

CA PMA Chargeback™

Best Practices Guide

Release 12.6.00



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CA Technologies Product References

This document references the following CA Technologies products:

- CA Datacom®/AD
- CA Datacom®/DB
- CA Mainframe Software Manager (CA MSM)

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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	7
Audience	7
Mainframe 2.0 Overview	7
Mainframe 2.0 Features	8
Chapter 2: Installation and Configuration Best Practices	9
Installation	9
Install the Prerequisites	10
Implementation	10
Optimize Raw Data Collection	10
Use EXTDATA Files from CA JARS RA	11
Accounting and Chargeback System	12
Determine your Chargeback Methodology	12
Identify Your Business Structure	13
Identify Metrics that Indicate Structure	13
Assign and Enforce Account Codes	14
Start Using Account Codes	14
Assign Utilization Information Correctly	15
Determine Your Chargeback Algorithm	15
Determine Your Rates	15
Standardize Names of Charge Elements	16
Define Complex Units	16
Use Qualified Rates	17
Normalize Rates	17
Set Charges	18
Execute Your Chargeback Algorithm Daily	18
Publish Your Rates	19
Start Producing Invoices	19
DataManager Implementation	19
Identify Resource Consumption and Cost	20
Determine the Amount of Resource Consumption	20
Identify Consumers	20
Identify the Time and Duration of the Resource Consumption	21
Take Advantage of Adjustments	21
Create Input Record Descriptions (IRDs)	21
Create Output Record Descriptions (ORDs)	22

Configuration	22
Reevaluate Your System	22
Maintenance	23
Apply PSPs and PTFs	23
Interfaces and Integration Points	23

Index	27
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Chapter 1: Introduction

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 PMA Chargeback.

This section contains the following topics:

[Audience](#) (see page 7)

[Mainframe 2.0 Overview](#) (see page 7)

[Mainframe 2.0 Features](#) (see page 8)

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 and installation 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.

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](#) (see page 9)

[Implementation](#) (see page 10)

[Accounting and Chargeback System](#) (see page 12)

[DataManager Implementation](#) (see page 19)

[Configuration](#) (see page 22)

[Maintenance](#) (see page 23)

[Interfaces and Integration Points](#) (see page 23)

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 PMA Chargeback.

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 CA PMA Chargeback Installation Guide to set it up. CA MSM can continue to help you maintain your product.
- CA PMA Chargeback does not currently interface with the IBM Health Checker. IBM Health Checker is ideally designed for software products that operate as continuously executing z/OS address spaces, such as started tasks. The most important CA PMA Chargeback activities execute as batch jobs.

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*.

Install the Prerequisites

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

Business Value:

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

Additional Considerations:

These CA Common Services must be installed before you install CA PMA Chargeback:

- CAIRIM
- CA C Runtime
- CA VIEWPOINT
- CA SRAM
- Earl Service

CA Datacom with SQL or IBM's DB2 must also be installed.

More Information:

Installation Guide

Implementation

The people who are going to implement the product should review the accounting and chargeback best practices in this guide so they can prepare for implementation during installation.

Business Value:

Upfront planning shortens the time and reduces the effort required for implementation.

Optimize Raw Data Collection

Minimize the number of times each data record is processed—from the time it is created until the time it is input into CA PMA Chargeback.

Business Value:

This optimizes performance and saves I/O and CPU resources.

Additional Considerations:

Before configuring and activating optional components, determine the raw data sources required by each component, and begin the process of automating the collection of raw data as a parallel task to implementation.

Use EXTDATA Files from CA JARS RA

Although both EXTDATA and account/history files can be created by CA JARS RA, the use of EXTDATA files is the recommended practice for all applications.

Business Value:

This is the only method supporting performance-management and capacity-planning reporting using RMF data from the SMF data source.

Additional Considerations:

EXTDATA files employ the following chargeback and reporting methods:

- Data-specific extensible record formats.
- Comprehensive sets of SMF data types and fields processed.
- Reporting is done via the CA Earl report writers.
- Summarization is a manual process.
- Application of rates and charge calculations is done by CA PMA Chargeback.

