ChangeMan® ZMF 8.1.4

Administrator's Guide

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Welcome to *ChangeMan® ZMF*

ChangeMan® ZMF is a comprehensive and fully integrated solution for Software Change Management systems in z/OS environments. It provides reliable and streamlined implementation of software changes from development into production. ChangeMan ZMF manages and automates the application life cycle, protects the integrity of the code migration process, and results in higher quality delivered code to any test environment and to the production environment.

Before You Begin See the Readme for the latest updates and corrections for this manual.

Objective The *ChangeMan ZMF Administrator's Guide* describes how ChangeMan ZMF can be configured and administered.

Audience This document is intended for ChangeMan ZMF global administrators, application administrators, and security administrators. It assumes that the administrator has a thorough knowledge of ChangeMan ZMF functions and is familiar with MVS™ and the security system in use.

Navigating this book This guide describes the ISPF user interface to ChangeMan ZMF and explains how to perform administrative ChangeMan ZMF functions.

Change Bars Change bars in the left margin identify substantive changes in this publication since ChangeMan ZMF release 8.1.3.

Guide to ChangeMan ZMF Documentation

The following sections provide basic information about ChangeMan ZMF documentation.

ChangeMan ZMF Documentation Suite

The ChangeMan ZMF documentation set includes the following manuals in PDF format.

Manual	Description
Administrator's Guide	Describes ChangeMan ZMF features and functions with instructions for choosing options and configuring global and application administration parameters.
ChangeMan ZMF Quick Reference	Provides a summary of the commands you use to perform the major functions in the ChangeMan ZMF package life cycle.
Customization Guide	Provides information about ChangeMan ZMF skeletons, exits, and utility programs that will help you to customize the base product to fit your needs.
Db2 Option Getting Started Guide	Describes how to install and use the Db2 Option of ChangeMan ZMF to manage changes to Db2 components.
ERO Concepts	Discusses the concepts of the ERO Option of ChangeMan ZMF for managing releases containing change packages.

Manual	Description
ERO Getting Started Guide	Explains how to install and use the ERO Option of ChangeMan ZMF to manage releases containing change packages.
High Level Language Functional Exits Getting Started Guide	Provides instructions for implementing and using High Level Language (Cobol, PL/1, and REXX) exits, driven consistently by all clients to enforce local business rules in ZMF functions.
IMS Option Getting Started Guide	Provides instructions for implementing and using the IMS Option of ChangeMan ZMF to manage changes to IMS components.
INFO Option Getting Started Guide	Describes two methods by which ChangeMan ZMF can communicate with other applications: ■ Through a VSAM interface file. ■ Through the Tivoli Information Management for z/OS product from IBM.
Installation Guide	Provides step-by-step instructions for initial installation of ChangeMan ZMF. Assumes that no prior version is installed or that the installation will overlay the existing version.
Java / zFS Getting Started Guide	Provides information about using ZMF to manage application components stored in USS file systems, especially Java application components.
Load Balancing Option Getting Started Guide	Explains how to install and use the Load Balancing Option of ChangeMan ZMF to connect to a ChangeMan ZMF instance from another CPU or MVS image.
M+R Getting Started Guide	Explains how to install and use the M+R Option of ChangeMan ZMF to consolidate multiple versions of source code and other text components.
M+R Quick Reference	Provides a summary of M+R Option commands in a handy pamphlet format.
Messages	Explains messages issued by ChangeMan ZMF, SERNET, and System Software Manager (SSM) used for the Staging Versions feature of ChangeMan ZMF.
Migration Guides	Gives guidance for upgrading ChangeMan ZMF from earlier versions.
OFM Getting Started Guide	Explains how to install and use the Online Forms Manager (OFM) option of ChangeMan ZMF.
SER10TY User's Guide	Gives instructions for applying licenses to enable ChangeMan ZMF and its selectable options.
User's Guide	Describes how to use ChangeMan ZMF features and functions to manage changes to application components.
XML Services User's Guide	Documents the most commonly used features of the XML Services application programming interface to ChangeMan ZMF.
ZMF Web Services User's Guide	Documents the Web Services application programming interface to ChangeMan ZMF.

Using the Manuals

Use Adobe® Reader® to view ChangeMan ZMF PDF files. Download the Reader for free at get.adobe.com/reader/.

This section highlights some of the main Reader features. For more detailed information, see the Adobe Reader online help system.

The PDF manuals include the following features:

- **Bookmarks.** All of the manuals contain predefined bookmarks that make it easy for you to quickly jump to a specific topic. By default, the bookmarks appear to the left of each online manual.
- **Links.** Cross-reference links within a manual enable you to jump to other sections within the manual with a single mouse click. These links appear in blue.
- **Comments.** All PDF documentation files that are delivered with ChangeMan ZMF have enabled commenting with Adobe Reader. Adobe Reader version 7 and higher has commenting features that enable you to post comments to and modify the contents of PDF documents. You access these features through the Comments item on the menu bar of the Adobe Reader.
- **Printing.** While viewing a manual, you can print the current page, a range of pages, or the entire manual.
- **Advanced search.** Starting with version 6, Adobe Reader includes an advanced search feature that enables you to search across multiple PDF files in a specified directory.

Searching the ChangeMan ZMF Documentation Suite

There is no cross-book index for the ChangeMan ZMF documentation suite. You can use the Advanced Search facility in Adobe Acrobat Reader to search the entire ZMF book set for information that you want. The following steps require Adobe Reader 6 or higher.

1. Download the ZMF All Documents Bundle ZIP file and the ZMF Readme to your workstation from the My Downloads tab on the Support website.
2. Unzip the PDF files in the ZMF All Documents Bundle into an empty folder. Add the ZMF Readme to the folder.
3. In Adobe Reader, select **Edit** | **Advanced Search** (or press **Shift+Ctrl+F**).
4. Select the **All PDF Documents in** option and use **Browse for Location** in the drop down menu to select the folder containing the ZMF documentation suite.
5. In the text box, enter the word or phrase that you want to find.
6. Optionally, select one or more of the additional search options, such as **Whole words only** and **Case-Sensitive**.
7. Click **Search**.
8. In the **Results**, expand a listed document to see all occurrences of the search argument in that PDF.
9. Click on any listed occurrence to open the PDF document to the found word or phrase.

Using the ISPF Interface

Administrators will most likely use the ChangeMan ZMF ISPF to configure and manage ChangeMan ZMF instances.

Description of the ISPF Interface

Instructions for using the ISPF interface are provided in the *ChangeMan ZMF User's Guide* in Chapter 2 "Using the ISPF Interface."

Using Online Help

Online help is the primary source of information about ChangeMan ZMF. Online help is available as a tutorial, through Help screens, and in ISPF error messages.

Online Tutorial

ChangeMan ZMF includes an online tutorial that provides information about features and operations, from high-level descriptions of concepts to detailed descriptions of screen fields.

To view the tutorial table of contents, select option T from the ChangeMan ® Primary Option Menu, or jump to it from anywhere in ChangeMan ZMF by typing =T and pressing ENTER.

Press PF1 from anywhere in the Tutorial for a complete list of Tutorial navigation commands and PF keys.

Online Help Screens

If you have questions about how a ChangeMan ZMF screen works, you can view a help panel by pressing PF1 from anywhere on the screen.

Online Error Messages

If you make an invalid entry on a ChangeMan ZMF screen, or if you make an invalid request for a function, a short error message is displayed in the upper right corner of the screen. Press PF1 to display a longer error message that provides details about the error condition.

Remember that the long message does not display automatically. Request the long message by pressing PF1.

Typographical Conventions

The following typographical conventions are used in the online manuals and online help. These typographical conventions are used to assist you when using the documentation; they are not meant to contradict or change any standard use of typographical conventions in the various product components or the host operating system.

Convention	Explanation
italics	Introduces new terms that you may not be familiar with and occasionally indicates emphasis.
bold	Identifies UI controls, including PF keys, buttons, check boxes, lists, options, fields, and panel titles. Also emphasizes important information.
UPPERCASE	Indicates keys or key combinations that you can use. For example, press the **ENTER** key.
`monospace`	Indicates code, syntax examples, values that you specify, or results that you receive.
`monospaced italics`	Indicates names that are placeholders for values you specify; for example, *`filename`*.
vertical rule |	Separates menus and their associated commands. For example, select File | Copy means to select Copy from the File menu. Also, indicates mutually exclusive choices in a command syntax line.

Notes

Sterling Connect:Direct® is an IBM® point-to-point file transfer software product that can be used to transfer files between two ChangeMan ZMF instances. The original name of the product was Network Data Mover (NDM). The "NDM" mnemonic persists, embedded in Connect:Direct and ChangeMan ZMF component names, options, and JCL examples.

Chapter 1
Introduction

This guide is intended for ChangeMan ZMF global and application administrators as well as for security administrators. It assumes that the administrator has a thorough knowledge of ChangeMan ZMF functions, and is familiar with MVS™ and the security system in use.

As an administrator, your responsibilities depend on your administrative domain. You may be any or all of the following:

Global Administrator	16
Application Administrator	16
Security Administrator	16
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Global Administrator

If you are the global administrator, it is your responsibility to set the high-level rules (called *parameters)* of your site's implementation process. They can be as restrictive or permissive as you choose. For example, you have the option to completely prohibit or allow your site's developers to check out components to their personal libraries.

NOTE Rules are set for ChangeMan ZMF users on two levels. The global administrator sets them first, and the application administrator can further restrict them on an application-by-application basis.

It is also your responsibility to specify to ChangeMan ZMF the systems with which it interacts and the details regarding the staging library allocation. For example, as the global administrator you may choose CA Panvalet® as your baseline library storage means. You specify many other details, including procedures used for compiling (depending on languages for source), maximum allowance for schedule package installation on a daily basis, notification vehicles for people who need information on packages awaiting approval, and others.

Application Administrator

If you are the application administrator, it is your responsibility to set rules of your application's implementation process. They can only be as permissive as the values which are set by the global administrator (although you can further restrict your users). For example, if the global administrator lets users at the site check components out to their personal libraries, you can restrict your users from checking out components to their personal libraries. But if the global administrator has already restricted their access, you cannot override the global administrator's decision and give them permission.

Like the global administrator, you also set staging library information as well as determine compiling procedures for the languages used in your application's development. In addition, you configure the promotion libraries (if any) and baseline libraries used by your application. You create approval lists that are used by ChangeMan ZMF to notify strategic people in your development process that a change package is ready to be moved on to the next level of integration, testing, or into production.

In fact, no matter whether you are a global or an application administrator, you are capable of running reports for the site or the applications; you may also be responsible for setting up remote site information (if you have remote sites).

Security Administrator

As the security administrator, you assist and consult with the global and application administrators on site, user, library and component level security using the security package in use at your site. You are expected to be an expert in that system's functions and capabilities and you set up the overall security of your development process.

ChangeMan ZMF Monitor

As a ChangeMan ZMF monitor, you oversee packages and work closely with users during the implementation process, and you may be involved in resubmitting installation jobs if there are problems at package installation time. Also, you have the ability to hold packages back from installation as well as change the status of packages in limbo.

General Administrator

As the general administrator, you may be an expert in the periodic housekeeping tasks for ChangeMan ZMF such as starting up and shutting down each ChangeMan ZMF instance, updating the query information, backing up or recovering the package master, or clearing the activity log.

You may customize ChangeMan ZMF by implementing user exits, using and updating the services, creating custom reports, setting up the SYSOUT facility, or updating skeletons. Finally, you may also be a specialist in setting up the administration for the many selectable options which can be purchased individually for the unique needs of your site.

All of the responsibilities described above, except for customizing ChangeMan ZMF skeletons and administration for selectable options, are described further in this document. Information about skeletons is contained in the *ChangeMan ZMF Customization Guide*, and the selectable option information is contained in the individual selectable option manuals.

The global, application, and monitor administrative domains described above require that you have been defined to the individual security entities as such. See "Setting Up User Restrictions" on page 30 for further details.

Chapter 2

What is ChangeMan ZMF?

ChangeMan ZMF is a software change management product that integrates, automates, and controls the essential components of the software management lifecycle. With ChangeMan ZMF, the implementation of effective software management control is simplified.

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Change Package

A Change Package is a grouping of all the components (Source, Copybook, Load, JCL, control cards, compiling procedures, documentation, and other components) required to implement a software change into production.

You can build Change Packages for any type of change, including permanent, emergency, temporary, simple, and complex changes. A variety of information can be associated with a Change Package. For example, reasons for the change, contingency plans, special implementation instructions, work request numbers, and contact lists can all be captured when the Change Package is created.

All Change Packages are referenced in the package master, a control file that contains the significant information regarding current and previous Change Packages. At creation time, a unique Change Package number is assigned to facilitate cross referencing. When a programmer adds components to a Change Package, that information is added to the package master.

Impact Analysis

To analyze the impact of changes, many organizations rely on data from a variety of sources, such as batch library scans and cross reference files. This method makes it difficult to maintain all sources of data and verify that they are current. ChangeMan ZMF provides a comprehensive facility to capture, query, and *enforce* relationships between components.

These relationships include not only the traditional ones, such as a source and executable relationship, but also other relationships based on common references to copybooks, SQL Include components, CA Panvalet® ++INCLUDE components, CA Librarian® - INC components, Called Subroutines, and JCL fields such as program name, procedure name, or data set name.

Checkout

Checkout enables you to reintroduce components residing in baseline or promotion libraries to the change cycle. Generally, production level components are checked out for modification. However, you can check out any previous version of a baseline component.

Depending on how ChangeMan ZMF is configured, one can check out components:

- To personal libraries
- To staging libraries
- Associated with a package using the copy forward feature
- In batch
- Online
- Concurrently with other components

If your site has applications that require parallel development, you can configure ChangeMan ZMF to allow concurrent checkout of components. ChangeMan ZMF has an automated process for managing this concurrent development. As part of this process, ChangeMan ZMF ensures that each owner of a version is aware of the actions of the other owners.

After you check out components and make necessary modifications, ChangeMan ZMF records the components and the associated change package for further impact analysis. This ensures that your developers are always working with the proper version of a component.

Staging

Staging is the process of introducing newly developed (or previously developed) components into the change cycle for modification or enhancement, and packaging with related change package components. When you *stage* a component, ChangeMan ZMF recognizes the type of component that you are staging and copies it into a staging library of corresponding type (source, load, JCL, documentation, copybook, etc.). Staged components are also associated with a pre-defined change package, which is the vehicle used to move components through the change cycle and track the history of change management activities for each staged component.

In change management systems other than ChangeMan ZMF, staging libraries are merely pre-production holding areas shared by one or more application groups. After components are tested in development libraries, they are copied into staging libraries prior to production implementation.

ChangeMan ZMF staging libraries are more than pre-production holding libraries. Components can be modified and tested *in* protected ChangeMan ZMF staging libraries. Moreover, when you stage source components, they are compiled and the resulting load modules are identified, helping you to maintain the integrity of source-to-load relationships.

