  This can be found in /sso/depot/thirdparty/keytool\_commands.txt. | System displays:  Enter keystore password: | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Enter in the default cacerts password and hit **Enter**.  This can be found in /sso/depot/thirdparty/keytool\_commands.txt. | System displays:  Trust this certificate? [no]: | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **yes** to trust this certificate.  This can be found in /sso/depot/thirdparty/keytool\_commands.txt. | System displays:  Certificate was added to keystore | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | In the ssh window as the user with **root** privileges, type the following to verify the certificate was added:  **sudo /sso/sfw/java/jdk11.0.23/bin/keytool -list -cacerts |grep tcserver542**  This can be found in /sso/depot/thirdparty/keytool\_commands.txt. | System displays:  Enter keystore password: | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Enter in the default cacerts password and hit **Enter**.  This can be found in /sso/depot/thirdparty/keytool\_commands.txt. | System displays a message similar to the following:  tcserver542, Aug 5, 2024, trustedCertEntry, | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | In the ssh window as the user with **root** privileges, type the following to copy the PEM certificate:  **sudo cp** /sso/sfw/installers/thirdparty**/tcserver542\_vsp.pem /etc/pki/ca-trust/source/anchors**  This can be found in /sso/depot/thirdparty/keytool\_commands.txt. | File is copied. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | In the ssh window as the user with **root** privileges, type the following to add the certififcate to the OS system wide truststore:  **sudo update-ca-trust extract**  This can be found in /sso/depot/thirdparty/keytool\_commands.txt.  **Note:** Repeat steps **E17-E29** to install new certificates for each additional lsafserver node and Web server if applicable. | The truststore is updated.  You can view that this was updated by running command **trust list** and you will see the cert listed. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | **Java 11 and tcServer updates**  In the ssh window as the **webtrust** user, navigate to **/home/webtrust/Builds** and edit the **lsaf-install.properties** file. | File opens for editing. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Update the **rexec.java.home** property to use the updated JAVA\_HOME.  **rexec.java.home=/sso/sfw/java/jdk11.0.23**  **Note:** Repeat steps E30-E31 if the LSAF Execution for R is on a separate server and not AIO. | Property is updated. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | SAS LSAF REST API 1.1, SAS LSAF Java API 2.7 and SAS LSAF Macro API 2.7 are supported with LSAF 5.4.2. The trusted connections properties must be enabled to use them. Update the following:  **sassession.enable.trusted.connections=true**  **sassession.enable.trusted.token.connections=true**  Save the file with edits. | File is saved with changes made. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | As the **webtrust** user type the following:  **cd /sso/sfw/tcServer/instances/lsafserver1/bin** | Directory is changed. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  **cp setenv.sh setenv.sh.java8** | File is copied. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Edit the **setenv.sh** file and update JAVA\_HOME:  **JAVA\_HOME="/sso/sfw/java/jdk11.0.23"** | The JAVA\_HOME variable is updated. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | **Remove** the following from JVM\_OPTS as they have been deprecated in Java 11:  **-XX:+UseConcMarkSweepGC**  **-XX:+UseParNewGC**  **-XX:+PrintGCDetails**  **-XX:+PrintGCDateStamps** | Options are removed. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | **Modify** the following property in JVM\_OPTS  **-Xloggc:$CATALINA\_BASE/logs/$gc\_log**  To  **-Xlog:gc:$CATALINA\_BASE/logs/$gc\_log**  This is updating -Xloggc to Xlog:gc (added **colon**) | The system property is modified. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Ensure that the following performance tuning options are included in the JVM\_OPTS:  **-XX:CMSMaxAbortablePrecleanTime=25000**  **-XX:CMSInitiatingOccupancyFraction=85**  **-XX:+UseCMSInitiatingOccupancyOnly**  **-Dhazelcast.max.no.heartbeat.seconds=300**  **Note:** These tuning options are not part of the default template and likely were added as a post-install option in previous LSAF versions. | The tuning options are included in the JVM\_OPTS. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Save the file with edits. | File is saved with changes made. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Repeat steps **E30-E39** for each **lsafserver(x)** node on each web application server. The tuning options are not made on the **lsafserveradmin** node. | Steps are repeated as necessary on each lsafserver(x) node. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | **Deploy LSAF 5.4.2**  As the **webtrust** user, the production zip file should be copied from the **/sso/sfw/installers** staging area to the **/home/webtrust/Installs** directory. | The **LSAF 5.4.2** production binary is copied to the /home/webtrust/Installs directory. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  **cd /home/webtrust/Installs** | The directory is changed. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **rm -rf dist** | The dist directory is deleted. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **unzip -q lsaf-core-5.4.2.PROD.46.20240827.140312.zip** | The contents of the zip file are extracted. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **cd dist/install** | The directory is changed. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **ant clean** | System displays:  Buildfile: /home/webtrust/Installs/dist/install/build.xml  clean:  [delete] Deleting directory /sso/sfw/tcServer/instances/lsafserveradmin/webapps/xythosadmin  [delete] Deleting directory /sso/sfw/tcServer/instances/lsafserveradmin/webapps/xythosinit  [delete] Deleting directory /sso/sfw/tcServer/instances/lsafserveradmin/webapps/xythosremoteadmin  [delete] Deleting directory /sso/sfw/tcServer/instances/lsafserver1/webapps/lsaf  [delete] Deleting directory /sso/sfw/tcServer/instances/lsafserver2/webapps/lsaf  BUILD SUCCESSFUL  Total time: 1 second | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **ant deploy** | System displays (depending on how many tcServer nodes you have installed):  Buildfile: /home/webtrust/Installs/dist/install/build.xml  deploy:  deploy-tomcat-1:  do-deploy-dev:  do-deploy-prod:  do-deploy:  [echo] Deploying to /sso/sfw/tcServer/instances/lsafserver1  [echo] build.cache.group.name = lsafsurfside.ondemand.sas.com  [echo] build.rexec.cache.group.name = lsafsurfside.ondemand.sas.com\_rexec  [copy] Copying 1 file to /sso/sfw/tcServer/instances/lsafserver1/conf  [copy] Copying 26021 files to /sso/sfw/tcServer/instances/lsafserver1/webapps/lsaf  deploy-tomcat-2:  do-deploy-dev:  do-deploy-prod:  do-deploy:  [echo] Deploying to /sso/sfw/tcServer/instances/lsafserver2  [echo] build.cache.group.name = lsafsurfside.ondemand.sas.com  [echo] build.rexec.cache.group.name = lsafsurfside.ondemand.sas.com\_rexec  [copy] Copying 1 file to /sso/sfw/tcServer/instances/lsafserver2/conf  [copy] Copying 26021 files to /sso/sfw/tcServer/instances/lsafserver2/webapps/lsaf  deploy-tomcat-3:  deploy-tomcat-4:  deploy-tomcat-5:  deploy-tomcat-6:  deploy-tomcat-7:  deploy-tomcat-8:  check-admin-uptodate:  deploy-admin-server:  [echo] Configuring administration server /sso/sfw/tcServer/instances/lsafserveradmin  [unzip] Expanding: /home/webtrust/Installs/dist/webapps/xythosinit.war into /sso/sfw/tcServer/instances/lsafserveradmin/webapps/xythosinit  [unzip] Expanding: /home/webtrust/Installs/dist/webapps/xythosremoteadmin.war into /sso/sfw/tcServer/instances/lsafserveradmin/webapps/xythosremoteadmin  [copy] Copying 242 files to /sso/sfw/tcServer/instances/lsafserveradmin/webapps/xythosadmin  [move] Moving 36 files to /sso/sfw/tcServer/instances/lsafserveradmin/lib  [copy] Copying 1 file to /sso/sfw/tcServer/instances/lsafserveradmin/lib  [copy] Copying 1 file to /sso/sfw/tcServer/instances/lsafserveradmin/conf  [copy] Copying 1 file to /sso/sfw/tcServer/instances/lsafserveradmin/lib  [copy] Copying 1 file to /sso/sfw/tcServer/instances/lsafserveradmin/lib  do-deploy-dev:  do-deploy-prod:  deploy-rexec:  [echo] Deploying remote execution application  [echo] build.rexec.cache.group.name = lsaf542.ondemand.sas.com\_rexec  [copy] Copying 7 files to /sso/sfw/lsafexecution  BUILD SUCCESSFUL  Total time: 5 seconds | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Execute **steps E48-E54** if the **R lsafexecution** server is on a standalone OMR/R/SAS Application Server. Otherwise, skip to **step E53**.  