More Information:

User Guide

Accounting and Chargeback System

Determine your Chargeback Methodology

Decide what the goals are for accounting and chargeback in your enterprise before you set up accounting and chargeback policies and procedures.

Business Value:

Knowing the expected outcome from your chargeback system will guide you through the implementation process. Many decisions you must make during the implementation process will be governed by expected results. For example, determining your reporting requirements will directly affect the key structure of your accounting and chargeback database, which in turn affects database size. Determining whether you will have a zero based accounting system or a "for profit" system will affect how you set rates. A well researched and planned chargeback implementation process will be completed in a more timely fashion.

Additional Considerations:

Decide if you want the data center to recover its costs or make a profit:

- If you just want to recover the cost of your data center, rates are not that important, because recovery goals for dollar amounts will be set for various metrics. The amount charged back to users of the system will be based on each entity's percent of total usage for a specific chargeable metric type. The users of that entity will then incur that percentage of the total cost for that metric. Charges will vary from period to period.
- If you want the data center to be a profit center, you must determine appropriate rates for all metrics that will be part of your chargeback algorithm. Start with cost figures that need to be recovered for the associated metrics that you will be charging for. Charges will be determined, in the simplest form, by applying the rate for a specific metric by the usage amount (unit) for any particular user of system resources. These types of chargeback systems are repeatable because the charge will not vary depending on how much of the total any particular user consumes.

More Information:

- *CA JARS Resource Accounting Installation Guide*
- *CA JARS Resource Accounting User Guide*
- *User Guide, Cost Recovery Panels*

Identify Your Business Structure

Determine how your business is organized and reflect that organization in the accounting and chargeback system. Choose an accounting structure that maps well to your business.

Business Value:

Correctly identifying the business organization hierarchy to the chargeback system at the onset of your implementation is critical. The need to modify the structure after the implementation starts may require revisiting a significant amount of work.

Additional Considerations:

- The structure you select will determine the higher level keys of your chargeback system's database and accounting algorithm.
- The chargeback system allows for up to five levels of identification of business structure, for example Division, Department, Group, and so on. You can report at each lower-level structure and summarize lower level structures up to a higher level. For example, multiple groups would be reported on at the group level, all groups would be summarized up to a specific department, and many departments would be summarized up to a division.
- Avoid the temptation to define levels that are not required. The number of levels selected will have an impact on the size of the database.

More Information:

To implement accounting structures in the chargeback system, see "Setting Up Your Accounting Structure" in the *User Guide*.

Identify Metrics that Indicate Structure

For every raw data source that will be used in your chargeback algorithm, you must identify specific metrics within that data source that may be used to indicate which accounting structure (slot) the information belongs to.

Business Value:

This exercise will point out, early in the process, which data sources do and do not contain the required metrics for accounting structure slotting. For those that do not, steps can be taken to remedy the problem while other parallel work is being performed.

Additional Considerations:

Every data record that is processed by the chargeback system will be identified as a specific record type. For each specific record type, identify metrics within that record that can be used to indicate which accounting structure the resource utilization metrics belong to.

More Information:

See "Setting Up Your Accounting Structure" in the *User Guide* for detailed information on how to indicate to the chargeback algorithm where accounting sources information is in individual record types.

Assign and Enforce Account Codes

Begin the process of assigning, implementing, and enforcing account code standards before implementing your chargeback system.

Business Value:

Completing this task first eases the implementation of your chargeback algorithm and acclimates the user community to the new requirements before implementation begins.

Additional Considerations:

- This process can be time consuming if accounting standards and enforcement processes are not in place.
- Assign account codes to users and jobs on the system. The information in the Account Number and Accounting Information fields on the JOB statement in the JCL and other variables can be used to identify the users of resources.

Start Using Account Codes

Once account codes have been created and implemented, users should begin using them immediately, even before the accounting system has been implemented.

Business Value:

When the accounting and chargeback system is implemented, your users will be used to using account codes and will not need to make any significant changes.

Assign Utilization Information Correctly

Assign utilization information to the correct organizational entity, the one that is, in fact, using the system resources.