In addition, ChangeMan ZMF maintains up-to-date records of all staging activities for packages and components. For example, when you stage a source component, the time that the component was staged is recorded, along with the name of any associated load modules, or copybooks, and the compiling procedures and linkage parameters used during the compile. This information is kept in the ChangeMan ZMF master file, the package master. You can view this component and package information any time by using the *query* function.

ChangeMan ZMF further extends the concept of staging by providing a means of isolating components from other changes in progress. This prevents uncontrolled and unknown copybooks and subroutines from being inadvertently referenced, allowing parallel or concurrent development without the risk of accidental overlays. The stable coexistence of multiple versions of a single component simplifies the blending of changes.

Audit

The ChangeMan ZMF audit process enables you to ensure correct synchronization of components and procedures. Using data stored in the package master, component

master, and impact analysis dataspace, ChangeMan ZMF maintains control of current and past modifications and component versions. Therefore, potential production problems can be identified before they impact production.

The audit function inspects the staging library contents of an evolving change package with respect to baseline library contents. The inspection looks for situations such as a package that shows no change from the baseline library, or a package that contains an LOD component that does not match its SRC component. Recognizing such out-of-sync situations helps you detect code that is inconsistent with your development procedure and other code problems. Examples of out-of-sync situations that the ChangeMan ZMF audit addresses include:

- Copybooks that have been changed after a source program has been compiled.
- Source programs that must be recompiled due to a copybook change.
- Called subroutines that have been changed after a referencing source program has been compiled and linked.

With ChangeMan ZMF you can enforce by application whether you want an audit, and if so, whether you want to correct or leave potential uncovered problems.

Recompile and Relink

The Recompile and Relink functions are intended to introduce components into packages in special circumstances. Neither Recompile nor Relink copies the source into the package, but instead keeps the output of the process. This may be helpful if:

- A copybook has changed, but not the referencing source (Recompile).
- The source code is not available for a driver, but a change is made to a subroutine (Relink).
- It is necessary to perform a composite link where the resulting load component name does not have accompanying source (Relink).

Both Recompile and Relink use the component's history from the package master. For example, Relink picks up the link options that were used when the program was last compiled.

Both Recompile and Relink can be used to resolve certain types of out-of-sync situations found during the audit of a package.

Freeze

Another unique ChangeMan ZMF feature is the ability to freeze Change Packages. When the Change Package is ready for the next phase of the change implementation lifecycle, a freeze is performed to prevent further modifications. The freeze also positions the Change Package for promotion or approval. Traditional methods accomplish this function by moving components from the development libraries to a separate set of libraries or, in some cases, separate environments. ChangeMan ZMF controls your updates in conjunction with your security system, so component movement is no longer necessary.

If further modifications are required, you can unfreeze a Change Package, and the approval process is reset.

Promotion

ChangeMan ZMF has the ability to promote Change Packages through multiple shared, pseudo-production promotion environments. These promotion environments can be secured as if they are production, and ChangeMan ZMF controls all updates.

ChangeMan ZMF considers shared promotion environments a place where full integrated system testing may be performed. When the time comes for a full system or an integrated system test, authorized approvers promote the acceptable components into the promotion environments.

When testing is complete and the Change Package is approved, ChangeMan ZMF removes the components from the promotion environments. All production installation occurs from the Change Package staging environment. With ChangeMan ZMF, you define your testing methodology and the number of testing levels that are required.

Approval

Approvals for change package installation are performed online, eliminating the requirement for manual approval processes. During the ChangeMan ZMF approval process, authorized approvers can indicate that the change package is acceptable for production implementation, or they have the option to reject or review the change and generate a checklist of questionable or unclear items for the programmer to resolve.

ChangeMan ZMF relies on your security system; it does not use internal personnel tables. Approval lists of specific USERIDs or approving entities are defined to your security system so that electronic approvals can be collected.

For each application, a variety of approvers can be included on the approver list. Separate approval lists can be created for scheduled, planned changes and for unplanned, emergency changes, or you can choose to use an approval hierarchy. With ChangeMan ZMF, you have the flexibility to make these choices.

Production Installation

ChangeMan ZMF is actively involved in the management and control of actual production component installation. Component installation can be automated through the ChangeMan ZMF internal scheduling system, or through the ChangeMan ZMF direct interface with a job scheduling system. In addition to component movement, ChangeMan ZMF performs other production installation activities such as DB2®, IMS and CICS processing.

ChangeMan ZMF also has a unique change quantity threshold facility that allows you to control the number of changes that occur in a given time period. For example, you may

want to limit the number of change packages that are installed during month-end processing.

Baseline Libraries and Delta Decks

ChangeMan ZMF recognizes that your software components are a vitally important business asset. It gives you the ability to store your production source components in a structure that works for your organization. Components can be stored in PDS files, PDSE files, CA Librarian files or CA Panvalet files. Components can be segregated by application or by categories, such as batch versus online. Equally, applications can share libraries.

ChangeMan ZMF automatically stores prior versions of components. These versions can be stored as full copies (inherent for load components), or as delta decks. It uses a unique reverse base/delta technique known as stacked reverse deltas. With this technique, the current version of the component is the base, and delta decks are created to backtrack to previous versions.

Backout Management Facilities

ChangeMan ZMF has comprehensive backout management facilities. In addition to source components, the prior functioning executable components can be automatically backed up. If a backout becomes necessary, ChangeMan ZMF automatically restores these executable components to production. It also performs all necessary DB2 Plan rebinding automatically.

Because ChangeMan ZMF is package driven, it backs out all the components of a change automatically.

Emergency Changes

Critical abends occur at inopportune times and require immediate attention. Because ChangeMan ZMF contains the ability to create Unplanned Change Packages, and the ability to maintain a separate list of approvers for unplanned changes, emergency changes are safe, fast and easy to perform. Additionally, because of the (optional) ability to concurrently check out components, ChangeMan ZMF provides notification to any developer affected by the change so that the emergency fix can be incorporated globally into all change packages.

ChangeMan ZMF does not impede the emergency change process by requiring that the component be released, reassigned, or renamed by the original owner.

ChangeMan ZMF Life Cycle

The change package life cycle is a rules-based process consisting of actions that you perform and actions automatically initiated by ChangeMan ZMF that guarantee the

integrity of changes you make to your production application system. These actions begin with Create Package and usually end with Baseline Ripple. Authority to perform any of these actions is controlled by ChangeMan ZMF and defined in your security system.

The actions in the change package life cycle include:

- **Create Package** is the first step in the change package life cycle. Using a series of input panels, screens or windows, you enter information that describes the change package, and you set control parameters that determine how the package behaves during the rest of the package life cycle.
- **Checkout Component** copies components from a baseline or promotion library into a staging library allocated exclusively to your package. You can also check out components to a personal library, which is tracked by ChangeMan ZMF.
- **Stage Component** is where you edit and build package components to meet project requirements. Source components are processed through predefined build processes to create executables and build listings. You can also stage components into your package from libraries outside of ChangeMan ZMF to bring those components under the control of ChangeMan ZMF.
- **Package Audit** detects problems that will occur in production if you install your package now in its current condition. Audit detects synchronization problems in relationships between components in your change package and synchronization problems between package components, components in participating packages, components in promotion, and baseline components.
- **Freeze Package** locks package information and package components to prevent further changes and to ensure that what the components you install into production are the same as the components you tested. You can selectively unfreeze, change, audit, and refreeze components to fix problems found in testing.
- **Promote Package** copies package components from staging libraries into test libraries. As a package is promoted from one testing level to the next, package components are removed from libraries in the prior level and copied from staging libraries into test libraries for the next level. Demote Package removes package components from test libraries.
- In **Approve Package**, predefined approvers review package information, components, and test results and approve or reject the package for install. If an approver rejects the package, they must enter text Reject Reasons.
- **Revert Package** removes all previously entered approvals, unlocks package information and components, and opens the package back up to development.
- **Distribute Package** starts automatically when all package approvals are entered for a package that is scheduled for install at a remote site. The package is transmitted to the remote site where package records are added to a ChangeMan ZMF P instance running there, package staging libraries are allocated and populated, and the package is added to the P instance internal scheduler.
- **Install Package** starts automatically, either when the package install date and time arrive, or when the last approval is entered. If the application has production libraries that are separate from baseline libraries, current production modules are backed up and new versions are copied from package staging libraries into the production libraries.
- **Baseline Package** starts automatically after a package is installed. This process ripples current and prior versions of package components down in the stack of prior

baseline versions, and then copies package components into the baseline libraries as the new current version.

- **Backout Package** removes package components from production libraries and restores the backups made at package installation. Package components that are the current version in baseline libraries are removed, and components are reverse rippled up the stack of prior baseline versions to restore the old current version.
- Utility **Scratch/Rename** removes **components** from or renames components within the ZMF environment.

Chapter 3

Pre-Implementation Decisions

This chapter provides you with important considerations that you may take up after ChangeMan ZMF has been installed, but before you set it up for your sites, applications, and users.

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Customizing ChangeMan ZMF for Your Site

You can customize ChangeMan ZMF by modifying skeletons, implementing exits, and establishing initial history records.

Modify Skeletons

JCL for ChangeMan ZMF batch jobs is created by ISPF file tailoring services. These services read members in ISPF skeleton libraries and use variables provided by ZMF to control skeleton logic and set JCL values to build job JCL. The generated JCL is submitted to the z/OS internal reader for execution.

Many ZMF skeleton can be used as they are delivered with ChangeMan ZMF. You must customize other skeletons to fit your environment and your implementation of ZMF. The *ChangeMan ZMF Installation Guide* lists skeletons that you must modify regardless of your ZMF implementation, and the *ChangeMan ZMF Customization Guide* provides general information about customizing ZMF skeletons.

Implement Exits

ChangeMan ZMF is delivered with program exits, which are assembler subprograms that modify the normal behavior of ZMF functions. You can activate and customize these exits to make ChangeMan ZMF fit your requirements for software change management. The *ChangeMan ZMF Customization Guide* includes general information about customizing ZMF exits and a description of each exit program. You may also investigate the powerful HLL exits described in the *ChangeMan ZMF High Level Language Functional Exits Getting Started Guide* in this release.

Establish Initial History Records

ChangeMan ZMF keeps information about components (also called history) in the component master file. This information includes compile and link options for the component. These options are used during the compile, recompile and relink processes.

It may be beneficial to pre-load this information before components are accessed through ChangeMan ZMF. CMNBAHST allows you to establish an initial history record for components. (Utility CMNBAHST is described in the *ChangeMan ZMF Customization Guide*.)

Managing Library Space

To build, distribute, install and back out change packages, ChangeMan ZMF allocates and accesses a number of data sets. There are administrative functions at the global and application level that provide you with the capability to enter and update information about how these data sets are named and allocated. ChangeMan ZMF provides modules that you can implement to help you manage library space more effectively. See the descriptions of exit programs SEREX001, CMNEX015, and CMNEXINS.

The staging libraries are always allocated as a PDS or a PDSE. Other libraries may be allocated using whatever storage method your site prefers. Currently there is only one backup for production libraries and it is stored as a PDS or PDSE.

Allocating Staging Libraries

Staging library allocation parameters are managed through the Global and Application Administration panels during setup. (See "Setting Up Global Administration" on page 49 and "Setting Up Application Administration" on page 121)

Allocating Baseline Libraries

ChangeMan ZMF baseline libraries may be pre-allocated outside of ChangeMan ZMF, or the application administrator may allocate PDS baselines through ChangeMan ZMF during application set-up. The following table describes the ways you can store the production and prior versions of components in baseline libraries.

Storage Means	Number of Levels Stored	Comments
Full PDS	2-10	The production version of a component is stored in full PDS format. There is an additional PDS library for each prior version level.
Stacked Reverse Delta	2-999	The production version of a component is stored in full PDS format. Prior versions are stored in proprietary reverse delta deck format. All reverse delta decks are stacked in a single PDS library.
Librarian	2-10	The production version of a component is stored in a CA Librarian file. There is an additional CA Librarian file for each prior version level.
Librarian Archie	2-255	The production version of a component and all prior versions are stored in a single CA Librarian file.
CA Panvalet	2-10	The production version of a component and all prior versions are stored in a single CA Panvalet library.
Reverse Delta Deck PDS	2-10	The production version of a component is stored in full PDS format. Prior versions are stored in proprietary reverse delta deck format. There is an additional PDS library of reverse delta decks for each prior version level. **NOTE** This storage means is obsolete for new baseline libraries, but existing baselines with this storage means are supported.

Allocating Promotion Libraries

Promotion libraries must be allocated outside of ChangeMan ZMF administration. After the libraries are allocated, they are defined to ChangeMan ZMF while setting up Promotion ("Configuring Promotion Sites, Levels, and Libraries" on page 153)

Allocating Production Libraries

See "Using Baseline Libraries for Production Libraries" on page 30 below for a discussion of baseline versus production libraries. If you decide to use production libraries, they are allocated outside of ChangeMan ZMF. The section "Configuring Production Libraries" on page 175 explains how to define the libraries.

Using Baseline Libraries for Production Libraries

ChangeMan ZMF has the ability to synchronize baseline libraries and production libraries. This can be useful when development and production processing occurs in different locations. If your production applications run at the same site as your baseline libraries, you may not need to set up separate ChangeMan ZMF production libraries. Remember, ChangeMan ZMF baseline libraries can be standard PDSs and can be accessed by external tasks. Eliminating ChangeMan ZMF production libraries where possible could result in significant DASD savings.

Setting Up Remote Sites for Production Libraries

An alternative to using baseline libraries for your production libraries is to set up additional ChangeMan ZMF subsystems. This allows you to segregate packages still in development from production level packages. You define one subsystem as your development site and the additional subsystems as remote sites where production level packages can be distributed and installed. Baseline libraries reside at the development site and production libraries are kept on the remote site CPU.

You set up remote sites during global administration by configuring your ChangeMan ZMF subsystems as either D (Development site) or DP (Development and Production site) for the subsystem you designate as your development site, and P (Production site) for the subsystem you designate as your production site.

If you initially invest in a single subsystem, but are planning to incorporate remote site subsystems in the future, configure your single subsystem as DP, not ALL. Setting up as an ALL site enables you to have both development and production libraries on a single CPU, but prohibits you from attaching remote sites.

Setting Up User Restrictions

A primary function of ChangeMan ZMF is to protect and regulate your valuable code. To do this, there are specific choices to be made about ChangeMan ZMF functions. For example, do you want to allow two users to work on the same component at the same time?

Many of these choices are set by parameters in ChangeMan ZMF itself. Part of this implementation of ChangeMan ZMF is setting these parameters in the global and application administration functions. By setting these parameters, you further define the functions the end users have and access. In the above example, the parameter would be

"Allow Concurrent Checkout". If this parameter is set to "no", only one person can work on the component at any given time.

"Setting Up Global Administration" on page 49 and "Setting Up Application Administration" on page 121 detail the set up requirements and identifies some of the policies you may want to set.

Allow Temporary Change Packages

A temporary change package is not permanent and may never be rippled into baseline. It is automatically deleted from production after a specified number of days (the user provides this information). The staging library contents associated with temporary change packages are placed into temporary libraries which are concatenated ahead of production libraries. They are never rippled into baseline and are deleted from the temporary libraries after a specified number of days by ChangeMan ZMF.