The LSAF 5.4.2 production ZIP file should be copied to the /home/webtrust/Installs directory on the OMR server. | The LSAF 5.4.2 images is copied to the OMR/R/SAS Application server. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | As the webtrust user, type **cd /home/webtrust/Installs** | Directory is changed. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **rm –rf dist** | The dist directory is deleted. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **unzip -q lsaf-core-5.4.2.PROD.46.20240827.140312.zip** | The contents of the zip file are extracted. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **cd dist/install** | Navigate to the /home/webtrust/Installs/dist/install directory. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **ant clean-rexec** | System displays:  Buildfile: /home/webtrust/Installs/dist/install/build.xml  Clean-rexec:    BUILD SUCCESSFUL  Total time: 2 seconds | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **ant deploy-rexec** | System displays:  Buildfile: /home/webtrust/Installs/dist/install/build.xml  do-deploy-dev:  do-deploy-prod:  deploy-rexec:  [echo] Deploying remote execution application  [echo] build.rexec.cache.group.name = lsaf542.ondemand.sas.com\_rexec  [copy] Copying 7 files to /sso/sfw/lsafexecution  BUILD SUCCESSFUL  Total time: 0 seconds | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Startup the **R lsafexecution** server processes from **/sso/sfw/lsafexecution**. (**./lxserver.sh start**) | R lsafexecution processes is started.  Started [1961612] | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Repeat steps **E41-E47** for each physical server that has tcServers installed. | Additional tcServers are updated. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | **Startup tcServer Admin Server**  Type **cd /sso/sfw/tcServer/instances** | Navigate to that directory. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **tcserver start lsafserveradmin** | System displays:  Instance Name: lsafserveradmin  CATALINA\_BASE: /sso/sfw/tcServer/instances/lsafserveradmin  CATALINA\_HOME: /sso/sfw/tcServer/runtimes/tomcat-9.0.43.A.RELEASE  JAVA\_HOME: /sso/sfw/java/jdk11.0.23  tc Runtime Version: 9.0.43.A.RELEASE  tc Server Version: 4.1.6.RELEASE  tc Server Installation Directory: /sso/sfw/tcServer/standard-4.1.6.RELEASE  Tomcat started.  Instance running as PID 1970274 | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  tcserver status lsafserveradmin | System displays:  Running Status: Running as PID 1970274 | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **cd lsafserveradmin/logs** | Navigate to the /sso/sfw/tcServer/instances/lsafserveradmin/logs directory. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **tail –1000 catalina.out** | System displays:  …  INFO: Starting ProtocolHandler ["http-nio-2223"]  Aug 05, 2024 5:04:29 PM org.apache.catalina.startup.Catalina start  INFO: Server startup in [2296] milliseconds  [2024-08-05T17:04:29-0400] [Par..ing\_57] Info ParameterMaster:308 Xythos WebFile Server Parameter Value Listing  WebFile Server Version: 7.2.165.1178852  Server last reloaded at: 2024 08 05 17:04:28 EDT  Xythos.RunMode = XythosStorageServer  Command Line or Init File Parameter Values  Xythos.Install=default  Xythos.ServerGroup=admin  ---  Used Search Engine  Local Lucene Index  /xythosfs/SASRepository/index/index  [2024-08-05T17:04:29-0400] [Par..ing\_57] Info ParameterMaster:808 Task manager time stamp format = 2024-08-05 17:04:29.602, server run ID = 1401 | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | **Startup tcServer lsafservers**  Type **cd /sso/sfw/tcServer/instances** | Navigate to that directory. