IBM Education Assistance for z/OS V2R2

Item: PFA Simplification, Usability, and Customer Requirements
Element/Component: PFA

Agenda

- Trademarks

- Presentation Objectives

- Overview

- Usage & Invocation

- Interactions & Dependencies

- Migration & Coexistence Considerations

- Installation

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Trademarks

- See url http://www.ibm.com/legal/copytrade.shtml for a list of trademarks.

Presentation Objectives

- Easier set up and installation of PFA – resolve common Q&A PMRs by doing more verification and set up programmatically when PFA starts

- Provide tuning assistance for exceptions

- Customer requirements

  - Allow user to define PFA directory location

  - Display output and messages to correct console

  - Allow time of modeling to be set in a stable environment

  - Clean up exception directories by age

  - Display common storage usage in *SYSTEM*

Overview

- Problem Statement / Need Addressed

  - Consistent set up and installation issues seen in Q&A PMRs

  - FITS requirements have been created for various configuration and functional enhancements

- Solutions

  - More validation done when PFA starts. If validation fails, PFA doesn't start.

  - Enhancements have been added throughout PFA to satisfy requirements

- Benefit / Value

  - Resolve issues with installation and set up so that more customers use PFA

  - Adds enhancements that customers have requested

Usage & Invocation

- Easier set up and installation

  - No longer need to run AIRSHREP.sh when new release installed

    - All PFA USS directories are created when PFA starts
    - AIRSHREP.sh still available as a tool to delete all old data if desired

  - /etc/PFA/ini is the ONLY ini file now used by PFA

    - PFA automatically creates /etc/PFA/ini file if it doesn't exist

      - Copies from an existing check's ini file if one exists
      - Copies from /usr/lpp/bcp/samples/PFA/ini if needed
      - You must ensure that JAVAPATH, PATH, and LIBPATH are correct for your installation! (See migration action)
      - WTO issued when /etc/PFA/ini file created shown as example below

```
 s pfa
 $HASP100 PFA       ON STCINRDR
 $HASP373 PFA       STARTED
*AIR045I PFA created the /etc/PFA/ini file by copying the
*/usr/lpp/bcp/samples/PFA/ini
*file. Update /etc/PFA/ini so that PFA processing can locate the Java
*code on your system.
```

Usage & Invocation

- Easier set up and installation – continued
  - Validates items at PFA start that didn't previously execute until hours later
    - Verifies PFA can invoke entire path at start up (through JVM)
    - Verifies version of java is not too low (requires 32-bit 7.1 or higher)
  - PFA doesn't start if validation fails
    - WTO issued for error that occurred
    - Details in log files specified in WTO shown as an example below

```
s pfa
$HASP100 PFA         ON STCINRDR
$HASP373 PFA         STARTED
AIR053I UNABLE TO INVOKE AIRJCHK METHODS.
VERIFY JAVAPATH= IN /etc/PFA/ini IS SET TO WHERE AIRJCHK
IS INSTALLED FOR THIS RELEASE AND ENSURE THE PFA USER IS AUTHORIZED
TO READ THE FILE. SEE SY1.launcher.log, SY1.builder.log, OR
SY1.1hr.cart.log IN
/u/wellie0/PFA_MESSAGE_ARRIVAL_RATE/data/
FOR MORE INFORMATION.
AIR056I VALIDATION FAILED DURING PFA INITIALIZATION. PFA CANNOT BE
 STARTED.
$HASP395 PFA         ENDED
```

  - Some PFA checks' file structures changed to reduce DASD required for USS files and improve performance

  - Messages now displayed to correct console

Usage & Invocation

- Provide guidance as to STDDEV and STDDEVLOW values needed to avoid exception

    - Written on the check's health checker report starting in V2R2

    - In *systemName*RUN.LOG files starting in V2R1

    - For the following checks:

        - PFA_MESSAGE_ARRIVAL_RATE
        - PFA_ENQUEUE_REQUEST_RATE
        - PFA_SMF_ARRIVAL_RATE
        - PFA_JES_SPOOL_USAGE
        - PFA_LOGREC_ARRIVAL_RATE

    - Value may not have been used in algorithm or may be too high which are also indicated in report

    - Example lines from different reports:

        - `Highest STDDEV needed to avoid this exception:  8`
        - `Highest STDDEVLOW needed to avoid this exception:  IRRELEVANT`
        - `Highest STDDEV needed to avoid this exception:  TOO HIGH`

Usage & Invocation

- Allow installation to define PFA's directory path
    - If not specified, home directory of PFA user is used (as in previous releases).

    - Path specified in /etc/PFA/ini
        - PFADIR= /u/myOwnDirPath
        - Path must exist
        - PFA user must have read and write authority to the directory
    - If PFADIR= specified and PFA user's home directory exists at start,
        - Files from /config directories are copied to PFADIR= path
        - PFA directories in PFA user's home directory are then deleted.