If the you restrict this option, the user is not allowed to select this change package option during package creation. If you allow temporary packages, users are required to enter the number of days the package is to remain in production after installation (duration number of days).

Work Request and Department Number Required

You can use the work request number and department number to track change packages in certain ChangeMan ZMF batch reports. They can also select viewing of package information within the Query function.

If you require all applications (and their users) to enter a work request number or a department number during change package creation, then users are not allowed to finish creating a change package without entering this information. (ChangeMan ZMF performs no validation checks on the number, but only that one is entered.)

Planned Installation Calendar

If you are the global administrator, you can set up a Planned Installation Calendar which limits the maximum number of planned changes that can be installed for any given date in the forthcoming 1820 days. See *Chapter 4, "Global Component Options" on page 93*. Setting the maximum number to zero stops any planned package from being planned for installation on that date (unplanned change packages are not restricted by the calendar). This zero implies a non business day. A planned package cannot be scheduled for installation on a date that has already reached its maximum limit.

For the user, this information is accessible from the Dates option in the Build Change Package Menu. The user does not update the actual calendar. During package creation, they enter the desired installation date for each remote site selected to receive the package. ChangeMan ZMF verifies that the date is available and increments the calendar accordingly. If the date entered is not available (either the maximum allowable packages have been met or the date is blocked), the user is not be able to create the change package until a valid date is entered.

Unplanned change packages are not affected by this calendar.

Disable Installation Calendar

This option allows you to completely disable the Planned Installation Calendar. When a user creates a change package, ChangeMan ZMF only checks the install date to verify if it is a valid date, and disregards the maximum packages criteria.

Normal Business Hours

The application Planned Approval list is incorporated into any change package that is created within normal business hours. An unplanned package uses the Unplanned Approval list if it is created outside of normal business hours. Normal business hours are defined in global administration parameters.

Checkout Enforcement

You can set the checkout enforcement rule such that if a component exists in baseline, it must be checked out before it can be staged. There are levels to this rule:

Level	Rule
1	Any component may be staged regardless of whether it exists in baseline or has been checked out to a package. ChangeMan ZMF does not check for the component's existence in the baseline libraries.
2	Users attempting to stage a component that exists in the baseline but has not been checked out must pass a security system ENTITY CHECK before the stage can proceed. The entity name is specified in the application parameter generation. Staging is not allowed if the user does not pass the entity check.
3	Disallow anyone from staging a component which exists in the baseline library but has not been checked out to the package requesting the stage.

Allow Concurrent Checkout

This rule is used to dictate whether a user can check out components that are already checked out to another package. It only applies to planned packages, not emergency packages.

Validate Version During Staging

This option validates the component versions during staging. If the same component is in motion in two different packages, the first package to baseline ripple can force the user of the other package to halt development and recheckout the latest version of the component.

Staging Restriction Level

This option restricts who is allowed to stage NEW components. New components are not yet associated or checked out to a package.

Level	Rule
1	All users can work on new components. This means they can stage components that are not yet associated with a packages (called development driven staging) as well as stage component that are associated with a package (called package driven staging).
2	Allows only users who have been defined to a special entity by their TSO ID to stage new components. Otherwise, they can only check out and stage components that are associated with a change package.
3	Does not allow you to stage new components, only ones currently associated with a package. This effectively disables development driven staging.

Overlay Prior Staged Component

This rule can prevent someone from staging a component from a file outside of ChangeMan ZMF (stage from development) and overlaying another person's work on the same component in the same change package.

Regardless of the setting for this rule, a warning is displayed if the stage from development will overlay an existing package component.

Audit Level

You cannot freeze the change package without passing audit. The Audit Level in application administration sets the maximum return code that audit may produce and still allow your change package to pass the audit:

Audit Code	Explanation
0	Audit is recommended but not required. It may be performed, but this is optional.
1	Audit is required but any return code (except ABEND) is acceptable.
2	Audit is required but the return code must not exceed (12). This means that there are out-of-sync situations within this set of staging libraries
3	Audit is required but the return code must not exceed (8). This means that there are no out-of-sync situations within the staging libraries but there are out-of-sync situations within the baseline.
4	Audit is required but the return code must not exceed (4). This means that there are no out-of-sync situations in both staging and baseline sets of libraries, but there is at least one component of a staging library that is identical to the corresponding component in baseline (duplicate).
5	Audit is required but the return code must not exceed (0) which implies that there are no "out-of-synch" situations with either the staging libraries or the Baseline libraries, and no "duplicates" exist.

Designated Compile Procedures

Change management best practices require consistent, repeatable build processes. ChangeMan ZMF offers a variety of controls over build processes and build options to provide you with the level of consistency you want, and the level of flexibility you want to offer to application developers when they work on components in packages.

Level of Control	ChangeMan ZMF Processes and Configuration
Minimum	The compile procedure and build options that a developer enters on ChangeMan ZMF panels are recorded in package component records. These values are presented on build process panels the next time a build process is initiated for the component in the package, but a developer can change the information. When the package is installed and the component is baselined, build process information stored in package component records is written to the Component History file. When the component is checked out to another package, the compile procedure and build options are copied from component history to package component records for use in build processing in the new package.
Medium	Some compile and link edit options are hard coded in compile procedure skeletons. Some compile and link edit options are prohibited, and if a developer uses them, the package cannot be frozen and the component cannot be selectively refrozen. (Exit program CMNEX025)
High	Application administrator defines a designated compile procedure with a Force Level 1 for single component or a group of components. The designated compile procedure specifies compile procedure and build options that must be used the last time a component is built before the package is frozen.
Maximum	Application administrator defines a designated compile procedure with a Force Level 2 for single component or a group of components. The designated compile procedure specifies compile procedure and build options that must always be used in build processing for the component.

Designated compile procedures can completely eliminate variation in build processing for components before they are installed into production, and designated compile procedures can eliminate variation in development build processing as well.

Secured Components

If the administrator has chosen to secure one of the application's components to specific TSO IDs, generic TSO IDs, or to an Entity, only the TSO IDs associated with the component are allowed to check out or stage the component during change package development.

Approval Lists

The administrator has set up a list of approvers for this application's change packages, entity names associated with each approver description, and whether the approver will be called upon to approve packages (generated for another application) which impact this application. More than one TSO ID can be associated with each entity name so that

packages can be approved when your regular approver is absent. When unplanned packages are created outside normal business hours, only the abbreviated list of approvers needs to be met. However, the installed package remains on the list of packages to be approved until the complete approval list is met. (This is called *Post Approval* and it is intended to facilitate emergency change packages.)

Other Considerations

There are several issues you need to consider when planning for implementation, such as staging library allocations, staging for recovery, handling remote site issues, and more. These are discussed in the paragraphs that follow.

Global Parameters for Staging Library Allocation

If you are the global administrator, you set up a model for the staging dataset names, size allocation specifications, and types of libraries to be allocated, so that each time a user creates a change package, the package's staging libraries are allocated based on certain standards.

The dataset names follow this model:

- Four consecutive question marks ???? must appear where the application mnemonic (three or four alphanumeric characters) is to be substituted.
- Seven consecutive pound signs ####### must appear where the package number (.#000123) is to be substituted.
- Example:`????.CMNSTAGE.#######`
- Result: `DEMO.CMNSTAGE.#000001.SRC`

Application Parameters for Staging Library Allocation

If you are the application administrator, you determine which library types are required to be generated as staging libraries for each application. If you choose to defer staging library allocation, ChangeMan ZMF does not allocate the library type at package creation time. (The user has the option during package creation to request allocation of any of the deferred library types.) If the user makes a stage/checkout request for any component of the deferred type, then the staging library is automatically allocated based on the size parameters chosen for the application.

Edit Staging Recovery Mode

This application level parameter causes ChangeMan ZMF to store all of the user's edits to change packages so that they can recover them in the event that their TSO session fails. After the failure, upon reentering ChangeMan ZMF, they have a choice of recovering or canceling the recovery.

Query Of Available Users Options

You can query source component staging information after the package has been frozen. If you implement customized user option panel names, or add customized panels and want to enable users to query information about them, edit panels CMNQRY22, CMNSTG04, CMNSTG05, CMNRCMP1. Link each of these four panels to any user option names or panels you have customized. See the ChangeMan ZMF 6.1 Customization Guide, Chapter 4 - User Data for more details.

Remote Sites

The global administrator has determined whether or not there are any remote production sites, how to transmit to them, and by what name they shall be known. The application administrator has chosen from the global list only those remote sites that are appropriate to application; thus, users may send change packages only to the remote sites designated for the application. (The user can select any or all of the remote sites from the application list.)

Package Approvals

The application administrator must set up two approval lists for each application.

- Planned Approvals

  This list of approvals is automatically incorporated into all planned packages. It is also included in unplanned packages that are created during normal business hours. Normal business hours are defined in application administration.

- Unplanned Approvals

  This list of approvals is automatically incorporated into unplanned packages that are created outside of normal business hours, which are defined in application administration.

Unplanned Approvals are intended to provide an alternative list of approvers for emergency changes that are urgent and may be needed at a time when approvers in Planned Approvals are not available.

Important considerations when defining Planned and Planned Approvals in application administration include:

- The type of approval list incorporated into an unplanned package depends on system time that the package was created and on the definition of normal business hours in application administration. The package install time is not considered.
- If an unplanned package is created with Unplanned Approvals, the Planned Approvals are added to the package after the package is installed. The package is displayed on the CMN120 Unplanned Packages Pending Post Approval report until all approvals are granted. An approval that is defined in both Unplanned and Planned Approvals does not need to be approved a second time.
- Approvals may be dynamically added to packages at Freeze by exit program CMNEX009 based on package conditions such as the presence of a library type or a the existence of a value in a Package User Information field.

- Restrictions can be placed on who can approve a package by setting Approval Restrictions in Application Parameters.
- The order of approval notification is influenced by the Hierarchical Approval Process indicator in Global Parameters.

Promotion And Demotion

Promotion is a ChangeMan ZMF facility that applies the changes in a package to libraries used for testing and other purposes.

Promotion can populate libraries used for:

- Batch testing where test libraries are coded in STEPLIB or JOBLIB statements in common application testing JCL.
- Online testing where application testing libraries are coded in region JCL.
- Unit testing where libraries are loosely controlled and populated by any developer who wants to run a test.
- Quality Assurance test libraries that must be tightly controlled and can only be populated by the QA testing coordinator.
- Training environments where software changes must be available for training classes before they are installed into production.
- Any purpose that requires package components to be copied into a fixed set of libraries.

How Does Promotion Work

Promotion copies components from package staging libraries into libraries that an enterprise uses for application testing or other purposes. Promotion may also be configured to execute additional processes to prepare promoted components for execution. Such processes might include CICS® PHASEIN/NEWCOPY, DB2® bind, and IMS™ gen.

Demotion deletes components from libraries that were populated by promotion. Demotion may also execute processes such as CICS PHASEIN/NEWCOPY, DB2 bind, and IMS gen to adapt an environment to the changes made by demotion.

Each set of libraries that promotion can target is represented by a **promotion level**. The ChangeMan ZMF Administrator defines promotion levels for each application with the library types that can be promoted and the names of the libraries that are targeted for each type. Library types for promotion usually include the executable components in your package and may also include nonexecutable types like source code. However, a promotion level does not have to include all library types in an application.

Each promotion level is defined under a **site**. Promotion can populate libraries and prepare executables on **local** sites, which means environments that are on the same MVS image as the ChangeMan ZMF server. Promotion can also populate libraries and prepare executables on **remote** sites, which means environments that are on MVS images separate from and do not share DASD with the image where the ChangeMan ZMF server runs.

Full promote and demote operate at the package level. All components in a package that are eligible for promotion are promoted or demoted together. The current promotion level is recorded at the package and the component level.

Selective promote and demote operate on individual components in a change package. The package promotion level remains the same, but the component promotion level changes.

Since application test libraries are often shared with other developers and projects, promotion looks for potential **overlays** by comparing the names of package components eligible for promotion against the directories of the target libraries. The person promoting the package is given a choice whether to proceed and overlay matching components in the promotion libraries or cancel the promotion request.

Promotion must not be confused with the physical movement of components through a series of test libraries and into production libraries. Promotion always copies components from package staging libraries into target promotion libraries. Likewise, at baseline ripple and install, package components are copied from package staging libraries into baseline and production libraries.

Promotion Library Cleanup

ChangeMan ZMF is delivered with the promotion facility configured to provide the maximum level control over the contents of promotion libraries. Promotion can be configured to satisfy other priority requirements.

In the maximum control configuration, when a package is promoted from one level to another, promotion libraries at the prior level are **cleaned up**. ChangeMan ZMF deletes the components from the libraries in the prior promotion level, unless a component originally promoted from the package was overlaid by promotion from another package.

Promotion libraries are also cleaned up when a promoted package is baselined or installed.

This configuration assumes that promotion libraries used for testing are concatenated in front of baseline libraries or production libraries or copies of these libraries. The objective is to guarantee that if no packages are promoted to a set of test libraries, those libraries are empty, and the test environment behaves exactly like production because it is running only production components.

In some testing environments, such as those that use databases and/or data dictionaries, it is not possible to concatenate promotion libraries in front of production libraries. Components must accumulate in the promotion environment as packages are cycled through development, testing, and install. To satisfy this requirement, ChangeMan ZMF skeletons must be modified to disable promotion library cleanup at promotion, demotion, and install.

Disabling promotion cleanup is not advisable. If promotion cleanup is disabled, the package lifecycle must be carefully analyzed to discover when orphans might be inadvertently left in promotion libraries, and when package components might not be copied to a particular accumulation library at all.

Promotion Security

Each promotion level in an application is associated with a security entity, which is defined in the mainframe security system (IBM RACF®, CA-ACF2®, or CA-Top Secret®). By

working with the security administrator to grant or deny userid access to the promotion security entities in the security system, the ChangeMan ZMF administrator can limit who can promote and demote packages in a particular promotion level.

For example, all developers might be permitted to promote packages to a unit test promotion level. Only Quality Assurance test coordinators might be permitted to promote packages to a QA test promotion level.

Promotion Rule

The behavior of the promotion function is governed by the Promotion Rule. The administrator selects a Promotion Rule for each application that provides the level of management for change packages, components, and promotion libraries that is required by the application.

The following table describes how the Promotion Rule determines the requirements for promoting and demoting packages and components.

Rule	Restrictions
0	Full and selective promote and demote are allowed without freezing the package first. Requires the following sequence to change a promoted component: **1** Selective unfreeze (only if the package is frozen) **2** Edit **3** Stage ("Restage") **4** Selective freeze of the component (only if the package is frozen) **5** Selective promotion to any level up to the package promotion level.
1	Requires that the package be frozen for promote and demote. Requires the following sequence to change a promoted component: **1** Selective demote of the component **2** Selective unfreeze **3** Edit **4** Stage **5** Audit package **6** Selective freeze of the component **7** Selective promotion back to the package promotion level.

