

# IBM Education Assistance for z/OS V2R3

Line Item Name: SMF Support  
Element/Component: USS Kernel

# Agenda

- Trademarks
- Session Objectives
- Overview
- Usage & Invocation
- Interactions & Dependencies
- Installation
- Session Summary
- Appendix

# Trademarks

- See url <http://www.ibm.com/legal/copytrade.shtml> for a list of trademarks.
- Additional Trademarks:
  - None.

# Session Objectives

Provide an overview of changes to the UNIX System Services function **Write an SMF Record** (BPX1SMF/BPX4SMF) to provide a more granular option to authorizing users to this function.

# Overview

- Problem Statement / Need Addressed
  - SSH needs to write an SMF record using the UNIX System Services function **Write an SMF Record** (BPX1SMF/BPX4SMF) to denote logon/logoff of secure shell users. This function requires authorization, either APF authorization or permission to the BPX.SMF facility class. Since the record would need to be issued while running under the client's ID, the only current solution is to permit all secure shell users to the BPX.SMF facility class profile.

Unfortunately, this would allow the permitted users to write any SMF record using the USS SMF function. There is a need for a more granular option to permit users to this function.

# Overview

- Solution
  - The USS function **Write an SMF Record** (BPX1SMF/BPX4SMF) is modified to also check for authorization to a new facility class, BPX.SMF.xxx.yyy, where xxx is a specific TYPE and yyy is a specific SUBTYPE for the SMF record to be written.
  - If facility class is defined and the user is permitted, the SMF service will allow the caller to write a SMF record of that TYPE/SUBTYPE.
  - Use of the BPX.SMF.type.subtype facility class profile requires a clean program-controlled environment.
    - The smf\_record syscall will verify that the address space has not loaded any executables that are uncontrolled and any future loads or execs to files that reside in uncontrolled libraries will be prevented.

# Overview

- Benefit / Value
  - Provides an option for greater control of users authorized to write SMF records using the UNIX System Service function.

# Usage & Invocation

- In order to use the smf\_record callable service, the caller must be APF authorized or permitted to either the BPX.SMF or the BPX.SMF.type.subtype resource profile in the FACILITY class.



# Usage & Invocation

- For the BPX.SMF.type.subtype check, no generics are allowed.
- To be permitted to the BPX.SMF.type.subtype facility class, the process must be program-controlled and the environment is marked MUST STAY CLEAN.
- When the user is not APF authorized and not permitted to either BPX.SMF or BPX.SMF.type.subtype, the failure is logged as a failure to BPX.SMF.
- The type/subtype in the facility class name will not have leading zeros.  
For example:
  - BPX.SMF.7.0
  - BPX.SMF.119.94
  - BPX.SMF.0.0

# Usage & Invocation

- Messages:
  - Message BPXP014I changed to have an additional controlled reason text for SMF:

**BPXP014I ENVIRONMENT MUST *envirstate* CONTROLLED FOR *text* PROCESSING.**

Where variable *text* can now be: “**SMF (BPX.SMF.type.subtype)**”

- *Envirstate* can be “REMAIN” or “BE”
- *Text* can also be “SERVER (BPX.SERVER)” or “DAEMON (BPX.DAEMON)”

# Usage & Invocation

- Exceptions and return codes:

Return Code	Reason Code	Condition
'8B'x	'2AF'x	EPERM JREnvDirty

The specified function is not supported in an address space that is not program controlled.

# Usage & Invocation

- Exceptions and return codes:

Return Code	Reason Code	Condition
'79'x	'660'x	EINVAL JrSMFTypeSubtypeMismatch

The SMF type or subtype parameters do not match the type or subtype specified in the SMF record to be written.

Return Code	Reason Code	Condition
'79'x	'661'x	EINVAL JrSMFRecordLenMismatch

The SMF record length parameter is smaller than record length specified in the SMF record to be written.

# Installation

- This new function is also available on z/OS V1R13, V2R1 and V2R2 via the installation of APARs:
  - OA49744
    - V2R2 HBB77A0 UA81068
    - V1R13 HBB7780 UA81069
    - V2R1 HBB7790 UA81070
  - OA48775
    - V2R2 HBB77A0 UA80086
    - V1R13 HBB7780 UA80087
    - V2R1 HBB7790 UA80088

# Session Summary

- The UNIX System Services has provided another option for authorizing users to the function **Write an SMF Record** (BPX1SMF/BPX4SMF)
  - Permission to the BPX.SMF.class.subclass facility class profile

# Appendix

- z/OS UNIX System Services Planning
- z/OS UNIX System Services Programming: Assembler Callable Services Reference
- z/OS XL C/C++ Runtime Library Reference
- z/OS MVS System Messages Volume 3 (ASB – BPX)