CA SMF Director®

Best Practices Guide

Release 12.6.00

CA Technologies Product References

This document references the following CA products:

- CA ACF2™ (CA ACF2)
- CA Common Services™ for z/OS (CCS)
- CA Mainframe Software Manager (CA MSM)
- CA MICS® Resource Management
- CA Service Desk
- CA Top Secret® (CA Top Secret)

Contact CA Technologies

Contact CA Support

For your convenience, CA Technologies provides one site where you can access the information you need for your Home Office, Small Business, and Enterprise CA Technologies products. At http://ca.com/support, you can access the following:

- Online and telephone contact information for technical assistance and customer services
- Information about user communities and forums
- Product and documentation downloads
- CA Support policies and guidelines
- Other helpful resources appropriate for your product

Provide Feedback

If you have comments or questions about CA Technologies product documentation, you can send a message to techpubs@ca.com.

If you would like to provide feedback about CA Technologies product documentation, complete our short customer survey, which is available on the CA Support website at http://ca.com/docs.

Best Practices Guide Process

These best practices represent years of product experience, much of which is based on customer experience reported through interviews with development, technical support, and technical services. Therefore, many of these best practices are truly a collaborative effort stemming from customer feedback.

To continue and build on this process, we encourage users to share common themes of product use that might benefit other users. Please consider sharing your best practices with us.

To share your best practices, contact us at techpubs@ca.com and preface your email subject line with "Best Practices for *product name*" so that we can easily identify and categorize them.

Contents

Chapter 1: Introduction

This section contains the following topics:

Purpose of this Guide

The guide provides a brief introduction to CA's Mainframe 2.0 strategy and features, and describes the best practices for installing and configuring CA SMF Director.

Audience

This guide is for systems programmers and system administrators who install, configure, and maintain the product.

Mainframe 2.0 Overview

Mainframe 2.0 is our strategy for providing leadership in the mainframe operating environment. We intend to lead the mainframe marketplace for customer experience, Out-Tasking solutions, and solution innovation. After listening to customer needs and requirements to keep the mainframe operating environment viable and cost-effective, we are providing new tools to simplify usage and to energize this operating environment for years to come.

CA Mainframe Software Manager™ (CA MSM) is an important step in realizing the Mainframe 2.0 strategy. CA MSM simplifies and standardizes the delivery, installation, and maintenance of mainframe products on z/OS systems. CA MSM has a browser-based user interface (UI) with a modern look and feel for managing those solutions. As products adopt Mainframe 2.0 features and CA MSM services, you can acquire, install, and manage your software in a common way.

CA MSM provides software acquisition and installation that make it easier for you to obtain and install CA mainframe products, and apply the recommended maintenance. The services within CA MSM enable you to manage your software easily based on industry accepted best practices. The common browser-based UI makes the look and feel of the environment friendly and familiar.

We follow the IBM z/OS packaging standards using SMP/E, with some additional CA qualities of service added, to make installation simple and consistent. Additionally, through the synchronization of product releases and the use of common test environments, we will declare a yearly mainframe software stack that includes many new releases with enhanced functionality. This stack is certified for interoperability across the CA mainframe product portfolio and the base IBM z/OS product stack.

Mainframe 2.0 Features

Mainframe 2.0 has the following main features:

CA Mainframe Software Manager (CA MSM)

Delivers simplified acquisition, installation, and deployment capabilities using a common z/OS-based web application delivered through a browser-based UI. CA MSM includes the following services:

Product Acquisition Service (PAS)

Facilitates the acquisition of our mainframe products and services, including product base installation packages and program temporary fixes (PTFs). This service integrates the inventory of products available on your system with CA Support, providing a seamless environment for managing and downloading software and fixes onto your system.

Software Installation Service (SIS)

Facilitates the installation and maintenance of our mainframe products in the software inventory of the driving system. This service enables you to browse and manage the software inventory using a web interface, and automates tasks for products that use SMP/E to manage installation. You can browse downloaded software packages, and browse and manage one or more consolidated software inventories (CSIs) on the driving system.

Software Deployment Service (SDS)

Facilitates the deployment of CA Technologies mainframe products from the software inventory of the driving system. This service enables you to deploy installed products that are policy driven with a set of appropriate transport mechanisms across a known topology. The enterprise system topology can include shared DASD environments, networked environments, and z/OS systems. Policies represent a combination of metadata input that identifies the component parts of a product and user-supplied input that identifies the deployment criteria, such as where it will go and what will it be called.

Electronic Software Delivery (ESD)

Enables you to get our products from an FTP server. We have improved this process so that you no longer need to build a tape to install the product.