Rule	Restrictions
2	Requires that the package be frozen for promote and demote. Requires the following sequence to change a promoted component: **1** Selective demote of the component **2** Selective unfreeze **3** Edit **4** Stage **5** Audit package **6** Selective freeze of the component **7** Selective promotion through all intermediate levels to the package promotion level.
3	Requires that the package be frozen for promote and demote. Requires the following sequence to change a promoted component: **1** Full demote of the package **2** Selective unfreeze of the component **3** Edit **4** Stage **5** Audit package **6** Selective freeze of the component **7** Full promotion through all promotion levels up to the original promotion level.
4	Requires that the package be frozen for promote and demote. Requires the following sequence to change a promoted component: **1** Full demote of the package **2** Revert the package to development status **3** Edit **4** Stage **5** Audit package **6** Freeze package **7** Full promotion through all intermediate levels to the package promotion level.

NOTE The Promotion Rule does not change the requirements for audit. If audit is required before freeze, then audit is required before selective freeze.

Promotion Rule By Promotion Level

Normally, all promotion levels in all sites in an application are governed by the Promotion Rule coded in application administration parameters.

However, the level of control over promotion usually differs between lower promotion levels used for developer unit testing and higher promotion levels used for systems testing, quality assurance testing, and user acceptance testing.

Exit program CMNEX027 can be used to assign different promotion rules to different promotion levels. This exit can also be used to assign other promotion restrictions to individual promotion levels.

Promotion Rule 0

If the Promotion Rule is set to 0 for an application (or for a promotion level with exit program CMNEX027), many promotion controls are relaxed. These relaxed rules may be appropriate for certain uses like populating libraries used in early component testing.

In addition to the requirements listed in the Promotion Rule table above, the relaxed controls for Promotion Rule 0 include:

- Components that are not ACTIVE that are in library types eligible for promotion are bypassed and a message is displayed.
- Re-staging a component sets the component promotion level to 0. The package promotion level is not changed.
- Package may be promoted to levels that are not the next contiguous level.

Promotion Rule 0 must be used with caution because it allows different versions of a component to exist in promotion libraries and staging libraries.

First Promote

When a package is at promotion level 0 (not promoted), special procedures apply to the first promotion action. These procedures, specially in combination with Promotion Rule 0, can be useful for promoting individual package components for testing before the entire package is ready for testing.

- A package component may be selectively promoted when the change package is at Level 0 (not promoted). A selective promote in these circumstances is labeled a **first promote**.
- When all components are promoted to the same level as the first promote, the package promotion level is changed to that level. The package may be fully promoted or demoted from this new level.
- After a first promote, a package cannot be promoted until all components are selectively promoted to that level.

Other Restrictions and Options

These are general rules for promoting and demoting packages and components:

- Except for first promote, a component cannot be selectively promoted to a promotion level higher than the package promotion level.
- Except for first promote, the package promotion level is set only by a full promotion. The package promotion level is reset after a full demotion, not after all components have been selectively demoted.
- A package may not be promoted or demoted if components are at different promotion levels above the 0 level. Components may need to be selectively promoted or demoted to align components at the package level.
- A package may not be promoted to the current package promotion level. A component may not be selectively promoted to its current component promotion level.
- Promotion or demotion for local sites is accomplished in one batch job. Promotion or demotion for remote sites requires three batch jobs, one of which runs at the remote location.
- All promotion jobs that are initiated on the user's MVS image obtain JOB card information from the Promote Options Panel. Promotion jobs that run at remote sites obtain JOB card information from the Site Definition in application administration. Job names for jobs that run at remote sites may be modified with exit program CMNEX008.

Promotion Paths

When promotion is defined for an application, the administrator creates each promotion level under a site defined in Application Administration.

The administrator can set the Force Demotion field for sites in the promotion definition to allow packages to be promoted to levels in more than one site at the same time. Sites may also be defined so that packages must be demoted in other sites before they can be promoted to levels in that site.

Levels, sites, and the Force Demotion field may be configured to provide multiple promotion paths within the same application. Here are some alternative promotion path definitions.

- Define each level under a unique site so that the Force Demotion field can be used to allow promotion or any or all promotion levels at the same time.
- Define all levels under one site to provide a single promotion path for all packages. If there is only one promotion site defined in an application, the promotion function skips over the site selection panel when a package is promoted or demoted.
- Group promotion levels under several sites to create multiple promotion paths. There might be a path for packages with online system changes and a different path for packages with batch system changes.
- Use sites for special promotion purposes. A promotion level with training environment libraries as targets might be defined under a unique site. A package containing new software would be promoted to this level on a certain calendar date to support training classes no matter where the package was promoted in other sites.

Approvals and Promotion

Approvals and promotion are separate facilities.

- Users authorized to promote packages to a level may promote frozen packages to that level no matter what approvals have been granted.
- Users authorized for approval can approve frozen packages no matter where a package may be promoted.
- The last approver initiates distribution and/or scheduling regardless of the last promotion level reached.

The package lifecycle always requires approvals. The package lifecycle does not require that packages be promoted before they are baselined and installed.

However, security entities for promotion and approvals may be used to provide a procedure that mixes promotion privileges with approval responsibility, as in the following example:

- The QA coordinator is permitted update authority to a promotion security entity to allow her to promote packages to the QA test environment.
- The QA coordinator is permitted update authority to an approval security entity to allow her to enter an approval labeled QA Testing.

The QA coordinator should only approve a package for QA Testing after she has promoted the package, the package has been tested, and she has examined QA test results.

NOTE Planned and Unplanned Approval definitions include an Order No. field. When this field is incorrectly called an approval level, users often confuse its purpose with the function of a promotion level.

Promotion Libraries In SYSLIB Concatenations

Library concatenations for SYSLIB DD statements in compile and link edit JCL are automatically built by ChangeMan ZMF skeletons. These skeletons put staging libraries at the top of the concatenation and baseline libraries at the bottom. Promotion libraries are placed between staging and baseline libraries.

You may exclude individual promotion libraries from these SYSLIB concatenations by coding the SYSLIB Exclude field in the promotion library definition in application administration. The SYSLIB Exclude field only has meaning for like-copy and like-load library types.

Staging Versions

The staging versions facility can save an unlimited number of versions of a package component that a developer might create in a staging library between the time the component is first added to the package and the time the package is baselined.

Staging versions may be created only for components that can be edited from the Stage: Package Components panel.

Staging versions are stored as full copies in a compressed format in a VSAM file. Each version may be labeled with an optional 35-character description.

Some features of staging versions are available if the merge facility has been installed. The merge facility of staging versions is only available if your company has licensed ChangeMan® M+R.

Staging Versions Installed

For detailed SSV implementation instructions, See Step 6: Define Staging Versions VSAM Files and Step 10: Build SERNET JCL for ChangeMan ZMF in Chapter 5 of the ChangeMan ZMF Installation Guide.

These features are available if the staging version facility has been installed:

- The VC Staging Selection Code can be used to display the Version Control panel for any component that is on the Stage: Package Components panel.
- The Version Control panel always shows a STG version and usually a BAS version. These versions are pointers to the component in the staging library and baseline library respectively.
- From the Version Control panel, the STG and BAS versions can be browsed, viewed, and compared.

Staging Versions Enabled

The staging versions facility may be enabled for a library type by setting the Save Staging Versions parameters in Global and Application Library Types.

These features are available in library types for which the staging version facility has been enabled.

- Users can add a component change description each time they create a new version of a package component on the Stage: Package Components panel.
- Users can save a staging version whenever they change a component on the Stage: Package Component panel.
- The administrator can make ChangeMan ZMF create a staging version every time a staging library member in the enabled library type is changed, or ChangeMan ZMF can ask if the user wants to overlay the component in the staging library without first creating a staging version.
- From the Version Control panel, the user can browse and view staging versions.
- Users can compare any two staging versions listed on the Version Control panel.
- Administrators can delete staging versions listed on the Version Control panel.

ChangeMan® M+R Licensed

If your company licensed ChangeMan M+R, and your administrator installed the software, you can merge two to eight versions listed on the Version Control panel to create a new version of the component. ChangeMan M+R is automatically invoked, and the Base and derivative versions are automatically assigned.

Considerations For Staging Versions

You must consider the following issues before you decide to install or enable save staging versions:

- If the staging versions facility is installed, ChangeMan ZMF reads one of the staging version VSAM files whenever a user performs a function that replaces a member in a staging library. This VSAM read might have an adverse effect on ChangeMan ZMF response time.
- If the staging versions facility is installed and enabled for a library type, ChangeMan ZMF writes to the save staging version VSAM files whenever a user saves a staging version. This VSAM write might have an adverse effect on response time.

You can disable staging versions for a library type by changing the Save Staging Versions parameter to NO in the library type definition in Application Parameters.

You can de-install the staging package facility by removing the HPSPLIB and HPSIN DD statements from the SERNET started task JCL. You can then delete the three staging version VSAM files.

Implementation Checklist

The following checklist is a high-level overview of the steps to implement ChangeMan ZMF. Some of the items have been covered in more detail earlier in this chapter. Since every site is different, and every implementation needs to be tailored for your specific needs, this checklist is only a suggestion of the steps you may wish to take.

Most implementations are done one application at a time. The first application may be a real application in your shop, or a test application set up to become familiar with ChangeMan ZMF.

1 Form an Implementation Team. This team usually consists of security personnel, application leads, application programmers, systems programmers, operations analysts, managers, et cetera. These are the people that can make and carry out the decisions necessary to implement ChangeMan ZMF.

2 Form an Application Test Team. This team should consist of someone who could perform program tests where required and someone that is extremely familiar with your existing change control process and/or compile and link edit procedures. Additionally, someone that is familiar with ISPF skeletons would be a large plus but this process could be learned if required. Your security administrator must be on alert as changes are needed periodically during the initial phases of implementation.

3 Conduct an implementation planning session with appropriate staff to determine how ChangeMan ZMF will help control the current environment and what the flow of the entire process should be.

4 Identify ALL libraries that will be managed by ChangeMan ZMF for the application.

5 Locate ALL compile/link edit procedures that will be required for integration into ChangeMan ZMF for the application. If current procedures are in skeleton format, all skeletons must be expanded and all symbolic variables must be resolved. This means that you have to review all the options for the compile/link edit procedures.

6 Identify ALL language types that will be required for integration into ChangeMan ZMF for the application (for instance, ASM, COBOL, DB2, CICS). If multiple versions of a language are required, that must also be noted. Each of these languages must have compile/link edit procedures that have been identified above.

7 Ensure the installation security package has been altered properly as outlined in the security portion of the ChangeMan ZMF documentation. This must include the set up of required ChangeMan ZMF entity names, association of the appropriate userids to those entity names, and set up of the proper dataset access rules for the ID associated with the subsystem.

8 Have two TSO IDs available for use in ChangeMan ZMF.

- The first ID must have the following privileges:
  - All five ChangeMan ZMF entity privileges
  - External authority for update of custom skeleton library
- The second ID is a standard TSO ID with no additional authority to ChangeMan ZMF. This ID only has access to a specific application, and it must not have any administrative capabilities. It is used for testing/debugging the system. Remember to grant this ID access to data sets and batch jobs as outlined earlier in this chapter.

9 The subsystem should be brought up, security resource rules established and set up for a test application, and the global and application administrative parameters should be defined with permissive rules. These initial administrative decisions may be made more restrictive later as you become more familiar with the product. Finish setting up the test application by defining libraries, languages, procedures, et cetera. (These processes are detailed in Chapter 4, "Setting Up Global Administration" and Chapter 5, "Setting Up Application Administration".)

10 If you are using the DB2 Option, the installation procedures for DB2 should be followed, ensuring that the ID associated with the subsystem has SYSADM OR BIND/ADD authority for all DB2 programs. For more information on the DB2 option see the *ChangeMan ZMF DB2 Option Getting Started Guide*.

11 Identify all ChangeMan ZMF exits that will assist in the enforcement of shop standards for customization, if required. (See the *ChangeMan ZMF Customization Guide.*)

12 Have test programs for each of the above language types so that the STAGE process may be completely tested. The resultant size (length) of the linked component is a good indicator of the ChangeMan ZMF process producing an equivalent load component to the one currently in production. In other words, the load components should be the same size if the skeletons invoked the same compile/link edit procedures. Running a parallel test of those components is a final test.

When the above tasks have been completed, you are ready to move through a phased implementation of ChangeMan ZMF. Many of the above tasks must be performed for each new application that is moved under ChangeMan ZMF control, for example, identifying the libraries necessary. Other tasks, such as setting up the subsystem security rules, are *one time only* items and do not need to be performed again.

ChangeMan ZMF Administrator Duties

The person who will become the ChangeMan ZMF administrator should be very involved in the implementation process. Not only will this help familiarize the administrator with the product, but he/she can be involved in the decisions about functions that he/she may later have to teach to users.

In addition, the administrator traditionally has many other duties in the supervision of ChangeMan ZMF:

- Consider the implementation needs of your sites, including space allocation for libraries as well as security needs. (See "Setting Up Global Administration" on page 49.)
- Set global parameters for your ChangeMan ZMF installation. (See "Setting Up Global Administration" on page 49.)
- Consult on and/or set application parameters. (See "Setting Up Application Administration" on page 121.)
- Set the global and/or application parameters for remote sites. (See "Configuring Remote Sites" on page 257.)
- Produce and browse reports for your sites or specific applications. (See "Defining and Running ChangeMan ZMF Reports" on page 205.)
- Customize ChangeMan ZMF for your site. Customization includes the implementation of exits and tailoring skeletons. (See the *ChangeMan ZMF Customization Guide.*)
- Continually monitor ChangeMan ZMF for packages in limbo as well as packages whose installation you wish to expedite or prohibit. (See "Monitoring Site and Application Packages" on page 189.)
- Periodically execute housekeeping functions such as starting up and shutting down the ChangeMan ZMF instance, backing up the package master, clearing the logs, updating the query component relationship information. (See "Batch Housekeeping Tasks" on page 225.)
- Act as primary contact for questions, problems, and suggestions forwarded to Customer Support.

Scheduler Specification Flexibility

Keep the following in mind when setting up your system. See the ChangeMan ZMF ERO Getting Started Guide and ChangeMan ZMF XML Services User's guide for more details on Scheduler interaction.

There are three global admin scheduler types: CMN, Manual and other. This defines which of the 3 scheduler types to enable in application and release admin, and the default scheduler to use when defining new applications and releases.

Equivalent scheduler parameters are available in application admin. This defines which scheduler types may be selected when creating or updating a package and which scheduler type is set by default when creating a package.

Equivalent scheduler parameters are also available to the ERO functions that create and update a release. This defines which scheduler types may be selected when creating or

updating a package attached to the release and which scheduler type is set by default when creating a package attached to the release.

A new package attached to a release will default to the release default scheduler, not the application default scheduler.

A new package created using the short and copy forward method will use the application or release default scheduler, not the scheduler from the package used as a model. The scheduler from the model package may not be valid, will not be displayed and can not be changed using the short method.

A new package created in ZMF/ISPF using the long and copy, forward method will use the scheduler from the package used as a model. The scheduler from the model package may not be valid but can be changed using the long method.