    - Not used by default in sample: `#PFADIR= /myPFAdirectorypath`

    - To use, specify a valid, existing path prior to starting PFA

        - `PFADIR= /u/myPFApath`

    - PFA will not start if errors in path as shown in example below:

```
s pfa
$HASP100 PFA        ON STCINRDR
$HASP373 PFA        STARTED
AIR047I PFA FOUND THAT THE PATH SPECIFIED IN THE /etc/PFA/ini FILE FOR
 PFADIR= DOES NOT EXIST. PFA DID NOT START.
```

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Usage & Invocation

- Allow installation to define "base" model time to avoid modeling during peak periods in a stable environment

  - **FORCEMODEL** parameter added to *all* PFA checks

    - Specifies a "base" time for modeling to occur (in 24-hour clock format)

      - Subsequent modeling occurs based on the MODELINT parameter
      - Modeling will still occur dynamically when PFA detects instability
      - Default: FORCEMODEL(NO) → base model time is not used

  - Example: You want modeling to occur at 5:00 A.M. and again at 6:00 P.M. for all PFA checks

    - Set FORCEMODEL to 05:00 and MODELINT to 780 minutes later
      - Dynamic update:
        - `f hzsproc,update,check(ibmpfa,pfa_*), parm('FORCEMODEL(05:00) MODELINT(780)')`
      - Persistent update: Use an HZSPRMxx parmlib member
    - Display current setting of all PFA parameters for all checks
      - `f pfa,display,checks,detail`

Usage & Invocation

- Delete EXC_*timestamp* directories by age

  - Pre-V2R2 kept a maximum of 30 regardless of age – sometimes directories were more than a year old!

  - V2R2 keeps a maximum of 30, but also deletes them if they are old

    - **EXCDIRDAYS** – new parameter added to *all* PFA checks
      - Minimum: 30 days
      - Default: 90 days
      - Maximum: 365 days

  - Additional code changes have been made via PTFs to only create EXC_*timestamp* directories if data has changed sufficiently

    - Increases likelihood of initial exception existing in EXC_*timestamp* directory

  - Use PFA's modify display command to display current settings:

    - *F pfa,display,check(pfa_e*),detail*
    - Partial example at right

```
CHECK SPECIFIC PARAMETERS:
  COLLECTINT                        : 1
  MODELINT                          : 720
  COLLECTINACTIVE                   : 1=ON
  DEBUG                             : 0=OFF
  EXCDIRDAYS                        : 90
  FORCEMODEL                        : NO
```
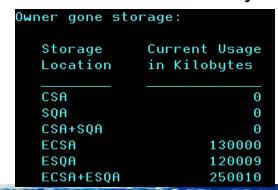
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Usage & Invocation

- Common storage usage in *SYSTEM* now displayed for PFA_COMMON_STORAGE_USAGE check
  - Pre-V2R2 health checker report showed usage as UNAVAILABLE.
  - V2R2 – Total usage in *SYSTEM* now displayed

- Owner Gone storage also displayed when exception occurs
  - Address spaces that are gone that did not free storage can be found in the *systemName*.All.mapmvs file where
    - The fourth field in the first element is all zeros.
    - The third element is the storage from that ASID and address in bytes
  - `E/CSATST2E/002C/0000000000000000/259003EC,`
  - `216471953 ,`
  - **0133120000,**
  - `20141110110552`
  - Example of owner gone on report shown on right

```
Owner gone storage:

    Storage        Current Usage
    Location       in Kilobytes
    _____     _____

    CSA                       0
    SQA                       0
    CSA+SQA                   0
    ECSA                 130000
    ESQA                 120009
    ECSA+ESQA            250010
```

Interactions & Dependencies

- Software Dependencies
    - Lowest supported java release is Java 7.1 (32-bit only)

- Hardware Dependencies
    - None

- Exploiters
    - None

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Migration & Coexistence Considerations

- **/etc/PFA/ini** file is the only ini file used by PFA starting in V2R2.
  - Before starting PFA,
    - If /etc/PFA/ini file exists,
      - ensure that it contains the correct JAVAPATH, PATH, and LIBPATH for your installation.
    - If /etc/PFA/ini file doesn't exist,
      - copy /usr/lpp/bcp/samples/PFA/ini into /etc/PFA/ini and update JAVAPATH, PATH, ad LIBPATH.
    - If /etc/PFA/ini file doesn't exist when PFA is started,
      - PFA will create an /etc/PFA/ini file and issue a WTO that the fields may need to be updated.
    - If you want to take advantage of new PFADIR= functionality, edit the /etc/PFA/ini and add the path you want to use. The path must exist.

  - JAVAPATH: the SMP/E install path for PFA's java code
  - PATH and LIBPATH: The executable code for the JNI calls (where java is installed on your system)

Migration & Coexistence Considerations

- All existing checks have a new DATE in IBM Health Checker for z/OS
    - DATE(20140313)

- HZSPRMxx statements for PFA checks must be updated with the new date
    - Ensure new parameter defaults for existing checks are appropriate for your installation
        - All checks: FORCEMODEL(NO) – feature not active by default
        - All checks: EXCDIRDAYS(90) – EXC_timestamp directories kept for a maximum of 90 days by default
    - Ensure interaction between existing and new parameters is appropriate
        - If MODELINT(720) (which is the default) is not the current value on any check, consider if FORCEMODEL should be used and a different value specified for MODELINT.

Installation

- Executing the PFA AIRSHREP.sh is NO LONGER required.

    - AIRSHREP.sh -new

        - Still available and deletes all existing PFA directories that exist in the PFA user's home directory.

    - AIRSHREP.sh -migrate

        - Does nothing other than tell you it's doing nothing.

Presentation Summary

- PFA is easier to install and configure in V2R2

- PFA has been enhanced to satisfy several customer requirements.

Appendix

- Publication: *z/OS Problem Management*