Business Value:

Each data source may have its own nuances for collecting and ensuring proper use of accounting information. Appropriate steps should be taken for each data source to ensure accounting information integrity.

Additional Considerations:

To do this effectively, accounting standards not only have to be in place, but they must be enforceable. For batch and online applications on the mainframe, this can be accomplished by implementing JES exits to check job cards and their accounting information, only allowing TSO users to log on using a predetermined account code that assigns their work to the appropriate structure, and so on.

Determine Your Chargeback Algorithm

Carefully analyze the costs associated with running your data center, including the leases on the hardware and software, the people who work in the data center, power costs, supply costs, and who is using which resources.

Business Value:

Allows you to construct an effective chargeback system that recovers all costs of the data center.

Additional Considerations:

Use SMF and RMF data to build a picture of past and current resource utilization. From this picture, trend analysis can be used to predict usage levels in the future.

Determine Your Rates

Start building a chargeback algorithm with just a few metrics that show resource utilization, such as CPU time, I/Os and device connect time. Set a base charge so that jobs that use very few resources can be accounted for.

Business Value:

You can play out what-if scenarios by making changes to unit, rate, and cost information on a small scale before full implementation.

Additional Considerations:

The chargeback system provides a rate determination methodology that may be used after collection of one complete period's worth of data.

More Information:

User Guide, Rate Determination Panels

Standardize Names of Charge Elements

When defining similar charge elements for different record types, use a standardized naming convention so that like elements have names with the same characters.

Business Value:

Like elements from different sources can be easily compared, supporting your business decisions and actions. Activities like chargeback and planning can compare different sources on a common basis.

Additional Considerations:

For example, batch jobs, started tasks, CICS transactions, IMS processing, and so on all consume some amount of CPU time. If each charge element name contains the characters CPU_TIME, the data can be compared.

More Information:

User Guide, Defining Charge Elements.

Define Complex Units

Define complex units.

Business Value:

Complex unit algorithms may be applied using multiple numerical fields within a single record type and arithmetic operators like plus, minus, multiply, and divide. This reduces the total number of individual charge elements that need to be created, which reduces complexity.

Additional Considerations:

- As many metrics and operators as needed may be used in creating a complex unit.
- Normal order of operator precedence is used and parenthetical support is also provided.

More Information:

User Guide, Defining Charges

Use Qualified Rates

Apply reduced or increased costs for various activities, like running jobs on weekends.

Business Value:

Changing consumer behavior can make the data center more cost-effective.

Additional Considerations:

- To encourage users to run batch jobs during off-peak times of day, use a qualified rate based on time of day (for example, shift). Charge a higher rate for batch jobs run during peak utilization times and a reduced rate for those run during off-peak times.
- You can favor one business unit over another or one customer over another by qualifying rates based on information used to "slot" utilization into specific account structures.
- Qualified rates can be defined for global usage by all record types, with the restriction that all required information to evaluate the qualifier is contained in the chargeback system common header section for all records, or can be record type specific.
- The basic rate defined for a charge element is used if no qualified rates have been defined for a charge element or if no defined qualified rates meet the requirement to apply the qualified rate.

More Information:

User Guide, Defining Charges

Normalize Rates

Charge the same amount for CPU time on a higher-rated MIPS computer as on a lower-rated computer.

Business Value:

Avoid inequities in charges for computer use.

Additional Considerations:

Normalize unit data when data from multiple systems with different ratings for speed (generally MIPS rates) are processed together in one chargeback algorithm.

More Information:

User Guide, Defining Charges

Set Charges

Set minimum charges and static use charges.

Business Value:

Provides flexibility in your accounting algorithm, allowing charges that do not fit into the "charge = unit x rate" calculation.

Additional Considerations:

- For example, a charge element could be defined to charge a minimum charge of \$5 for CPU time.
- Every time a data record is processed that creates a CPU charge, there could be a static charge created for \$5, just for running a batch job on the system.

More Information:

User Guide, Defining Charges

Execute Your Chargeback Algorithm Daily

Run the raw data through CA PMA Chargeback on a daily basis.