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **tcserver start lsafserver1** | System displays:  Instance Name: lsafserver1  CATALINA\_BASE: /sso/sfw/tcServer/instances/lsafserver1  CATALINA\_HOME: /sso/sfw/tcServer/runtimes/tomcat-9.0.43.A.RELEASE  JAVA\_HOME: /sso/sfw/java/jdk11.0.23  tc Runtime Version: 9.0.43.A.RELEASE  tc Server Version: 4.1.6.RELEASE  tc Server Installation Directory: /sso/sfw/tcServer/standard-4.1.6.RELEASE  Tomcat started.  Instance running as PID 1990405 | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type the following:  tcserver status lsafserver1 | System displays:  Running Status: Running as PID 1990405 | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **cd lsafserver1/logs** | Navigate to the /sso/sfw/tcServer/instances/lsafserver1/logs directory. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **tail –f lsaf\_info.log**  ***Note:*** Depending on how fast your server is, you may need to type **tail -300 lsaf\_info.log** | While viewing the output of the startup, you will see view important information like the following:  2024-08-05 17:14:20,357 | INFO | | | main | c.h.i.j.ManagementService : [10.209.136.202]:5701 [dev] [5.3.6] Hazelcast JMX agent enabled.  2024-08-05 17:14:20,367 | INFO | | | main | c.h.c.LifecycleService : [10.209.136.202]:5701 [dev] [5.3.6] [10.209.136.202]:5701 is STARTED  2024-08-05 17:14:20,407 | INFO | | | main | c.h.i.p.i.PartitionStateManager : [10.209.136.202]:5701 [dev] [5.3.6] Initializing cluster partition table arrangement...  2024-08-05 17:14:20,812 | INFO | | | main | o.f.c.i.u.VersionPrinter : Flyway 3.2.1 by Boxfuse  2024-08-05 17:14:21,111 | INFO | | | main | o.f.c.i.d.DbSupportFactory : Database: jdbc:oracle:thin:@hlsrd10076au.vsp.sas.com:6660/hlsrd10076pdb.hlsrd10076au.vsp.sas.com (Oracle 19.0)  2024-08-05 17:14:21,372 | INFO | | | main | o.f.c.i.c.DbValidate : Validated 178 migrations (execution time 00:00.128s)  2024-08-05 17:14:21,447 | INFO | | | main | o.f.c.i.c.DbMigrate 2024-08-13 15:43:28,126 | INFO | | | main | o.f.c.i.c.DbMigrate : Current version of schema "XDSTORE1": 5.  4.18  2024-08-13 15:43:28,127 | INFO | | | main | o.f.c.i.c.DbMigrate : Migrating schema "XDSTORE1" to version 5  .4.19 - lsaf relationship event  2024-08-13 15:43:28,885 | INFO | | | main | o.f.c.i.c.DbMigrate : Migrating schema "XDSTORE1" to version 5  .4.20 - lsaf relationship event  2024-08-13 15:43:29,571 | INFO | | | main | o.f.c.i.c.DbMigrate : Successfully applied 2 migrations to sch  ema "XDSTORE1" (execution time 00:01.457s).  ---------------  024-08-05 17:24:19,845 | INFO | | | main | o.f.c.i.c.DbMigrate : Current version of schema "XGS1": 5.3.02  2024-08-05 17:24:19,845 | INFO | | | main | o.f.c.i.c.DbMigrate : Schema "XGS1" is up to date. No migration necessary.  2  2024-08-05 17:24:21,938 | INFO | | | main | c.s.l.s.s.a.i.s.OrRequestMatcher : CSRF protections are disabled  2024-08-05 17:24:22,399 | INFO | | | main | c.s.l.s.c.c.i.ConfigurationServiceImpl : Detected application information provider com.sas.lsaf.svcs.core.config.impl.ApplicationInfoProviderImpl#0.  2024-08-05 17:24:22,399 | INFO | | | main | c.s.l.s.c.c.i.ConfigurationServiceImpl : BuildId = 5.4.2.PROD.46.20240827.140322  2024-08-05 17:24:22,399 | INFO | | | main | c.s.l.s.c.c.i.ConfigurationServiceImpl : ClusterId = 06e7bdf492b1c6cec740930f60b23ea9  ---------------  2024-08-05 17:24:22,399 | INFO | | | main | c.s.l.s.c.c.i.ConfigurationServiceImpl : Detected application information provider com.sas.lsaf.svcs.core.config.impl.ApplicationInfoProviderImpl#0.  2024-08-05 17:24:22,399 | INFO | | | main | c.s.l.s.c.c.i.ConfigurationServiceImpl : BuildId = 5.4.2.PROD.39.20240802.100147  2024-08-05 17:24:22,399 | INFO | | | main | c.s.l.s.c.c.i.ConfigurationServiceImpl : ClusterId = 06e7bdf492b1c6cec740930f60b23ea9  2024-08-05 17:24:22,961 | INFO | | | main | c.s.l.s.c.r.i.x.u.RepositoryUpgrader : Current repository version is 28. Upgrades are necessary.  