CA PMO™ Runtime Performance Optimizer

Best Practices Guide

r4.4

CA Technologies Product References

This document references the following CA Technologies products:

- CA Mainframe Software Manager (CA MSM)
- CA PMO™ Runtime Performance Optimizer (CA PMO)
- CA SYSVIEW® Performance Management

Contact CA Technologies

Contact CA Support

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

- 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

Providing Feedback About Product Documentation

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

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.

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Chapter 1: Introduction

This section contains the following topics:

Purpose of this Guide

The guide provides a brief introduction to the CA Technologies mainframe management strategy and features, and describes the best practices for installing and configuring CA PMO.

Audience

The intended audience of this guide is systems programmers and administrators who install, configure, deploy, and maintain CA PMO.

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 and user-supplied input. Metadata input identifies the component parts of a product. User-supplied input identifies the deployment criteria, such as where it goes and what it is named.

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, Maintenance, 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 PMO.

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.

More Information:

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

Install into a new CSI

Install into a new CSI.

Business Value:

The installation of CA PMO deletes the previous release in the CSI. Installing into an existing CSI would eliminate the possibility of returning to the previous version of CA PMO should any problems be discovered in the new install.

Product Maintenance

The following section explains the best practices for product maintenance.

Apply the Latest Maintenance

Apply all the latest maintenance for CA PMO.

Business Value:

Being current on maintenance avoids system failures, makes problem resolution go smoothly, and ensures that you get the best value from using CA PMO.

Performance

The following sections explain the best practices for configuring CA PMO for optimal performance.

Apply Updates Efficiently

If you are using the PMO/XSYS component, evaluate how updates are applied and managed before using CA PMO.

Business Value:

CA PMO handling of updates reduces the need for operator intervention. If updates are handled incorrectly, the programs that issue BLDL/FIND requests may be receiving outdated members. These programs may experience a system S106 error, or they may obtain an old copy of the requested member.

Additional Considerations:

If you stop CA PMO and then update a library on that system that is eligible for management by CA PMO on other systems, you should issue the command F PMO,D=library_name on all systems where CA PMO was active when the update occurred.

More Information:

For more information, see "Tuning CA PMO" in the *CA PMO Systems Programmer Guide*.

Optimize Performance with Proper Configuration

Let CA PMO run for one hour. Then start up PMOMON and check various displays to see if CA PMO is configured for optimal performance.

Business Value:

Setting optimal parameters allows CA PMO to manage almost all the BLDL/FIND requests. This improves processing and significantly reduces its cost.

Additional Considerations:

- Enter the D1 command to view the D1 display. Examine this display to see if the managed list is sorted more than six times per hour on average, or if the minimum sort interval is less than seven minutes. If either of these cases is true, CA PMO is resolving too few LNKLST library searches. To fix this, increase the size of the managed list by raising the value of the MLSIZE parameter.
- Look at the D2 display and determine the percentage of CA PMO assisted LNKLST BLDL/FIND requests. Divide the number of CA PMO assisted LNKLST requests by the total number of LNKLST requests. This should be at least 90% (.9). Also look at the D5 display and divide the number of library directory searches that CA PMO resolved by the total number of library directory searches. Again, the result should be at least 90%. If either of these percentages is less than 90%, consider increasing the value of the MLSIZE parameter.
- If CA PMO is automatically choosing what private libraries to manage, look at the D6 display. If the value of NUMADDED Exceeded is higher than 1%, raise the value for the NUMADDED parameter.

Tune CA PMO to Manage Libraries

If you are manually including libraries for management (that is, if you specified EXCLAUTO=* in your startup parameters), use this best practice to tune CA PMO.

Business Value:

Allowing CA PMO to automatically select libraries for management assures optimal performance. This private library selection by activity extends the performance gain to all busy libraries.

Additional Considerations:

- Check the D7 display to see if the percentage of I/O directory searches for candidates exceeds 10%.
- Also check this display to see if the percentage of I/O directory searches due to updates and concatenation problems where the member is not found exceeds 5%.
- If either of these problems exists, consider changing the EXCLAUTO=* parameter so that only certain libraries are excluded from management. Alternatively you can use the INCLAUTO parameter to allow CA PMO to automatically include busy libraries and volumes for management.

Provide Sufficient Virtual Storage

Set an appropriate amount of virtual storage for CA PMO to prevent message PMO691I GETMAIN FAILED - VIRTUAL STORAGE EXHAUSTED. REASON=HT/DCB. DSN=data set name.