Business Value:

Allows for easy monitoring and quick response. Spreads the processing out over the course of a billing period. Makes your users aware of their resource consumption and expenses every day, instead of only at invoice time.

Additional Considerations:

- SMF data and subsystems data can be voluminous, and attempting to process all of the raw data for a period at one time will be very time consuming. By processing the data incrementally over the course of a period, the last execution of the period will not take any longer than any of the other daily executions during the period.
- After a week or two of running CA PMA Chargeback daily, evaluate your rates and make adjustments.

More Information:

See the information on rate determination and rate generation in the *User Guide*.

Publish Your Rates

Once the rates and billing algorithms have been adjusted to what is needed to meet the goals you have established, you need to publish them.

Business Value:

The users of your systems will be aware of what they will be charged and how they will be charged. Allows them to verify and understand their charges.

Start Producing Invoices

Design a billing system that produces invoices for data center costs incurred, using the account codes that represent your business.

Business Value:

Provides users with the information they need to begin budgeting for resource use under the chargeback system.

Additional Considerations:

- Start with test runs. Once your test runs indicate that your goals are being met, you can begin to use the chargeback system and start generating invoices.
- Results should be continuously monitored to ensure that the rates make sense and that the goals are being met.

More Information:

User Guide, Generating Chargeback Invoices

DataManager Implementation

Although CA PMA Chargeback comes with a large variety of pre-defined input and output record formats, you may need to perform accounting and chargeback functions on other resources. The DataManager provided with CA PMA Chargeback allows you to define the input and output formats for other resources. Follow these recommendations.

Identify Resource Consumption and Cost

Determine what resources are being consumed and what this consumption is costing your enterprise.

Business Value:

Any resource that costs money can be charged back if its usage can be tracked.

Additional Considerations:

- Knowing the costs of all your resources makes it easier to determine which metrics to use for accounting and chargeback purposes and what rates to charge for consumption.
- This information can be used for justification and auditing.

Determine the Amount of Resource Consumption

Identify the metrics and data sources that can be used to measure how much of each resource is used.

Business Value:

Knowing how much of a resource has been used helps determine chargeback rates so that costs can be recovered.

Additional Considerations:

This information lets you set up an audit trail for accounting and chargeback.

Identify Consumers

Determine who is using the resource.

Business Value:

Identifying the consumer lets you allocate charges fairly.

Additional Considerations:

- Chargebacks can be justified and audited.
- Outliers can be identified and taught to use less of the resource by more efficient processing.

Identify the Time and Duration of the Resource Consumption

Determine when resources were consumed and for how long.

Business Value:

Knowing when resources were consumed lets you assign their use to a specific chargeback interval. You can also charge less for resources consumed at an off-peak time of the day or on a weekend.

Take Advantage of Adjustments

Accounting and chargeback can be based on factors other than who used the resource, when it was consumed, and how much was consumed.

Business Value:

Lets you use additional factors to adjust the cost of a resource.

Additional Considerations:

Contractual obligations can be fulfilled based on adjustment factors.

Create Input Record Descriptions (IRDs)

Use the input data records to describe the data that will be used as input to the accounting and chargeback process.

Business Value:

Describing the fields in the input records accurately lets CA PMA Chargeback normalize the data from the resource. The normalized data can then be used to perform accounting and chargeback.

Additional Considerations:

- The data records must be in a standard sequential file.
- For each field, you must define its name, description, format, date/time attribute, offset, length, and, if it is numeric, the precision.

More Information:

See the *DataManager User Guide*, Handling Input Records.

Create Output Record Descriptions (ORDs)

The output records are the normalized records that will go into the accounting and chargeback processes that are the heart of CA PMA Chargeback.

Business Value:

Well-defined ORDs let you set up an effective and auditable accounting and chargeback system for resources that are not provided with CA PMA Chargeback.

Additional Considerations:

All ORD records must be defined with one start time, one end time, and one duration. This information will allow CA PMA Chargeback to assign resource use to specific time periods during the day as well as to particular billing intervals.

More Information:

See the *DataManager User Guide*, Handling Output Records.

Configuration

Reevaluate Your System

Periodically compare your CA PMA Chargeback database configuration with the business and data center requirements at your site, and modify your configuration if necessary to meet current objectives.