Best Practices Management

Integrates with IBM Health Checker for z/OS to verify that deployed software follows our best practices. The health checks continually monitor the system and software to provide feedback on whether the software continues to be configured optimally.

Best Practices Guide

Provides best practices for product installation and configuration.

Note: For additional information about the CA Mainframe 2.0 initiative, see http://ca.com//mainframe2.

Chapter 2: Installation and Configuration Best Practices

This section contains the following topics:

Installation

Use CA MSM to acquire, install, and maintain your product.

Business Value:

CA MSM provides a common way to manage mainframe products. CA MSM provides a web interface, which works with Electronic Software Delivery (ESD) and standardized installation and management of mainframe products. You can use it to download and install CA SMF Director.

CA MSM lets you download product and maintenance releases over the Internet directly to your system from the CA Support website. After you use CA MSM to download your product or maintenance, you use the same interface to install the downloaded software packages using SMP/E.

Additional Considerations:

After you install the product, use the following CA SMF Director guides to tailor the product to your sites configuration:

- *Installation Guide*
- *Systems Programmer Guide*
- *User Guide*

CA MSM can subsequently be used to maintain your product.

More Information:

For more information about CA MSM, see the *CA Mainframe Software Manager Guide*. For more information about product setup, see the *Installation Guide*.

CA Common Services

Make sure you have installed the most current release of the CA Common Services.

Business Value:

The latest release of CA Common Services contains the most current infrastructure updates, including licensing changes and service desk integration.

Additional Considerations:

Integration with CA Service Desk requires the following CA Common Services:

- CAICCI, the Common Communication Interface component of CA Common Services
- SOAP (CAISDI/SOAP) client service

More Information:

For more information on CA Common Services, see the *Installation Guide*.

Control Data Set Migration

Migrate the CA SMF Director Control Data Set (SCDS) from your current release to the new release.

Business Value:

As new features are added to the product the SCDS format changes. When you install the new product release, migration of the SCDS occurs to provide access to the new features. The CA SMF Director SCDS cannot be shared with a previous release.

Additional Considerations:

Before you begin to migrate the SCDS to your new release, back up your existing SCDS.

CA SMF Director uses a control data set (SCDS), which is the central point for all of its processing. It contains all the configuration information and all the history file indexes with information on dumped SMF data.

More Information:

See the step Review Conversion Considerations in the *Installation Guide* and the chapter "Utility and Maintenance Functions" in the *Systems Programmer Guide*.

Configuration

Control Statements

Give careful consideration when defining the complex-level and system-level configuration options using the following two sets of control statements:

- OPTIONS control statement defines complex-level options that affect all of the defined systems.
- DUMPOPTIONS control statement defines system-level options that only apply to one specific system.

Business Value:

Proper initial settings of OPTIONS and DUMPOPTIONS control statement parameters will reduce the time frame required for the implementation process. These control statements map your business requirements for the handling of SMF data at your installation to the available product features.

The OPTIONS control statement lets you control product features that affect all defined systems.

The DUMPOPTIONS control statement lets you control how CA SMF Director creates and maintains the SMF history files for a specific system.

Additional Considerations:

The specification on the OPTIONS statement becomes the default at the DUMPOPTIONS level unless overridden by a DUMPOPTIONS specification. Consider the control statement mapping requirement for all systems that are to be controlled by CA SMF Director before proceeding.

We recommend that you use the following options on the OPTIONS statement:

- AUTODEL automatically removes expired entries from the SCDS. This reduces the overhead of maintaining history file index entries with expired data.
- DYNAM ensures that CA SMF Director dynamically allocates history files when performing dump, extract, and print operations. This option is required for logstream dumping.

We recommend that you use the following options on the DUMPOPTIONS statement:

- COPIES(2) forces CA SMF Director to create a duplicate copy of the dumped data (history file). If the primary copy of the data is damaged for any reason, you can use the alternate (alternate history file).
- SCRATCH forces CA SMF Director to perform a nonspecific mount request for a scratch tape when a new tape volume is needed for a history file. This option is required for logstream dumping.

- Either RETPD/ARETPD (retention period) or EXPDT/AEXPDT (expiration date) is required for the AUTODEL feature and increases the SCDS data set integrity. The use of RETPD/ARETPD is preferred.
- CATLG catalogs the history file data set.

More Information:

See the *User Guide* and the *Systems Programmer Guide* for information on customizing control statements and their operands,

Security Permissions

Define security permissions for CA SMF Director in your security product: CA Top Secret, CA ACF2, or IBM RACF.

Business Value:

Defining security permissions lets you control user access to individual CA SMF Director functions to meet your security standards.

More Information:

For more information, see the chapter “Securing Functions” in the *Systems Programmer Guide*.