2024-08-05 17:24:22,965 | INFO | | | main | c.s.l.s.c.r.i.x.u.RepositoryUpgrader : Skipping repository upgrade 1 'Remove StandardId'  2024-08-05 17:24:22,965 | INFO | | | main | c.s.l.s.c.r.i.x.u.RepositoryUpgrader : Skipping repository upgrade 2 'Remove StudyId'  2024-08-05 17:24:22,965 | INFO | | | main | c.s.l.s.c.r.i.x.u.RepositoryUpgrader : Skipping repository upgrade 3 'Remove Cdisc Domain Mixin'  2024-08-05 17:24:22,965 | INFO | | | main | c.s.l.s.c.r.i.x.u.RepositoryUpgrader : Skipping repository upgrade 4 'Remove Lead'  2024-08-05 17:24:22,965 | INFO | | | main | c.s.l.s.c.r.i.x.u.RepositoryUpgrader : Skipping repository upgrade 5 'Remove Signatures'  2024-08-05 17:24:22,965 | INFO | | | main | c.s.l.s.c.r.i.x.u.RepositoryUpgrader : Skipping repository upgrade 6 'Add SigningStatus'  2024-08-05 17:24:22,965 | INFO | | | main | c.s.l.s.c.r.i.x.u.RepositoryUpgrader : Skipping repository upgrade 7 'Update Users Folder Type'  2024-08-05 17:24:22,965 | INFO | | | main | c.s.l.s.c.r.i.x.u.RepositoryUpgrader : Skipping repository upgrade 8 'Update User Folders Type'  2024-08-05 17:24:22,965 | INFO | | | main | c.s.l.s.c.r.i.x.u.RepositoryUpgrader : Skipping repository upgrade 9 'Remove System Mixin'  2024-08-05 17:24:22,966 | INFO | | | main | c.s.l.s.c.r.i.x.u.RepositoryUpgrader : Skipping repository upgrade 10 'Remove Path'  2024-08-05 17:24:22,966 | INFO | | | main | c.s.l.s.c.r.i.x.u.RepositoryUpgrader : Skipping repository upgrade 11 'Remove Name'  ---------------  2024-08-05 17:24:23,739 | INFO | | | main | c.s.l.s.c.r.i.x.u.RepositoryUpgrader : Running repository upgrade 36 'Update Gid Numbers'  2024-08-05 17:24:23,747 | INFO | | | main | c.s.l.s.s.u.i.l.LdapUserServiceImpl : Updating all LDAP user account GID numbers 550.  ---------------  2024-08-05 17:24:24,839 | INFO | | | main | c.s.l.s.s.u.i.l.LdapUserServiceImpl : updating LDAP user: sastest1  2024-08-05 17:24:24,841 | INFO | | | main | c.s.l.s.s.u.i.l.LdapUserServiceImpl : updating LDAP user: sastest2  2024-08-05 17:24:24,842 | INFO | | | main | c.s.l.s.s.u.i.l.LdapUserServiceImpl : updating LDAP user: sastest3  2024-08-05 17:24:24,850 | INFO | | | main | c.s.l.s.c.r.i.x.u.RepositoryUpgrader : Running repository upgrade 37 'Fix Acl Missing Membership Aces'  2024-08-05 17:24:24,994 | INFO | | <system> | main | c.s.l.s.s.a.i.AclServiceImpl : Found 0 current acls with missing membership sticky bit aces to fix  2024-08-05 17:24:25,138 | INFO | | <system> | main | c.s.l.s.s.a.i.AclServiceImpl : Found 0 default acls with missing membership sticky bit aces to fix  2024-08-05 17:24:25,142 | INFO | | | main | c.s.l.s.c.r.i.x.u.RepositoryUpgrader : Running repository upgrade 38 'Reset Job Health Status Properties'  2024-08-05 17:24:25,142 | INFO | | | main | c.s.l.s.c.r.i.x.u.RepositoryUpgradeUtils : - searching for healthStatus property definition.  2024-08-05 17:24:25,143 | INFO | | | main | c.s.l.s.c.r.i.x.u.RepositoryUpgradeUtils : - property definition healthStatus exists, removing all references to property id 1244.  2024-08-05 17:24:25,145 | INFO | | | main | c.s.l.s.c.r.i.x.u.RepositoryUpgradeUtils : - removed property healthStatus from 0 repository items.  2024-08-05 17:24:25,145 | INFO | | | main | c.s.l.s.c.r.i.x.u.RepositoryUpgradeUtils : - searching for lastRunDate property definition.  2024-08-05 17:24:25,145 | INFO | | | main | c.s.l.s.c.r.i.x.u.RepositoryUpgradeUtils : - property definition lastRunDate exists, removing all references to property id 1245.  2024-08-05 17:24:25,146 | INFO | | | main | c.s.l.s.c.r.i.x.u.RepositoryUpgradeUtils : - removed property lastRunDate from 0 repository items.  2024-08-05 17:24:25,148 | INFO | | | main | c.s.l.s.c.r.i.x.u.RepositoryUpgrader : Repository upgrade complete. Successfully executed 1 upgrades.  2024-08-05 17:24:35,318 | INFO | | | SAS\_Scheduler\_StartupThread | c.s.l.s.s.i.ScheduleManagementServiceImpl : Starting Quartz Scheduler now, after delay of 10 seconds. | ☐Pass ☐Fail ☐N/A  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Hit **Ctrl-C** to stop viewing this log file. | You no longer see the output of the log file. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Repeat **steps E60–E65** to start up any additional lsafservers. Repeat for each Web server that has tcServers installed. | Steps repeated as necessary. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Hit **Ctrl-D** to stop the script command. | System indicates script stopped running. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |
|  | Type **exit** | You’re logged off the web server. | ☐Pass ☐Fail ☐Skipped  Exception No: \_\_\_\_\_\_\_\_\_\_\_ |