Business Value:

Maximizes the value gained from your CA PMA Chargeback investment as your business changes.

Additional Considerations:

- It is critical for those responsible for CA PMA Chargeback administration to maintain awareness of evolving business paradigms, shifting workload priorities, and technology changes at your site.
- CA PMA Chargeback continuously introduces new database files and metrics. Files and metrics that were once irrelevant at your site may become critical as your company evolves. Conversely, previously important files may lose relevance.
- Account code structures and content that previously reflected your organizational structure may require updates as your company changes over time.

Maintenance

Apply PSPs and PTFs

Apply each new PTF, APAR, and service pack as soon as possible.

Business Value:

Keeping CA PMA Chargeback technically and functionally current lets you take advantage of enhancements and entitles you to full technical support.

Additional Considerations:

- Maintenance is provided through SMP/E format PTFs and APARs that are available from <http://ca.com/support>.
- Maintenance can be performed using the CA MSM Product Acquisition Service (PAS) and Software Installation Service (SIS).

Interfaces and Integration Points

CA PMA Chargeback is designed to provide reporting and chargeback capabilities for a variety of systems and subsystems, in addition to z/OS operating system data. Data in history format or EXTDATA generated by CA JARS RA can be used as input to CA PMA Chargeback.

Business Value:

Implementing interfaces for subsystems and vendor products increases the scope of data that can be used in your chargeback implementation, which provides a more complete solution and more accurate chargeback.

Additional Considerations:

When using CA JARS RA with CA PMA Chargeback, there are many additional data sources for use in a chargeback system.

- If CICS and/or IDMS data needs to be included in the chargeback algorithm, we recommend that you use CA JARS Resource Management for CICS or the CA JARS Resource Management CA IDMS Option as the data collection mechanism for CICS or IDMS regions.
- CA JARS DSA Resource Manager Option is a disk-space accounting product that allows data centers to charge for data sets allocated on DASD, based on the time allocated and the size of the data set.

- If you are implementing a chargeback system and CA Roscoe data is to be included in the chargeback algorithm, we recommend that you use the CA Roscoe interface to produce the EXTDATA format output records for inclusion into the chargeback system. This is included with CA JARS RA.
- If you are implementing a chargeback system and charging for CA Datacom/DB utilization, it is important that you use the CA Datacom/DB interface to collect billing data from CA Datacom/DB accounting tables and create EXTDATA records to include in your chargeback algorithm. This is included with CA JARS RA.
- If you are implementing a chargeback system and charging for tape volume utilization, it is important that you use the TVA interface to collect billing data from CA 1 or CA TLMS in EXTDATA format and include it in your chargeback algorithm. This is included with CA JARS RA.
- If you use the ADABAS database system in your data center and are implementing a chargeback system, we recommend that you use the ADABAS interface to collect utilization data for ADABAS and input into the chargeback system. This is included with CA JARS RA.
- If you are implementing a chargeback system and DB2 data needs to be included in the chargeback algorithm, use the CA JARS DB2 interface as the data collection mechanism for DB2 regions. We recommend that you create interface data in the EXTDATA format. This is included with CA JARS RA.
- If you are implementing a chargeback system and IMS utilization statistics are to be included in the chargeback algorithm, we recommend that you use the IMS interface to produce EXTDATA format output records for inclusion into the chargeback system. This is included with CA JARS RA.
- If you are implementing a chargeback system and charging for VM utilization, it is important that you use the VM interface to collect billing data from VM account records and create EXTDATA format records to include in your chargeback algorithm. This is included with CA JARS RA.
- If you are implementing a chargeback system, and IBM NETVIEW data is to be included in the chargeback algorithm, we recommend that you use the Network Accounting interface to produce EXTDATA format output records for inclusion into the chargeback system. This is included with CA JARS RA.

- The CA JARS CMF interface processes the SMF record type 110 subtype 2 record (statistics) as input. This data is reformatted into EXTDATA. EXTDATA records can be used for reporting with the CA Earl and CA Easytrieve report writers and can be input into the chargeback system. This is included with CA JARS RA.