Business Value:

The message appears if the GETMAIN fails for the hash table or for the DCB for the current library. In this case, CA PMO stops managing a different library (with less directory activity) and starts managing the current library (with more directory activity). This may have a negative impact on the directory search performance.

With sufficient virtual storage provided, CA PMO can manage the busy libraries that can benefit most, without losing the directory search benefit that results in performance gains.

Additional Considerations:

As a general rule, you allocate one megabyte for every 13,000 directory entries to be stored in hash tables. The virtual storage size of the CA PMO address space is controlled by the IEFUSI user exit. The default for this exit is 32 MB, which is enough storage for 416,000 directory entries.

You do not need to worry about allocating too much storage. CA PMO does not actually use the storage unless it is needed.

More Information:

Each offline report shows the amount of virtual storage used by the library. See "Producing Offline Reports for Managed Private Libraries" in the *CA PMO Systems Programmer Guide*.

Monitor z/OS Health Checks

Use CA SYSVIEW to monitor the health checks generated for CA PMO.

Business Value:

Health checks alert you to conditions that could prevent CA PMO from providing the best performance optimization, if uncorrected, and they guide you in addressing the problem.

Additional Considerations:

The following health checks are provided for CA PMO:

PMO_TIME_BETWEEN_SORTS

Ensures that the managed list is big enough to provide the best performance for directory searches of LNKLST members with CA PMO.

PMO_LNKLST_MEM_NOT_FND

Ensures that CA PMO is adequately assisting LNKLST searches.

PMO_NUMADDED_EXCEEDED_PCT

Ensures that there are enough entries for private libraries.

More Information:

See "CA PMO Health Checks" in the *CA PMO Systems Programmer Guide*.

Eliminate Unnecessary I/O within a Single Sysplex

Use the XCF Enhanced Data Transmission in place of control file when using a single sysplex.

Business Value:

The XCF will be used in place of the control file within a single sysplex to eliminate unnecessary control file I/O. Whereas each PMO must read the control file to determine if any other CA PMO system has updates, XCF messages can drive PMO with update information using an Event Driven Architecture. Updates reflected by the XCF implementation provide for increased performance.

More Information:

For more information see "Determine the Multiple System Communication Path (Optional)" in the *CA PMO Installation Guide*.

Generate LLA Refreshes for Link List Members

Allow CA PMO to generate LLA refreshes for link list members.

Business Value:

When LLA manages the link list libraries, LLA must be refreshed when a library is updated to ensure that LLA has the correct information. CA PMO can automatically generate selective LLA refreshes following link list updates.

More Information:

For more information, see "Handling LNKLST Updates" in the *CA PMO Systems Programmer Guide*.

Use Group Name for the XCF Enhanced Data Transmission

If you are using the PMO/XCF component, you need to specify the group name that will be used by CA PMO in the sysplex. It is required to be different from other groups defined in the sysplex. If the default value (PMOXCFGP) is not acceptable, it is recommended to include PMO in your own group name.

Business Value:

Specifying the group name that is used by other products in the sysplex may cause that CA PMO will accept XCF messages from different products. This will result in error messages issued from CA PMO Also the PMO/XCF Update Messages will be sent to other products that use the same Group name. This may lead to unexpected results.

Additional Considerations:

The group name must be eight characters long, padded on the right with blanks if necessary; the valid characters are A-Z, 0-9, and national characters ($, # and @). To avoid using the names IBM uses for its XCF groups, do not begin group names with the letters A through I or the character string SYS. Also, do not use the name UNDESIG, which is reserved for use by the system programmer in your installation.

More Information:

For more information, see "Specifying Parameters" in the *CA PMO Systems Programmer Guide*.

Optimize Sysplex functionality and Enable Event Driven Communications

To optimize sysplex functionality and enable event driven communications use both the XCF and control file.

Business Value:

To save I/O processing time and to better communicate with event driven communications, use the XCF for CA PMO systems running on the same sysplex. To allow for CA PMO systems to share updates across sysplex's, use the control file for one PMO on each sysplex.

More Information:

For more information see "Determine the Multiple System Communication Path (Optional)" in the *CA PMO Installation Guide*.

Use SMF System ID

Use the SMF system ID to simplify CA PMO parameters.

Business Value:

The four character SMF system ID may be used to specify that a parameter only applies to a specific system. This simplifies the task of configuring CA PMO in a multiple system environment. Because you have fewer parameters, the resulting configuration is less complex and easier to manage.

More Information:

For more information, see "Parameter Syntax" in the *CA PMO Systems Programmer Guide*.

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