A new package created using the package.service.create service using the copy forward method will use the scheduler from the package used as a model. If specified, the scheduler specified in the service request will be used instead. The scheduler from the model package may not be valid but can be changed by specifying a scheduler in the service request. This is similar to the ZMF/ISPF function using long and copy forward methods.

The scheduler for packages attached to a release must comply with both the application and release allowed schedulers.

The global and application parameter update services (parms.gbl.update, parms.appl.update/create) perform minimal validation. These services do not ensure consistency between different global parameters or between different application parameters. The application update service does ensure that application updates conform to global restriction rules. The application update service will prevent setting a scheduler to be allowed if it is not allowed in global parameters. It will prevent setting a default scheduler other than '1', '2' or '3' (cmn, manual or other). The global and application update services ignore allowed scheduler values other than 'Y' and 'N'. These services allow setting a default scheduler that is not an allowed scheduler.

The release configuration service (rlsmrlse.service.config) will prevent setting a scheduler to be allowed if it is not allowed in global parameters. It will prevent setting a default scheduler that is not allowed in global parameters. It will prevent setting a default scheduler that is being disallowed in the current service call.

See the ChangeMan ZMF ERO Getting Started Guide and ChangeMan ZMF XML Services User's Guide for more details on how the Scheduler interacts with these facilities.

Chapter 4

Setting Up Global Administration

This chapter explains how to set up and change global administration for your ChangeMan ZMF instance. Some entries in global administration define general use parameters and functions. Other global administration entries limit the range of choices available when defining parameters and functions for applications.

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Accessing the Global Administration Options

Perform these steps to access the **Administration Options** menu (CMNADMON).

1 Go to the ChangeMan ZMF **Primary Option Menu** (CMN@PRIM).

NOTE If option **A Admin** is *not* shown on the **Primary Option Menu**, you are not authorized in your security system for any ChangeMan ZMF administration functions. See topic "Security Considerations" in the *ChangeMan ZMF Installation Guide* and then consult with your security administrator.

2 On the **Primary Option Menu**, select option **A Admin** and press **Enter**. The **Administration Options** menu (CMNADMON) is displayed.

```
CMNADMON                      Administration Options
Option ===> ____________________________________________________

A  Application    Perform application administration functions
B  Application    Browse application administration configuration
G  Global         Perform global administration functions
H  Global         Browse global administration configuration
R  ERO            Perform release creation/administration functions
```

The **Administration Options** menu is built dynamically to show only those administration functions that you are authorized to browse or update, and will be greyed out if you are not authorized. If you have ERO licensed then as shown, the option R will also be available (if authorized).

NOTE If option **G Global** is not shown on the **Administration Options** panel, you are not authorized in your security system to update global administration. See topic "Security Considerations" in the *ChangeMan ZMF Installation Guide*, and then consult with your security administrator.

3 On the **Administration Options** menu (CMNADMON), select option **G Global** and press **Enter**. The **Update Global Administration Options** menu (CMNGAMN1) is displayed:

```
CMNGAMN1             Update Global Administration Options
Option ===> _____________________________________________

1  Parms          Global parameters
2  Library        Library types
3  Language       Language names
4  Procedures     Compiling procedures
5  Reason Codes   Reason codes for unplanned packages
6  Sites          Site information
7  Lock           Application parameter locks
8  HLL Exits      High level language exits
9  Field Names    User field name substitution
C  Component      Component information
D  Dates          Installation calendar
H  Housekeeping   Housekeeping tasks
I  Impact         Impact Analysis
N  Notify         Global notification file
O  Options        Selectable options
R  Reports        ChangeMan ZMF batch reports
S  Skeletons      Skeleton procedures
```

You can use option **H Global** on the **Administration Options** menu (CMNADMON) to view global parameters on read-only panels.

Setting up Global Parameters

Some of the settings in global parameters define the basic configuration for ChangeMan ZMF in your environment. Other parameters govern the action of users.

The application parameters that an administrators will set later can be more restrictive than the global parameters, but they cannot be more permissive. If you set global parameters to allow more options, application administrators can establish tighter control over sensitive applications while allowing other applications more latitude.

NOTE The rules you define in global administration are not application specific—they affect all applications.

To set global parameters, execute the following steps to make entries on global parameters panels.

1 On the **Update Global Administration Options** menu (CMNGAMN1), select **1 Parms**. The **Global Parameters Part 1 of 8** panel (CMNGGP01) is displayed.

```
CMNGGP01               Global Parameters - Part 1 of 8
Command ===> ____________________________________________

Subsystem: 2

ChangeMan ZMF environment . . . . DP       (A/D/DP/P)
Job entry system  . . . . . . . . JES2     (JES2 or JES3)
Site node name  . . . . . . . . . S001
Logical unit/system name  . . . . BUCKS
Default unit name . . . . . . . . SYSDA
Default volume serial . . . . . . ______
Default non-vio keyword=name  . . UNIT     = SYSDA
ChangeMan ZMF security resource . $CMNSUP
Default job scheduler . . . . . . CMN      (CMN, Manual, Other)
Scheduler interval (CMN)  . . . . 001      (Minutes)

Enter "/" to select option
  /  Allow CMN scheduler
  /  Allow Manual scheduler
  _  Allow Other scheduler
```

The following table describes the fields of the **Global Parameters Part 1 of 8** panel and the valid information that you can enter in the fields.

Field	Description
Subsystem	Displays the subsystem ID that you are currently logged on to.

Field	Description
ChangeMan ZMF environment	Type a one- or two-character code to determine the kind of ChangeMan ZMF instance you are configuring. **CAUTION** The environment type is set when you run program INITIAL2 to initialize the package master VSAM file for this ChangeMan ZMF instance. (See the *ChangeMan ZMF Installation Guide*.) Consult with Customer Support before you change the environment on this panel. A ALL - A single ChangeMan ZMF instance that manages development, maintains baseline libraries, and maintains production libraries that are on shared DASD and shared catalogs. D DEVELOPMENT - A ChangeMan ZMF instance that manages development and maintains baseline libraries, but does not maintain production libraries. A D environment sends package information to a separate P environment for installation into production libraries. DP DEVELOPMENT AND PRODUCTION - A ChangeMan ZMF instance that manages development, maintains baseline libraries, manages production libraries on shared DASD and shared catalogs, and can send package information to a separate P environment for installation into production libraries that are not on shared DASD with shared catalogs. P PRODUCTION - A stripped-down ChangeMan ZMF instance that receives change package information form a D or DP environment and installs package components into production libraries. No development is performed in a P environment. A P environment is required where production libraries reside on an MVS image that is separated from development and does not share DASD and catalogs with development. A P environment is also required if DB2 binds or IMS gens must be performed for install on an MVS image that is separate from development.
Job entry system	Type the name of the job entry system (JES2 or JES3) used at your site.
Site node name	Type the site node name you specified in ChangeMan ZMF Environment. A (All) Environment: Type a common name or nickname for this ChangeMan ZMF instance. You cannot use the same name here that you will use for a site name in the Global Site List (=A.G.6). D (Development) Environment: Type a common name or nickname for this ChangeMan ZMF instance. You cannot use the same name here that you will use for a site name in the Global Site List (=A.G.6). DP (Development/Production) Environment: Type the Site Name for this ChangeMan ZMF instance defined in the Global Site List (=A.G.6). P (Production) Environment: Type the Site Name defined in the Global Site List (=A.G.6) of the D or DP ChangeMan ZMF instance that installs to this P instance.
Logical unit/ system name	Type the data transmission vehicle you will use in installation and promotion jobs for remote sites. ■ Target name for your transmission vehicle (like SNODE for Connect:Direct®). ■ For IEBCOPY enter the system name (e.g. 'SYSA').
Default unit name	Type the generic unit name for DASD to be used for dynamic allocations for this ChangeMan ZMF instance. This field may be left blank if DEFAULT VOLUME SERIAL is used. The Default Unit Name in Global Administration sets the Default Unit Name used when you create an application, but it can be changed at the application level.

Field	Description
Default volume serial	Type the DASD volume serial number to be used for dynamic allocations for this ChangeMan ZMF instance. This field may be left blank if DEFAULT UNIT NAME is used. The Default Volume Serial in Global Administration sets the Default Volume Serial used when you create an application, but it can be changed at the application level.
Default non-VIO keyword=name	For non-SMS managed devices: Enter 'UNIT' = and the generic unit name for disk packs that dynamic allocations requiring non-VIO DASD will utilize unless otherwise specified (e.g. 'SYSDA'). For SMS managed devices: Enter 'STORCLAS' = and the generic SMS storage class name. Note: UNIT and STORCLAS are mutually exclusive.
ChangeMan ZMF security resources	Type the resource class defined in your security system for ChangeMan ZMF. The literal 'CMN' is strongly recommended. See the *ChangeMan ZMF Installation Guide*.
Default job scheduler	Type the default scheduling system you will define to control submission of the package installation batch jobs within application and release administration. CMN — The ChangeMan ZMF started task will schedule the submission of package installation jobs. MANUAL — The installation process begins as soon as the package is approved. This option allows you to install a package before its scheduled install date. OTHER — ChangeMan ZMF performs a batch interface to add the package install job information to the external scheduler's database.
Scheduler interval (CMN)	Type the number of minutes (mmm) between checks by the internal ChangeMan ZMF scheduler for packages that have CMN scheduler type and are ready to be installed. The valid range is 1 to 255.
Install job scheduler options	Specify which scheduling systems can be definedwithin application and release administration to control submission of the package installation batch jobs. CMN Allow CMN scheduler MANUAL Allow Manual scheduler OTHER Allow Other scheduler

2 When you finish entering information on the **Global Parameters Part 1 of 8** panel, press **Enter**. The **Global Parameters Part 2 of 8** panel (CMNGGP02) is displayed.

```
CMNGGP02               Global Parameters - Part 2 of 8
Command ===> ____________________________________________

Transmission vehicle  . . . . . IEBCOPY
Normal business hours: from . . . 0001        (HHMM)
                         to . . . 2300        (HHMM)
Aging - installed packages  . . . 180
      - staging datasets  . . . . 180
      - component history . . . . 3660
      - staging versions  . . . . 365
Allocation retry count  . . . . . 5
Allocation retry wait   . . . . . 15
Number of days in calendar  . . . 364

Started procedures:
Installation job build  . . . . . CMN6ADSP
Batch component build . . . . . . CMN6ADSP
Promotion JCL build . . . . . . . CMN6ADSP
Default . . . . . . . . . . . . . CMN6ADSP
```

The following table describes the fields of the **Global Parameters Part 2 of 8** panel and the valid information that you can enter in the fields.

Field	Description
Transmission vehicle	Type IEBCOPY for an A environment or for an initial implementation of a D or DP environment. In a D or DP environment, this field sets the value of ISPF variable TRNSTYP, which is referenced in JOB statement skeletons CMN$$JNM and CMN$$SJN to enable JES job routing statements. Enter the data transmission vehicle that ChangeMan ZMF is to use to transmit messages, change packages, and other data between the development system and the production sites. This variable will be used in file tailoring the install jobs. IEBCOPY — Exclude JES routing statements from installation JCL. Use if there are no other sites and DASD is shared between D and P environments. OTHER — Include JES routing statements in installation JCL. Other transmission vehicle: XCOM, BDT, etc. will require skeleton file tailoring of the install jobs. **NOTE:** This field no longer sets the transmission vehicle used in building installation job JCL. ■ An ALL environment uses IEBCOPY by definition. ■ In a D or DP environment, the transmission vehicle for each site is specified on the **Site Information** panel (CMNGRST2).

Field	Description
Normal business hours	Type a **From** and **To** time in 24-hour clock format (hhmm). Normal business hours determine whether an unplanned package is assigned the Planned Approval List or the Unplanned Approval list when the package is created. If you create an unplanned change package during normal business hours, the Planned Approval List is assigned to your package. If you create an unplanned package outside of normal business hours, the Unplanned Approval List is assigned. To force all unplanned packages to use the Unplanned Approval List, set normal business hours to a one minute range when it is unlikely anyone would create a change package. The settings for normal business hours in Global Administration restrict the entries for these parameters in Application Administration. Normal business hours at the application level must be the same as the global parameters or times that fall within the global time range. **Note:** Normal business hours are compared to the time you *create* your package, not the time that your package is frozen or the time that it is scheduled for install.
Aging installed packages	Type the number of calendar days after a package is installed (status BAS, INS, or TCC) that package records must be retained on the package master. After the specified number of days, package records may be archived or deleted by housekeeping. You may set the value between 0 to 9999. A value of zero (0) days turns off the package aging function, package records are never archived or deleted. The setting for this parameter in global administration restricts the setting in application administration. The application setting cannot be less than the global setting. **Note:** The days you specify for **Aging - Installed Packages** must be equal to greater than the days you specify for **Aging - Staging Datasets**. Staging data sets cannot be deleted if the package records have been archived or deleted.
Aging staging datasets	Type the number of calendar days after a package is installed (status BAS, INS, or TCC) you want to retain staging libraries. After the specified number of days, staging libraries may be deleted by housekeeping. You may set the value between 0 to 9999. A value of zero (0) days turns off the staging library aging function, and staging libraries are never deleted by housekeeping. The setting for this parameter in global administration restricts the setting in application administration. The application setting cannot be less than the global setting. **Note:** The days you specify for **Aging - Staging Datasets** must be equal to or less than the days you specify for **Aging - Installed Packages.** Staging data sets cannot be deleted if the package records have been archived or deleted.

Field	Description
Aging component history	Type the number of calendar days after a package is installed (status BAS, INS, or TCC) that component history for that package must be retained on the component master. After the specified number of days, component history records may be archived or deleted by housekeeping. Regardless of the value specified, the most recent history record for a baselined component in a library type in an application is preserved in component history to provide information for future build activity and for audit auto resolve. You may set the value between 0 to 9999.A value of zero (0) days turns off the component history aging function, and component records are never archived or deleted. The setting for this parameter in global administration restricts the setting in application administration. The application setting cannot be less than the global setting. **Note:** The value for **Aging - Component History** must be equal to or greater than the value for **Aging - Installed Packages**. Even if you specify an aging value for component history that is less than the aging value for installed packages, component history is not deleted or archived until package records are deleted or archived and the associated component history records are flagged with delete/archive status.
Staging versions	Enter the number of days that saved staging versions from a package should remain. The corresponding change package must be in BAS, INS or TCC status for this value to take effect. If the package is in Memo Delete status this value has no effect and the saved staging versions will be deleted regardless. A value of zero (0) for this field means that there will be unlimited staging versions (no aging) regardless of the value specified for package aging. **CAUTION:** specifying a value of zero (no aging) is not recommended due to the resulting potential for unlimited growth in the staging versions master files. Refer to Chapter 9, "Activity Log Housekeeping" on page 240 for guidance.
Allocation retry count	Enter the number of times to retry failed allocation attempts. The value can be from 0 to 65535. Failed allocation attempts are retried when package installation JCL is generated.
Allocation retry waits	Enter the time in seconds to wait between allocation retry attempts. The value can be from 0 to 65535 seconds.
Number of days in calendar	Enter the number of days you want the calendar to contain. The calendar will be created with the number of days you have specified. The value can be from 364 to 1820.
Started procedure - Installation job build	Enter the name of the started procedure used to perform ISPF file tailoring to build the JCL used to install packages. The default name is CMNxADSP, where x is the ZMF subsystem ID.
Started procedure - Batch component build	Enter the name of the started procedure used to perform ISPF file tailoring to build the JCL used to checkout, compile, recompile and relink components. The default name is CMNxADSP, where x is the ZMF subsystem ID.
Started procedure - Promotion JCL build	Enter the name of the started procedure used to perform ISPF file tailoring to build the JCL used to promote and demote components. The default name is CMNxADSP, where x is the ZMF subsystem ID.