| Implementer Signature below indicates completion of Checklist E, items E1 – E70, above. | | | | |
| --- | --- | --- | --- | --- |
| Completed By: | Signature | Checklist Results | Implementation Date | Signature  Date |
|  |  | ☐ Pass ☐ Fail |  |  |

***Implementer Notes*** (☐ Yes ☐ No):

|  |
| --- |
|  |

## Checklist F: “Optional: Steps to Enable Job Health Status”

Enabling the job health status feature can be done by uncommenting the bean definitions in two files found in **/sso/sfw/tcServer/instances/lsafserver(n)/webapps/lsaf/WEB-INF/spring-config**

**lsaf-events-config.xml:**

<!-- To enable job health status listener, uncomment the bean definition below -->

<!--

<bean class="com.sas.lsaf.svcs.core.event.impl.adapter.ApplicationListenerAdapter">

<property name="listener">

<bean class="com.sas.lsaf.svcs.impact.relationship.impl.RelationshipEventListener">

<property name="internalRelationshipService" ref="internalRelationshipService" />

<property name="runAsManager" ref="runAsManager" />

<property name="jobCompletionPostEventTaskExecutor" ref = "jobCompletionPostEventTaskExecutor" />

</bean>

</property>

</bean>

-->

**lsaf-threads-config.xml:**

<!-- To enable job health status listener, uncomment the bean definitions below -->

<!--

<bean name="relationshipEventProcessingExecutor" class="com.sas.lsaf.svcs.core.common.server.spring.concurrent.ManagedThreadPoolTaskExecutor">

<property name="corePoolSize" value="1" />

<property name="maxPoolSize" value="3" />

<property name="daemon" value="true" />

<property name="threadNamePrefix" value="SAS\_Job\_Health\_Status\_Event\_Processor-" />

<property name="managedName" value="SAS:type=ThreadPool,name=SAS Job Health Status Event Processor " />

</bean>

<bean class="org.springframework.scheduling.concurrent.ScheduledExecutorFactoryBean">

<property name="threadNamePrefix" value="SAS\_Relationship\_Event\_Processor\_Timer-"/>

<property name="scheduledExecutorTasks">

<list>

<bean class="com.sas.lsaf.svcs.core.common.server.spring.concurrent.ManagedScheduledExecutorTask">

<property name="delay" value="60000" />

<property name="period" value="15000" />

<property name="runnable" >

<bean class="com.sas.lsaf.svcs.impact.relationship.impl.RelationshipProcessingScheduler">

<property name="runAsManager" ref="runAsManager" />

<property name="internalRelationshipService" ref="internalRelationshipService" />

<property name="relationshipEventProcessingExecutor" ref="relationshipEventProcessingExecutor" />

<property name="jobService" ref="jobService" />

</bean>

</property>

<property name="managedName" value="SAS:type=Timer,name=Job Health Status Event Processor Timer" />

</bean>

</list>

</property>

</bean>

-->

After the files have been updated on all tcServer nodes, the nodes must be restarted for the changes to take effect.

## 