SCDS Configuration and Access

Create a CA SMF Director Control Data Set (SCDS) large enough to contain all of your history index records and still have a surplus of free blocks for new history records.

Business Value:

Correctly sizing your SCDS reduces error messages and the need to enlarge the SCDS after it has been created.

Additional Considerations:

You should consider the following tasks:

- Use the AUTODEL option on the OPTIONS control statement to automatically remove expired history file index entries from the SCDS.

  This reduces the overhead of having entries with expired data.
- Specify PARM=READ when you execute the SMFD program so SCDS processes in read-only mode for operations that do not update the SCDS.

This provides read-only security for the SCDS for those individuals who need to perform read-only operations like LISTH and EXTRACT and reduces contention on the SCDS data set.

More Information:

See the information on calculating SCDS space requirement in the *Systems Programmer Guide*.

SCDS Maintenance

Back up the SCDS on a regular basis by specifying PARM=BACKUP when you execute the SMFD program.

Business Value:

Ensures the integrity of the SCDS, which is critical to the operation of CA SMF Director. For example, when data becomes physically damaged, you can easily have it restored.

Additional Considerations:

You can view the SCDS contents using the ISPF-based GUI, or the LISTC and LISTH control statements.

If the SCDS gets corrupted for any reason, do a backup and restore on the current SCDS. If this does not fix the problem (for example, because of physically damaged data), restore from an older SCDS backup.

If your SCDS is getting full or is full, back up your current SCDS, create a larger SCDS, and restore the backed up SCDS to the new one.

More Information:

See the *User Guide* and the *Systems Programmer Guide*.

Index Maintenance

Index maintenance functions can be used to perform the following tasks:

- Add pre-existing SMF data sets to the SCDS without having to read the SMF data again
- Remove expired entries using DELETEX when the SCDS becomes full
- Update entries using UPDTX that have corrupted or incorrect data

You can review index entries for SMF history files using the LISTH control statement or the online interface.

Use the following control statements to manually manipulate the SCDS index:

- ADDX - Adds entries
- DELETEX - Deletes entries
- UPDTX - Updates entries

Business Value:

Manually manipulating the SCDS index lets you troubleshoot and resolve problems with the SCDS index without having to restore from a prior backup version and then reprocess SMF data.

Additional Considerations:

To add SMF data manually and bring it under the control of CA SMF Director, use the SOURCE control statement instead of ADDX. That will completely integrate pre-existing SMF data into CA SMF Director.

Use the FIRSTYEAR option on the DUMPOPTIONS control statement to set the oldest year of SMF data allowed in the SCDS file (starting with 1960).

Set this option to the oldest year of existing SMF data that you want to add to the SCDS. Setting this option as the current year minus the largest retention period for your SMF data provides the following benefits:

- Allows for back loading of existing SMF data into CA SMF Director
- Prevents error messages and the possibility of data not being added to the history files when incoming records predate the year specified on the FIRSTYEAR option.

More Information:

See the chapter "SMFD Control Statement Reference" in the *User Guide*.

Data Integrity

Resolve overlapping-data conditions by investigating data in the intersection of the existing and new timestamp intervals. If an overlap occurred, set the OVERLAP value on the OPTIONS control statement so you will have an overlap grace time period. For duplicate data conditions, investigate your processes to determine why you are trying to reintroduce existing SMF data to CA SMF Director.

Business Value:

Resolving the timestamp issues for overlapping SMF data provides the following benefits:

- Guides you towards the appropriate setting for the OVERLAP parameter

- Reduces warning messages at DUMP time
- Reduces error messages at EXTRACT/PRINT time

Resolving duplicate data conditions provides the following benefits:

- Improves your processes to eliminate the conditions that caused an attempt to add existing data to the SCDS
- Allows for continued execution and availability of CA SMF Director
- Reduces the need for manual intervention

Additional Considerations:

Overlap detection can occur because the timestamp fields in vendor and user-written software are not always properly updated before writing their SMF records. This appears to CA SMF Director to be an overlapping data condition, but it is really a “false positive” caused by the incorrect setting of the timestamp fields.

If CA SMF Director notifies you of an overlap condition, you can do the following:

- Extract or print all the data by using the parameter PERMIT
- Avoid extracting or printing overlapping records by using the parameter NODUPS

More Information:

See the section on Overlapping SMF Data in the *Systems Programmer Guide*.

Tape Performance

Limit the number of files written to a CA SMF Director History tape volume.

Business Value:

If you are using high capacity drives, limiting the number of files written to a tape volume lets you avoid performance issues with tape positioning.