Field	Description
Started procedure - Default	Enter the name of the started procedure used to perform ISPF file tailoring to build the JCL used in cases not listed above. The default name is CMNxADSP, where x is the ZMF subsystem ID.
NOTE: The ChangeMan ZMF installer or global administrator must determine the names to be assigned to the four started procedures and define them to the security system before they can be used. Refer to the *ChangeMan ZMF Installation Guide* for details on setting up these procedures.	

3 When you finish entering information on the **Global Parameters Part 2 of 8** panel, press **Enter**. The **Global Parameters Part 3 of 8** panel (CMNGGP03) is displayed.

```
CMNGGP03                Global Parameters - Part 3 of 8
Command ===> ____________________________________________________

Enter "/" to select option
  Baselines
  /  Stacked Reverse Delta
  _  Panvalet
  _  User defined
  _  Librarian
  _  Librarian Access Method (LAM)
  Notification Vehicles
  _  Email
  /  Batch
  Other options
  _  Require Work request
  _  Require Department
  _  Disable installation calendar
  /  Allow temporary packages
  _  Process participating packages by install date
  _  Hierarchical approval process
  /  Use global notification file
  /  Allow application update to file
  _  Force display of global notification file
Global notification file . . CMNTP.S6.V814.CMNZMF.NOTIFY_____________
```

The first five fields of the panel specify the storage means for back levels of Baseline libraries. Except for CA Panvalet and CA Librarian, the current level of any baseline library is configured as a PDS. The storage means for the back levels of each particular Baseline library are selected by the Application Administrator (under the Baseline option) based on the means allowed here.

NOTE The Delta Deck storage means is obsolete for new baseline libraries. However, existing baselines with this storage means are supported.

The following table describes the fields of the **Global Parameter Part 3 of 8** panel and the valid information that you can enter in the fields**.**

Field	Description
Stacked Reverse Delta	Select to use the Stacked Reverse Delta Deck format. This storage means uses one PDS for the (0) level, and a second PDS for the (-001) thru (-999) levels. Back levels are stored in compressed form.
Panvalet	Select if earlier levels of Baseline are to be kept in PANVALET libraries.
User defined	Select if you will use ROSCOE or any other type of library organization. This will require file tailoring of install skeletons.
Librarian	If you have LIBRARIAN Masters, select this option.

Field	Description
Librarian Access Method (LAM)	Select if you have this method. LAM is only valid for release 3.6 or better.
Notification vehicle - Email	Select if you will use notification via email server. (CMN will send request via SMTP for email notification to user defined email server.)
Notification vehicle - Batch	Select if you will use notification via batch JCL submission. (CMN will build a job from skeleton CMN$$NTF and submit it).
Notification vehicle - Note	This option is always available (MVS SEND). The notification vehicle(s) selected will determine how approvers receive notification of packages pending approval. Multiple notification options may be selected.
Require Work Request	Select if users will be required to enter a Work Request during package creation. (Work request may be required under the INFO MANAGEMENT CHANGE RULE). Omit if it is to be optional.
Require Department	Select if users will be required to enter Department during package creation. Omit if it is to be optional.
Disable installation calendar	Select to disable the installation calendar; or omit to utilize the full calendar checking function (scheduling install dates, aging of packages, etc). The calendar is defined under the BUILD options, selection 0 (DATES).
Allow temporary packages	Select to allow temporary change package creation. Temporary change packages are placed into production concatenated ahead of production libraries based on the amount of days you have specified. Omit to prevent user from creating temporary change packages. **Note:** Temporary packages are never baseline rippled into permanent production libraries; however they are deleted from the production environment after the number of days specified at package creation.
Process participating packages by install date	Select to process and audit participating packages within a Complex or Super package by installation date.Participating packages are processed as groups within a Complex or Super package based on installation dates. Only those participating packages defined to the Complex or Super package which have not been baselined and having installation dates that are equal to or earlier than the participating package containing the component to be compiled or link-edited are included as part of the SYSLIB concatenation. Audit will process participating package groups within a Complex or Super package based on the installation date of participating packages. The Audit process will report only on participating packages defined within a Complex or Super package which have an installation date equal to or less than the installation date of the participating package specified by the user for the execution of the audit job.
Hierarchical approval process	Select this option to send notification of packages pending approval based on the hierarchial approval list you have established. Notification is sent to each approver level as the package is approved. If omitted, all entities will be notified simultaneously.
Use global notification file	Select to activate the global notification file. Messages may be written to this file which serves as a broadcast facility to communicate information from the ChangeMan ZMF administrator to the user. Users are prompted there is an update when they enter a ChangeMan ZMF session and will be able to browse the file.

Field	Description
Allow application update to file	Select to allow Application Administrators to update the global notification file.
Force display of global notification file	Select to automatically display the global notification file if it has been updated since the user last browsed it. If not selected, users are prompted if the global notification file has been updated. The display or notification occurs when the user navigates to the ZMF primary option menu.

4 When you finish entering information on the **Global Parameters Part 4 of 8** panel, press **Enter**. The **Global Parameters Part 4 of 8** panel (CMNGGP04) is displayed.

```
CMNGGP04                Global Parameters - Part 4 of 8
Command ===> ____________________________________________

Audit level . . . . . . . . . . . . 0    (0,1,2,3,4,5)
Unplanned package audit option  . . 0    (0,1,2)
Checkout enforcement rule . . . . . 1    (1,2,3)
Staging restriction level . . . . . 1    (1,2,3)
Promotion/demotion rule . . . . . . 0    (0,1,2,3,4)

Enter "/" to select option
  _  Disallow concurrent checkout
  /  Allow checkout to personal lib
  _  Eliminate save to personal lib
  /  Overlay prior staged module
  _  Validate version during staging
  _  Build install JCL at approve
  /  Use like-lod in syslib
  Validate ISPF libraries
  _  Isplib
  _  Ispmlib
  _  Ispplib
  _  Ispslib
```

This table describes the fields on the **Global Parameters Part 4 of 8** panel.

Field	Description
Audit level	Type a one digit code that shows the Audit level that must be passed before a change package can be frozen. If the Audit Level is made more restrictive after a package is frozen, packages with audit return codes that do not comply with the new Audit Level setting must be reverted, corrected and re-frozen, before they can be approved. 0 Audit is recommended but not required. 1 Audit is required; however any return code (except ABEND) is acceptable. 2 Audit is required; the return code must not exceed 12, this implies there are "out-of-synch" conditions within the staging libraries. 3 Audit is required; the return code must not exceed 8 which implies there are no "out-of-synch" situations within the staging libraries, but there are "out-of-synch" situations within the Baseline libraries. 4 Audit is required; the return code must not exceed 4, this implies there are no "out-of-synch" situations within the staging libraries or the Baseline libraries, but at least one module of a staging library is a "duplicate" of its Baseline counterpart. 5 Audit is required and the return code must not exceed 0 which implies that there are no "out-of-synch" situations with either the staging libraries or the Baseline libraries, and no "duplicates" exist.
Unplanned package audit option	This numeric value dictates the unplanned package Audit option. This option enforces if an unplanned package must be audited. 0 Audit is recommended but entirely optional. 1 Audit is required; however any return code (except abend) is acceptable. 2 Audit is required and must pass based on the Audit Level.
Checkout enforcement rule	Select this option to set checkout to staging enforcement rules. The numeric value entered dictates the rule that must be passed before a component may be staged. This setting allows you, as the administrator, to restrict who may stage components which have not been checked out from Baseline. **Note:** Checkout enforcement rules are for components that exist in the baseline libraries and are not for new components. 1 Users may stage any component, regardless if it has been checked out, to a package. ChangeMan ZMF will not check for the component's existence in the baseline libraries. 2 Users attempting to stage a component that exists in baseline but has not been checked out, must pass a security system ENTITY CHECK before the stage can proceed. The entity name is specified in the application parms generation. Staging will not be allowed if the user does not pass the entity check. 3 Users will not be allowed to stage a component which exists in the baseline library that has not been checked out to the package requesting the stage.

Field	Description
Staging restriction level	This regulates the Stage Development Driven option: 1 Allow all users access to both Development Driven (stage components into a package without checking them out) and Package Driven stage options. 2 Users are required to pass an entity check before being allowed to stage any components via the Stage Development Driven option. Only TSO-IDs associated with the ENTITY name are allowed to use both stage options. The entity name, which must be defined to your security system, is specified in Staging Restriction Level in the application parameters. 3 Users are required to CHECKOUT all components to a package before staging, effectively disabling the Stage - Development Driven option.
Promotion/ demotion rule	Determines how full and selective promote and demote work for all promotion sites and levels in the application. The setting for this parameter in Global Administration restricts Application Administration settings. An application setting cannot be numerically less than the global setting. Rules 1 thru 4 restrict promotion to Frozen (status FRZ) packages only: 0 Full and selective promote and demote are allowed without freezing the package first. Full promote can skip promotion levels. Requires the following sequence to change a promoted package component: Selective unfreeze (only if the package is frozen), edit, stage (restage), selective freeze of the component (only if the package is frozen), selective promotion to any level up to the package promotion level. **Note:** Because there is no requirement to demote a component before editing it, a component in the package staging library may not be the same as the component in a promotion library. This allows users to freely promote and demote components even if the change package has not been frozen.

Field	Description
	1 Package must be frozen for promote and demote. Full promote cannot skip promotion levels. Requires the following sequence to change a promoted package component: Selective demote of the component, selective unfreeze, edit, stage, audit package, selective freeze of the component, selective promotion back to the package promotion level. 2 Package must be frozen for promote and demote. Full promote cannot skip promotion levels. Requires the following sequence to change a promoted package component: Selective demote of the component, selective unfreeze, edit, stage, audit package, selective freeze of the component, selective promotion through all intermediate levels to the package promotion level. 3 Package must be frozen for promote and demote. Full promote cannot skip promotion levels. Requires the following sequence to change a promoted package component: Full demote of the package, selective unfreeze of the component, edit, stage, audit package, selective freeze of the component, full promotion through all promotion levels up to the original promotion level. 4 Package must be frozen for promote and demote. Full promote cannot skip promotion levels. Requires the following sequence to change a promoted package component: Full demote of the package, revert the package to development status, edit, stage, audit package, freeze package, full promotion through all intermediate levels to the package promotion level.
Disallow concurrent checkout	Select to prevent users from checking out components that are part of a planned package. **Note:** This rule does not apply to unplanned packages. You can always check out a component into an unplanned package, even if the component is in another package and the **Disallow concurrent checkout** indicator has not been selected.
Allow checkout to personal lib	Select to allow users to check out to a personal library for editing. A copy of the component is kept in a staging library. If users edit components checked out to a personal library *outside* of ChangeMan ZMF, their changes are never automatically saved to package staging libraries. **Caution!** The use of personal libraries is discouraged with change packages, however customers using the ZMF for Eclipse product with RDZ. See field 'Eliminate save to personal lib' below. If a user edits a package component directly in a personal library, their changes will not be promoted, audited, or installed if they forget to stage the member in the package. For this reason, the use of personal libraries is discouraged with change packages.

Field	Description
Eliminate save to personal lib	Select this option to restrict users from saving edited components to their personal libraries. This option determines how edited components are saved when a personal or development library is involved and the connection between those members. If a component is checked out to a personal lib, or staged from development, edits in staging will be performed on both the package's stage lib and the personal or development lib. After the first edit, changes are saved to both libraries regardless of this rule. Subsequent edits are saved in BOTH places if this rule is omitted. **Note:** Selecting this option breaks this connection, and edit changes are saved to the staging library only. If users edit components checked out to a personal library *outside* of ChangeMan ZMF, their changes are never automatically saved to package staging libraries. If you want users to be able to edit in a personal library, then set **Allow Checkout to Personal Lib.** **Caution!** If a user edits a package component directly in a personal library, their changes will not be promoted, audited, or installed if they forget to stage the member in the package. For this reason, the use of personal libraries with change packages is discouraged.
Overlay prior staged module	Determines whether a user can stage a component from development, and overlay a package component that is identified by another person's userid. The compare is between the userid of the person attempting the checkout or stage from development and the userid that is stored in the package component record. If not selected enforces single ownership of a module in a package and stops other users from overlaying a previously staged module. This option will not be enforced against members that were checked out to the package in batch.
Validate version during staging	Ensures the integrity of baseline library components between checkout and staging. Users must check out components (not stage from development) for validation to be in effect. (See **STAGING RESTRICTION LEVEL**). If the baseline version of a component has been altered after a user has checked it out, staging of that component will be prevented. Select to enforce validation.
Build install JCL at approve	Select this option to delay construction of the Package Installation JCL (often known as the 'x.node JCL') until the last approval takes place. Package Installation JCL is normally built each time the package is frozen.
Use like-lod in syslib	Select this option to include like-lod libraries as part of the in program (Binder) SYSLIB concatenations along with like-OBJ and like-NCL libraries. ChangeMan ZMF will always include Like-OBJ and Like-NCL as part of this concatenation.
Validate ISPF libraries	Validates the ISPF library concatenation used in a ChangeMan ZMF client against the library concatenation coded in the SERNET started procedure. When an ISPF client session is started, the ISPF library concatenation used to connect to ChangeMan ZMF is superseded by the concatenation coded in the SERNET started procedure. The VALIDATE ISPF LIBRARIES function ensures that no unauthorized libraries are subsequently concatenated for ChangeMan ZMF execution by a LIBDEF in the user's TSO session. The VALIDATE ISPF LIBRARIES function also verifies the ISPF library concatenation used in ChangeMan ZMF cataloged procedure CMNxJOBS. This prevents users from substituting a procedure with unauthorized libraries by using a JCLLIB statement in the JOB STATEMENT INFORMATION on ChangeMan ZMF panels that invoke the batch API.

Field	Description
Isplib	Select to validate ISPF load library concatenation (data set names and order).
Ispmlib	Select to validate ISPF message library concatenation (data set names and order).
Ispplib	Select to validate ISPF panel library concatenation (data set names and order)
Ispslib	Select to validate ISPF skeleton library concatenation (data set names and order).