More Information:

- *User Guide*
- *CA JARS Resource Accounting User Guide*
- See the *CICS Transaction Server for z/OS Performance Guide* for information on CMF monitoring facilities.

Index

A

- account
 - codes • 14, 19, 22
 - files • 11
 - structure • 22
- accounting
 - algorithm • 13
 - and chargeback • 12, 14, 23
 - information • 14
 - standards • 14
 - structure • 13
 - zero-based system • 12
- ADABAS interface • 23
- APARs • 23
- archive history • 11
- audience • 7
- automatic response actions • 23

B

- base charge • 15
- billing system • 19
- budgeting • 19
- business evolution • 22

C

- CA 1 Tape Management • 23
- CA Common Services • 10
- CA Datacom • 10, 23
- CA Earl • 10, 11
- CA Easytrieve • 23
- CA IDMS Option • 23
- CA JARS DSA Resource Management Option
 - interface • 23
- CA JARS Resource Management CA IDMS Option
 - interface • 23
- CA JARS Resource Management for CICS interface • 23
- CA Mainframe Software Manager (CA MSM) • 7, 8, 9
- CA Roscoe interface • 23
- CA SRAM • 10
- CA TLMS Tape Management • 23
- CA-C Runtime component • 10
- CAIRIM • 10
- capacity planning • 11

- charge elements, names of • 16
- chargeback
 - algorithm • 12, 13, 15, 18
 - methods • 11
 - system • 12, 15, 23
- charges
 - setting • 18
 - verification • 19
- CMF interface • 23
- complex units • 16
- configuration • 9, 22
- cost
 - analysis • 15
 - incurred • 19
 - of activities • 17
 - recovery • 12

D

- daily processing • 18
- data
 - collection • 10
 - input volume • 18
 - RMF • 11, 15
 - SMF • 11, 15
 - source metrics • 13
- database algorithm • 13
- DB2
 - installed • 10
 - interface • 23
- dump processing • 11

E

- Electronic Software Delivery (ESD) • 8, 9
- EXTDATA
 - files • 11
 - reporting • 23

H

- historical archive • 11
- history files • 11

I

- implementation • 10
- IMS

- interface • 23
- processing • 16
- increase costs • 17
- installation • 9, 10
- integration points • 23
- interfaces • 23
- invoices • 19

J

- JES exits, using • 15

K

- key structure • 12

L

- levels of accounting structure • 13

M

- Mainframe 2.0
 - features • 8
 - overview • 7
- maintenance • 23
- metrics
 - for data sources • 13
 - for record types • 13
 - rates • 12
- minimum charge • 18

N

- names of charge elements • 16
- Network Accounting interface • 23
- normalize rates • 17

O

- optimizing
 - data collection • 10
 - performance • 10
 - SMF input • 11

P

- performance
 - management • 11
 - optimizing • 10
- prerequisites • 10
- PTFs • 23
- publish rates • 19

Q

- qualified rates • 17

R

- rate
 - adjustment • 18
 - application • 11
 - calculations • 11
 - charging • 18
 - determination • 15
 - evaluation • 17, 18
 - metrics • 12
 - normalized • 17
 - published • 19
 - qualified • 17
 - testing algorithms • 19
- raw data sources • 10
- record types • 13
- recover costs • 12
- reduce costs • 17
- report
 - on capacity • 11
 - on chargeback • 15
 - on performance • 11
 - on structure levels • 13
 - requirements • 12
 - writers • 11
- requirements • 10
- resource use • 15
- RMF data • 11, 15

S

- slotting • 13, 17
- SMF
 - data • 11, 15
 - data volume • 18
 - dump processing • 11
 - records • 11
- SMP/E • 9
- Software Installation Service (SIS) • 8
- static use charge • 18

T

- tape volume utilization • 23
- technology changes • 22
- test runs • 19
- TSO users • 15

TVA interface • 23

U

unit

- business • 17

- complex • 16

- data • 17

- in chargeback • 12, 15

use charge • 18

users of resources • 14

V

ViewPoint service • 10

VM interface • 23

volume of data • 18

Z

zero-based accounting system • 12