Additional Considerations:

To avoid these issues, use the MAXFILESONVOL configuration option to limit the number of files that can be written to one tape volume.

Multiple Systems

In a Sysplex environment, use a shared SCDS for systems that have like processing requirements. For example, you might want to have all production systems sharing a single SCDS and all development or test systems sharing another SCDS.

Business Value:

This allows for more efficient use of resources as requirements for retention of SMF data and storage media can be quite different between environments. A production environment might have a five year retention requirement, a duplexing requirement, offsite storage, and use of high capacity tape drives, while a development or test system may only require thirty days for retention and use of DASD as the storage medium for history file data.

Additional Considerations:

Avoid implementing CA SMF Director for systems that are infrequently used, if you are required to do so it is suggested that these types of systems have a separate implementation of CA SMF Director with a non-shared SCDS.

Split Files

Use split files to reduce the time needed to create additional content-specific files, or generation data groups (GDGs), containing data from a defined interval (a single day or parts of a day).

Business Value:

This eliminates the need to run EXTRACTs after the dump process, reduces I/O and CPU usage, and generally provides better performance for managing your SMF data. In addition, you can select only the records that meet the criteria you specify.

Additional Considerations:

The following are the additional considerations for split files.

- Access split file GDGs through the split file index, and use fully qualified file names.
- Assembler language programs can use the $SPINDEX macro, located in CASFMAC library, to map the split file index records.
- We do *not* recommend accessing the generation zero split file because it may be incomplete.

Logstream Recording

Use logstream recording of SMF data with z/OS 1.9 or later.

Business Value:

Logstream recording of SMF data eliminates loss of data that can occur at switch time due to buffer overflows when using the traditional MAN file recording technique. This is especially true for large data centers with a high volume of SMF recording.

When using logstream recording, CA SMF Director can:

- Dynamically manage the data being dumped to the history files
- Eliminate the requirement of manually setting start and end timestamps
- Support coupling facility and DASD only logstreams
- Support coupling facility logstreams with data from multiple systems

Additional Considerations:

You can switch between logstream recording and MAN file recoding and CA SMF Director ensures that all of the SMF records are processed and archived.

You can filter SMF data based on MAN files or logstreams using:

- EXTRACT and PRINT control statements
- History file listings using LISTH statement

More Information:

See the logstream recording information in the *User Guide*.

Integration

CA SMF Director can be integrated with CA Service Desk and CA MICS Resource Management.

CA Service Desk Integration

Use the CA SMF Director integration with CA Service Desk to automatically open a service desk request if specified errors occur.

Business Value:

CA SMF Director manages and protects a large volume of important corporate data. If a corporation performs accounting and chargeback for data center resources the SMF data is where the majority of usage information is obtained to calculate charges. Using the automatic CA Service Desk notification for any CA SMF Director problems encountered during the dump process insures that there is a persistent record of the dump failure.

More information:

For more information about the CA Service Desk interface, see the *Systems Programmer Guide*.

CA MICS Resource Management Integration

CA SMF Director integrates with CA MICS Resource Management by means of split files and split index files. CA MICS uses the split files to periodically dump SMF log files.

Business Value

Minimizes the processor I/O and CPU time required to prepare SMF data for CA MICS. CA SMF Director provides the data splitting feature and has the additional benefit of interfacing directly with the CA MICS components that process SMF data. CA SMF Director keeps track of which split files have already been processed by CA MICS and which are ready to process.

Additional Considerations

CA SMF Director can be tailored to create split files based on the input needs of each CA MICS component within each unit. This allows automatic input of split files created by CA SMF Director into CA MICS without any user intervention. As split files are created, they are recorded into the split index. Once CA SMF Director marks them as being complete, they are automatically eligible for input into any subsequent CA MICS update process. This level of automation has the following benefits:

- Avoids contention between dump processing and CA MICS update processing because the CA SMF Director dump can be creating or adding data to a split file at the same time as CA MICS is reading completed split files. Additionally, dynamic allocation of the split file itself, using the absolute data set name, further reduces contention issues.
- Eliminates contention between CA MICS component update steps because each component has its own index and split files for processing.
- Eliminates the redundant processing of data that typically occurs after SMF dump time if separate input files need to be created.
- Prevents each CA MICS component step from reading unnecessary data because CA SMF Director can be used to restrict the split file contents to only those record types and subtypes required by each CA MICS component.
- Automatically selects the latest input files at those sites using incremental update to update the CA MICS database multiple times throughout the day, thus reducing overall nightly processing.

More Information

See “Integration with CA SMF Director” in the *CA MICS Planning, Installation, Operation, and Maintenance Guide (PIOM)*.

Index

N

O

P

R

S

T

U

V