5 When you finish entering information on the **Global Parameters Part 4 of 8** panel, press **Enter**. The **Global Parameters Part 5 of 8** panel (CMNGGP05) is displayed.

```
CMNGGP05                Global Parameters - Part 5 of 8
Command ===> ____________________________________________________

Audit package lock  . . . . OPTIONAL (Always/Never/Optional)

Enter "/" to select option
  _  Job name increment override
  _  Use zprefix in batch jobs
  _  Suppress msgs in dis/ins/bas jobs
  _  Create component work records
  _  Memo delete empty packages only
  /  Enable package user variables
  /  Enable component user variables
  _  Add user variables to package list table
  /  Allow component in multiple applications
  _  Auto scratch load member with source
  Approval Restrictions
  _  Package creator cannot approve
  _  Package worker cannot approve
  _  Only 1 approval per user
```

This table describes the fields on the **Global Parameters Part 5 of 8** panel.

Field	Description	
Audit package lock	This value dictates whether a package is locked to prevent the contents being updated while the package is being audited. A setting of ALWAYS or NEVER for this parameter in global administration restricts application administration to the same value. Enter one of the following values:	
	Always	Packages must be locked during audit.
	Never	Packages must not be locked during audit.
	Optional	Select if the application administrator for each application will determine whether or not packages are locked during audit.

Field	Description
Job name increment override	Determines whether a job name suffix for staging jobs is incremented to allow multiple jobs to run at the same time. This parameter does not affect job name increment for mass stage jobs initiated from the Stage: Mass Build panel (CMNSTG05). The job name in the Job Statement Information field must consist of the submitter's TSO userid followed by a one character alpha suffix, A-Z. Job name suffixes 0-9, @, #, and $ are not incremented. Selecting this parameter in Global Administration will not increment the job name suffix and forces jobs to singe thread.
Use zprefix in Batch Jobs	Select this setting to ensure ChangeMan ZMF will create a TSO profile using 'Profile prefix(&ZPREFIX) rather than 'Profile prefix(&ZUSER)' when it attaches a batch TSO session (during API functions such as checkout, freeze, stage). Setting this parameter in Global Administration restricts Application Administration settings. Refer to the IBM ISPF Dialog Developer's Guide and Reference for more information.
Suppress msgs in dis/ins/bas jobs	ChangeMan ZMF jobs that perform distribution, installation, baseline ripple, and back-out functions issue TSO SEND messages to inform you of success or failure. If you are distributing, installing, baselining, or backing out a large number of packages concurrently, the large number of TSO SEND messages can degrade system performance. This option enables you to suppress these TSO SEND messages only if a job is successful. If a job fails, you will always receive the TSO notification. Select this option to suppress the ChangeMan ZMF status notification messages issued by the distribution, install, and baseline jobs.This will suppress the messages that are normally sent to the broadcast log at completion of the individual job.
Create component work records	Select to enable the Component Work Record facility, which keeps a record of each userid that acted on a component in a change package. Actions which are recorded include checkout, stage, edit in stage, recompile, relink, and delete. Component work records can be accessed through the package list function. See also 'package worker cannot approve'.
Memo delete empty packages only	Determines whether change packages that contain components or utility requests (scratch or rename) can be memo deleted. There are two disadvantages to memo deleting packages that contain components: ■ If the package is mistakenly memo deleted, work on the components is lost. ■ Component history makes no distinction between components that were in packages that were installed and aged/deleted, and components that were in packages that were memo deleted and never installed. Select to prohibit memo delete if a package contains components or utility requests, requiring users to delete all components from a package before it is memo-deleted.
Enable package user variables	Select this option to allow users access to the package user variables during package lifecycle. This allows users to associate user data with a specific package and is used in conjunction with certain user exits, via a client interface or XML services.

Field	Description
Enable component user variables	Select this option to allow users access to the component user variables during the component lifecycle. This allows users to associate user data with a specific component and is used in conjunction with certain user exits, via a client interface or XML services.
Add user variable to package list table	Select this option to add package user data to the package list table. These variables are not used to build the displays in CMNLIST3 and CMNLIST4, but users do have the option to add them in place of existing fields. **IMPORTANT NOTE:** Adding these variables to the table will considerably increase the time to build the package list table, and is not recommended when large package lists are being built and displayed.
Allow component in multiple applications	Select this option to allow adding a component to packages across multiple applications.
Auto scratch load member with source	Select this option to automatically scratch associated load members when you scratch a source member. Additionally you will automatically scratch a source member when an associated load member is scratched. If this option is not selected, the user must manually scratch any associated load or source members.
Approval restrictions	The next three fields on this panel limit approval authority for planned packages, even though a user may be otherwise authorized to approve a package. Approval restrictions can be used to limit a user's approval authority within planned packages - even though they may otherwise be permitted to apply an approval to that package. Approval restrictions do not apply to unplanned approval lists.
Package creator cannot approve	Select to prevent the user who created the package from being part of the approval process. This parameter does not apply to unplanned packages.
Package worker cannot approve	Determines whether someone who has worked on a component in a planned package can approve that package, if they are otherwise authorized. Select to prevent a user, whose ID is associated with any of the package components, from taking part in the approval process. A user id is attached by each function (checkout, edit, stage etc.). This option will work in conjunction with the 'Create component work records option. With the option turned on, a history is maintained of each user's access to any component in the package. With the option turned off, only the last user id is stored. This parameter does not apply to unplanned packages.
Only 1 approval per user	Determines whether an approver can enter more than one approval for a planned package, even if they are otherwise authorized. Select to prohibit an approver from entering more than one approval for a planned package. If not selected, an approver is allowed to enter more than one approval. This parameter does not apply to unplanned packages.

6 When you finish entering information on the **Global Parameters Part 6 of 8** panel, press **Enter**. The **Global Parameters Part 6 of 8** panel (CMNGGP06) is displayed.

```
CMNGGP06               Global Parameters - Part 6 of 8
Command ===> ____________________________________________

Enter "/" to select option
  Enable display order
  _  Library types
  _  Languages
  _  Build procedures
  _  Reason codes
  _  Sites
  _  DB2 physical subsystems
  _  DB2 logical subsystems
  _  Online forms
  _  IMS control regions
  _  IMS DBD overrides
  _  IMS PSB overrides
  _  XML reports
  _  Applications
  _  3D skeletons
```

This table describes the fields on the **Global Parameters Part 6 of 8** panel.

Field	Description
Enable display order	Select to activate the default display order defined in global administration. The default display order is defined by a display order number defined for items in global administration. If activated, this is used as the default order in which lists are displayed. Users can use the SORT command to sort lists by various columns. Users can use the 'SORT DEFAULT' command to sort lists by the administration defined default display order, if activated. If not activated, 'SORT DEFAULT' sorts by predefined columns. Some options may be unavailable due to unlicensed options.
	Library types Languages Build procedures Reason codes Sites DB2 physical subsystems DB2 logical subsystems Online forms IMS control regions IMS DBD overrides IMS PSB overrides XML reports Applications 3D skeletons

7 When you finish entering information on the **Global Parameters Part 7 of 8** panel, press **Enter**. The **Global Parameters Part 7 of 8** panel (CMNGGP07) is displayed.

```
CMNGGP07                Global Parameters - Part 7 of 8
Command ===> ____________________________________________________________

Staging library model dataset names
 Dev model dsname  . . . CMNTP.S8.STGE.????.#######
 Prd model dsname  . . . CMNTP.S8.STGE.????.#######
 Dev model zFS name  . . /cmntp/c001/sert68/????/stge/#######      +
 Prd model zFS name  . . /cmntp/c001/sert68/????/stge/#######      +

   "????" is placeholder for application name.
   "#######" is placeholder for package number (.#000123).

 zFS temp folder . . . . /u/sert/Q001/tmp/s8                       +

 Package master  . . . . CMNTP.S8.CMNPMAST
 Cpnt mstr (short) . . . CMNTP.S8.CMNCMPNT
 Cpnt mstr (long)  . . . CMNTP.S8.CMNCMPNL
 Delay file  . . . . . . CMNTP.S8.CMNDELAY
 Ser#parm  . . . . . . . CMNTP.SER813.S8.TCPIPORT
 Impact analysis . . . . CMNTP.S8.IADSP

 Email server  . . . . . mail.mysite.com                    +
       port  . . . . . . 00025
```

This table describes the fields on the **Global Parameters Part 7 of 8** panel.

Field	Description
STAGING LIBRARY MODEL DATASET NAME Staging library data set names and HFS path names are created from a model by: 1 Replacing ???? with the application mnemonic 2 Replacing the last six # of ####### with the change package number 3 Appending a three character library type to the end as a data set name node or an HFS subdirectory **Notes:** ■ You must include the ???? and ####### nodes/directories in the model. ■ You may use the # character in other nodes/directories of the model. ■ Build your models so that they generate staging library names/paths that comply with your local standards. ■ Include the subsystem ID in the models if you will have multiple ChangeMan ZMF instances. ■ If you do not intend to manage Java components in ChangeMan ZMF, leave the HFS model names blank.	
Dev model dsname	Enter the model dataset name for staging libraries in the development environment. Four question marks (????) in the dataset name will be replaced with the appropriate application mnemonic. Seven pound signs (#######) will be replaced with the change package number.
Prd model dsname	Enter the model dataset name for staging libraries in the production environment. Substitutions will be the same as above. If this is a D or DP environment, this information must also be entered in SITE (Global Admin). This identifies the installation libraries for each remote site to the development site.

Field	Description
Dev model zFS name	Enter the model zFS directory for staging libraries in the development zFS environment. Four question marks (????) in the file name will be replaced with the appropriate application mnemonic. Seven pound signs (#######) will be replaced with the change package number.
Prd model zFS name	Enter the model zFS directory for staging libraries in the production zFS environment. Substitutions will be the same as above. If this is a D or DP environment, this information must also be entered in SITE (Global Admin). This identifies the installation libraries for each remote site to the development site.
HFS temp folder	The directory prefix where any HFS temporary files will be created by ChangeMan. These files are created when editing a file prior to staging back into the package, for example, and are cleaned up automatically.
VSAM master file	The Dataset name of the Package, Component, Delay, SER#PARM and Impact analysis files with which ChangeMan was started. (Display Only).
Package master	Displays the data set name of the package master for this ZMF instance.
Cpnt mstr (short	Displays the (short) data set name of the component master VSAM KSDS file for this ZMF instance. This file contains components with names of 8 characters or less (including HFS components).
Cpnt mstr (long)	Displays the (long) data set name of the component master VSAM KSDS file for this ZMF instance. This file contains components with names longer than 8 characters
Delay file	Displays the data set name of the delay file for this ZMF instance.
Ser#parm	Displays the reference table of application TCP/IP addresses and port numbers for this ZMF instance.
Impact analysis	Displays the data set name of the impact analysis LDS file for this ZMF instance.
Email server	If you set **NOTIFICATION VEHICLES: EMAIL ===> YES** on the **Global Parameter - Part 3 of 7** (CMNGGP03) panel, type the SMTP email server name or IP address for your email system. If you enter an email server name, it is parsed to establish a default domain name for email approver notifications. Example: Email server: mail.mysite.com Default domain name: mysite.com

Field	Description
Email server	Enter the SMTP email server name (or IP address) for the EMAIL approval vehicle, if used. This is the email server name ChangeMan will use to find the email server used at your site. The port number is optional. If omitted, ChangeMan will use port number 25, which is the default for most email servers. NOTE: the email server name is used to determine the domain name for email addresses associated with the internal email system used at your site. The default domain name is considered to be the email server name minus the first 'node'. For instance, if the email server name is 'mail.mysite.com', then the default domain name would be 'mysite.com'. This domain name will be appended to any user names define with an EMAIL notification vehicle in the application approval definition which do not contain a fully qualified email address (i.e. the user name are not appended with '@xxxxx.xxx') Refer to the approval notification setup instructions in application administration. If you specify an IP address here rather than a server name, you cannot use default domain names in your approval lists. For the SERNET notification vehicle, you must specify an IP address and port number. The default domain name for approval email addresses is defined in the ECP configuration. EMAIL SERVER: mail.mysite.com PORT NUMBER: 00025 (default domain name = mysite.com)
Port	Type the port number of the SMTP email server. If omitted, the port defaults to 00025.

8 When you finish entering information on the **Global Parameters Part 8 of 8** panel, press **Enter**. The **Global Parameters Part 8 of 8** panel (CMNGGP08) is displayed.

```
CMNGGP08                Global Parameters - Part 8 of 8
Command ===>_____________________________________________________

Job statement information:
   //CMNSTART JOB , 'ACCOUNT INFO'                                 
   //             CLASS=A,MSGCLASS=X                               
   //* JOBCARD from Global Parameters - Part 8 of 8                
   //* SERT8813 - Q001                                            

   The job statements will be used when package installation jobs are built
   at freeze time.  The job name will change to reflect package and install
   transaction numbers.  Job statements can be overridden at the Application
   Administration "PARMS" option and the Global Administration DB2 option.
```

This table describes the fields on the **Global Parameters Part 8 of 8** panel. Global parameters are generated after you press Enter.

Field	Description
Job statement information	Enter standard JOB card information which will serve as a model when you create an application.

Defining Library Types And Staging Library Attributes

A library type definition sets processing rules for the components stored under that library type. The definition also sets the data set attributes for the package staging library that is allocated for the library type. The Global Administrator defines the library types that are available to applications.

Global administration contains library types for all unique component types and processing requirements that might be required in any application. Library types can be changed at the application level, but they should be standardized on global definitions to simplify administration maintenance.

To define global library types, follow these steps:

1 On the **Update Global Administration Options** menu (CMNGAMN1), type 2 on the Option line and press Enter. The **Global Library Types Part 1 of 2** panel (CMNCGLT0) is displayed.

The first time you access this panel to define global library types, the panel is empty. This is an example of the panel after library types are entered.

```
CMNCGLT0               Global Library Types Part 1 of 2       Row 1 to 7 of 7
Command ===>_____________________________________________ Scroll ===> CSR

     Lib                                        Order Lke Seq Defer Target Sel
     type Description                         +                     type   Opt
___  CLS  CLIST                                0     C   ___   Y   _____  ___
___  JCL  JCL Library Type                     0     P   ___   Y   _____  ___
___  LCT  Linkedit Control Cards               0     P   ___   Y   _____  ___
___  LST  Listing                              0     P   ___   Y   _____  ___
___  NCL  NCAL subroutine load library         0     N   ___   Y   _____  ___
___  OBJ  Object module library                0     O   ___   Y   _____  ___
___  PKG  DB2 Bind Package Commands            0     P   ___   Y   _____  D
****************************** Bottom of data ********************************
```

The following table describes the fields on the **Global Library Types Part 1 of 2** panel.

Field	Description
Line Command	Enter a one-character to the left of a panel row. S Select to see the next panel for this library type. I Insert a blank library type row. R Repeat an existing library type row. D Delete an existing library type row.

Field	Description
Lib type	Enter a three character library type. The following library types are defined and reserved by ChangeMan ZMF . These lib types must have the following attributes: Like-types are defined in panel 2 of 2 **CMNCGLT1** CPY Copybooks - Requires like-copy, DCB must be RECFM=F/FB, LRECL=80 CTC Control Cards - Requires Like-PDS. DCB must be RECFM=F/FB, LRECL=80. DOC Documentation or text files- Requires Like-PDS. DCB must be RECFM=F/FB/V/VB. JCL Job Control Language - Requires Like-PDS, although libraries with this type are included in Impact Analysis JCL relationships. DCB must be RECFM=F/FB, LRECL=80. LCT Link Edit Control Cards - Requires Like-PDS. DCB must be RECFM=F/FB, LRECL=80. LOD Load Modules - Requires like-load. DCB must be RECFM=U, LRECL=0. LST Compiler Listings - Requires Like-PDS. Cannot be explicitly staged; however they can be browsed. DCB must be RECFM=F/FB, LRECL=80, BLKSIZE=23440 PRC Cataloged JCL Procedures or PROCS - Default to Like-PDS and are included in Impact Analysis JCL relationships. DCB must be RECFM=F/FB, LRECL=80 SRC Source code - Requires like-source. DCB must be RECFM=F/FB, LRECL=80
Description	Enter freeform text describing library type.
Order	Enter a number that will determine the order the Lib type list is displayed to users by default. Valid values are 0 to 65535. The display order option must be enabled in global parameters for the display order number to take effect.

Field	Description
Lke (like type)	Type a one-character LIKE code to define behaviors and characteristics of a library type. S – Like-SRC – Components in like-source library types are staged through a batch job defined by a Language and Procedure assigned to the component to create a component in a like-load library type. Every like-source library type must have a TARGET TYPE in its Library Type Definition. There is a source-load relationship between every like-source component and a like-load component. Members in like-source libraries are analyzed for Impact Analysis copybook relationships. C – Like-CPY – Components in like-copy library types are not processed through a procedure by stage. Like-copy libraries are included in SYSLIB concatenations for copybook libraries. L – Like-LOD – Components in like-load libraries are assumed to be the product of a stage procedure performed on a like-source component. Like-load libraries are included in SYSLIB concatenations for load libraries. N – Like-NCAL – NCAL load subroutines. Once staged they are concatenated in the SYSLIB for links within the same package (if the library type is present in the package). O – Like-Object – Object code subroutines. Once staged they are concatenated in the SYSLIB for links within the same package (if the library type is present in the package). P – Like-PDS - Components in Like-PDS library types are not processed through a procedure by stage. Like-PDS libraries are not included in SYSLIB concatenations for copybook or load libraries. Members in Like-PDS libraries are not analyzed for Impact Analysis relationships. Blank – Like-Other – If you leave the LIKE field blank in a Library Type Definition, the type is referred to as "like-other". Components in like-other library types are staged through a batch job created from an ISPF skeleton named CMN$$xxx where xxx is the like-other library type. Code like-other skeletons from a model named CMN$$OTH delivered in the product. You must also customize skeleton CMN$$CKO to check out components in a like-other library type. Search CMN$$CKO for "OTHER" to see instructions in the skeleton comments. **Note:** Like-other libraries are not analyzed for Impact Analysis relationships. Like-other components are not analyzed by Audit.

Field	Description
Seq (library sequence)	Type a numeric value from 001 to 255 for like-copy like-load library types. Sequence number influences two functions: ■ In build processing, sequence numbers that are assigned to like-copy library types determine the order of compile SYSLIB library concatenations, sequence numbers that are assigned to like-object, like-NCAL, and like-load library types determine the order of link edit SYSLIB library concatenations. ■ In audit auto-resolve, sequence numbers that are assigned to like-source library types determine the order that stage and recompile jobs are submitted for file-tailoring, and sequence numbers that are assigned to like-load library types determine the order that relink jobs are submitted for file-tailoring. Sequence numbers can have a numeric value from 001 to 255 or blank, and there is no edit for unique values. Blank sequence numbers sort ahead of numeric values. When sequence numbers are blank, or when the same sequence number is assigned to library types with same like-type, the SYSLIB or audit auto resolve order is determined by how the library types are stored on the package master, which cannot be controlled by the administrator.
Defer	Y Defer allocation of the staging library for this types until the fist component of the type is staged or checked out. N Allocate the stage library for this type when the change package is created, even though there may never be any members of this library type in the package. **Caution!** A 'N' setting will always allocate a stage dataset even though that type may not be used.
Target Type	Type a like-load, like-object, or like-NCAL target library type for each SRC or Like-SRC library type.
Sel Opt	Use this field to associate a library type with a ChangeMan ZMF selectable option that you have licensed. The behavior of the library type may require further definition in administration panels or ISPF skeletons. I=IMS D=DB2

ChangeMan ZMF sorts the library entries on the panel in ascending alphanumeric sequence by LIB TYPE before it redisplays the panel.

2 For each library type on the **Global Library Types Part 1 of 2** panel you must complete a second panel of information. Type S in the line command for a library type and press Enter. The **Global Library Types Part 2 of 2** panel (CMNCGLT1) is

displayed. The first time you access this panel for a library type, the panel is empty. This is an example of the panel after entering information for library type CPY.

```
CMNCGLT1               Global Library Types Part 2 of 2
Command ===> ____________________________________________________

Library type: CLS -  CLIST
Like value:   C     Defer value:   Y

Staging dataset attributes:
 Generic unit name  . . . . . SYSDA    (Generic group name or unit)
 Volume serial  . . . . . . . ______   (Required if generic unspecified)
 Space units  . . . . . . . . TRK      (trk, cyl or blk)
 Primary quantity . . . . . . 3        (In above units)
 Secondary quantity . . . . . 1        (In above units)
 Directory blocks . . . . . . 5
 Record format  . . . . . . . FB
 Record length  . . . . . . . 80
 Block size . . . . . . . . . 27920
 Data set type  . . . . . . . PDS      (library, pds, hfs or blank)
 Extended attributes  . . . . ___      (no, opt or blank)
 Save staging version . . . . NO       (y/n/o) o=optional

Enter "/" to select option:
  __ Checkout component description
  __ Checkout component activity file   Library type . . . . _____
```

The following table describes the fields on the **Global Library Types Part 2 of 2** panel.

Field	Description
Generic unit name	Type the DASD generic group or unit device name to be used for allocating staging libraries for this library type. This field may be left blank if the VOLUME SERIAL field is used.
Volume serial	Type the DASD volume serial number where stage libraries are to be allocated for this library type. This field may be left blank if the GENERIC UNIT NAME field is used.
Space units	Type the units to be used for the primary and secondary space allocations for staging libraries for this library type. TRK Allocate staging datasets in tracks. CYL Allocate staging datasets in cylinders. BLK Allocate staging datasets in blocks.
Space Allocations	Enter the primary space, secondary space, and directory block allocation to be used for the staging libraries for this library type. Use MINIMUM space allocations, especially the PRIMARY QUANTITY. ChangeMan ZMF dynamically reallocates stage libraries if extents or directory blocks are exhausted as the change package grows. Unused space in PDS stage libraries is freed when the change package is frozen. ChangeMan ZMF does not automatically compress stage libraries, but you can compress stage libraries for a package with the ZP Package List command.

Field	Description
Record format	Type the staging library record format for this library type. Valid values include: F, FA, FB, FBA, FBM, FM, FS, V, VA, VB, VBA, VBM, VM, U Legend: F - Fixed length records V - Variable length records U **-** Undefined format records B - Blocked records S - Standard blocks A - ASA printer control characters M - Machine code printer control characters
Record length	Type the logical record length for components in this library type.
Block size	Type the staging library block size for this library type. Type 0 to let SMS calculate the best block size for the storage device.
Dataset type	Leave blank for PDS staging library, or type one of the following:
	LIBRARY — Enter dataset type of LIBRARY to allocate a Partitioned Data Set Extended (PDSE). Except for BLKSIZE, all other DCB attributes will be ignored.
	PDS — Enter dataset type of PDS or leaving the field blank to allocate a standard Partitioned Data Set (PDS).
	HFS — HFS Directory
Extended attributes	NO — Data set cannot have extended attributes or reside in EAS. OPT — Data set can have extended attributes and reside in EAS. blank — Use default based on data type.
Save staging versions	Select to have prior versions of a component in a change package saved when it has been updated in the staging library. Prior versions can be displayed and acted on using the version control function within the package staging and query functions. This value has no effect if this facility is not installed. See "Staging Versions" on page 43
	YES — Prior versions for this application library type must always be defined to save prior staging versions.
	NO — Prior versions are not saved for this application library type.The application library type can never be defined to save staging versions.
	OPT — Saving prior versions is optional for this library type and is defined by the application admin. for each application. The application administrator can define the library type to always save staging versions, never save staging versions, or prompt the developer to make a choice
Checkout component description	Select this option to allow description updates. This will copy the Component General Description from the component master to the change package when a component is checked out. Allow developers to create or update the Component General Description through a change package.type. Users update the description by entering 'ED' on the "Stage:Package Driven" component list. If not selected developers are prevented from creating or updating the Component General Description in a change package. The Component General Description can always be created or updated through Application Administration.

Field	Description
Checkout component activity file	This optional file, a free-form record of a component's activity, is maintained as a separate component within a change package, and a separate library type within ChangeMan. When a component is checked out, its Activity File will automatically be checked out with it. Users can then update activity records by entering 'EA' on the "Stage: Package Driven" component list. Select this option to activate this feature.
Library type	If 'YES' is entered above, enter the library type (3 characters) that will contain the Activity File for this component. Each component type can have its own Activity File, which must be defined as a Library type, with Baseline and (if necessary for this component) Promotion and Production libs. **NOTE:** Establish Activity Files as LIKE PDS in Staging Libraries (1 of 2).

3 When you finish updating fields on the **Global Library Types Part 2 of 2** panel, press Enter to return to the **Global Library Types 1 of 2** panel.

4 When you finish updating library type definitions on the **Global Library Types Part 1 of 2** panel, press PF3, or type End and press Enter, to store the global library type definitions in the ChangeMan ZMF package master file.

Defining Language Names

You must provide ChangeMan ZMF with all of the language names that will be used in applications in this environment. The languages on this list are paired with skeleton names to create the global procedure list in the next section of this chapter.

Application administrators select languages from this list when applications are configured.

To define global languages, take the following steps:

1 Select Option 3 on the **Update Global Administration Options** menu (CMNGAMN1). The **Global Language Names** panel (CMNGGLNG) is displayed.

The first time you access this panel to define global languages, the panel is empty. This is an example of the panel after languages are entered.

```
CMNGGLNG                    Global Language Names          Row 1 to 11 of 11
Command ===> _____________________________________________   Scroll ===> PAGE

     Language Order
___  ASM      0
___  C        0
___  COBOL    0
___  COBOL2   0
___  JAVA     0
___  JCLGEN   0
___  LINK     0
___  MFS      0
___  PLI      0
___  REX      0
___  SQL      0
```

The following table describes the fields on the **Global Language Names** panel.

Column	Description
Line Command	Type a line command to the left of a panel row. I Insert a blank library type row. R Repeat an existing library type row. D Delete an existing library type row.
Language	Type the language name for the compile procedure. These language names are hard coded in stage skeletons in ISPF variable LNGNAME. If you use another language, analyze the PROCEDURE skeleton and other stage skeletons you intend to use to see if your language will require skeleton customization. ASM Assembler C C (not HFS) COBOL OS/VS COBOL COBOLE IBM Enterprise COBOL COBOL2 COBOL2 CPP IMSFMT IMS MFS Format PLI PLI/I CMNPLIE PLIE IBM Enterprise PL/I SASC SAS C SQL DB2 SQL

2 Type a new language or update an existing language on the panel. Use the line commands to Insert (below), Delete, or Repeat a panel row.

3 Press PF3, or type End on the Command line and press Enter, to save your updates.

Defining Compile Procedures

Compile procedures are required when you stage a like-source package component.

Use this option to enter all the procedures that are needed to stage like-source components in all applications on this ZMF instance.

Application administrators select compile procedures from this list when applications are configured.

Even if your applications do not contain any like-source components, you must enter a compile procedure.

To define global compile procedures, take the following steps:

1 Select Option 4 from the **Update Global Administration Options** menu (CMNGAMN1). The **Compile Procedure List** panel (CMNPRCNM) is displayed.

The first time you access this panel to define global procedures, the panel is empty. This is an example of the panel after procedures are entered.

```
CMNPRCNM                    Compile Procedure List           Row 1 to 5 of 5
Command ===> _____________________________________________Scroll ===> CSR

     Language  Procedure  Description                                  Order
____ ASM       CMNASM     Assembler build procedure                    0
____ C         CMNCEE     C build procedure                            0
____ COBOL2    CMNCOB2    COBOL2 build procedure                       0
____ PLI       CMNPLI     PL/I build procedure                         0
____ SQL       CMNSQL     Translate compile link SQL Stored Proc       0
****************************** Bottom of data ********************************
```

The following table describes the fields on the **Compile Procedure List** panel.

Column	Description
Line Command	Type a line command to the left of a panel row. I Insert a blank library type row. R Repeat an existing library type row. D Delete an existing library type row.
Language	Type * to choose a Language from the Language Selection List.
Procedure	Type the procedure name. The procedure must exist in one of the concatenated skeleton libraries. The procedures listed below are delivered in the SKELS library. You can create custom procedures. **NOTE:** If you create a custom procedure, do not use a numeric or special character in the fourth position of the procedure name. CMN$$OTH Stage "Other" library type CMNASM Stage assembler source CMNASMOB Stage assembler source to object CMNASM2L Stage ASSEMBLER source with double link edit (batch / CICS) CMNCEE Stage C/C++ (not HFS) source CMNCEEOB Stage C/C++ (not HFS) source to object CMNCOBE Stage IBM Enterprise COBOL source CMNCOBE2 Stage IBM Enterprise COBOL source with double link edit (batch / CICS) CMNCOBOB Stage OS/VS COBOL source to object CMNCOBOL Stage OS/VS COBOL source CMNCOB2 Stage COBOL2 source CMNCO2OB Stage COBOL2 source to object CMNDBDGN Stage IMS DBD source CMNJAR Create Java archive CMNJAVA Stage Java source CMNMAPGN Stage BMS MAP source CMNMFSGN Stage IMS MFS source

Column	Description
Description	Type the skeleton procedure description, which can be up to 44 alphanumeric characters.
Order	Enter a number to determine the order in which this list is displayed to users by default. Valid values are 0 to 65535. The display order option must be enabled in global parameters for the display order number to take effect.

2 On the **Compile Procedure List** panel, use a line command to Insert a new procedure row, or update an existing row on the panel.

a On the **Compile Procedure List** panel, type * (asterisk) in the Language column and press Enter to display the **Language Selection List** panel.

b On the **Language Selection List** panel, type line command S to select one or more languages. Then press Enter to return to the **Compile Procedure List** panel where the language or languages you selected are added.

c On the **Compile Procedure List** panel, if you know the name of the skeleton that you want to pair with the Language name, type the skeleton name in the Procedure field. Otherwise, type * (asterisk) in the Procedure field and press Enter to display the Procedure Selection List, which is a list of the members in the skeleton libraries concatenated in your ZMF started procedure.

d On the **Procedure Selection List** panel, type line command S to select a skeleton. Then press Enter to return to the **Compile Procedure List** panel where the Procedure field is populated with your selection.

e On the **Compile Procedure List** panel, type a description for the Language / Procedure combination.

f On the **Compile Procedure List** panel, continue to add or complete Language / Procedure rows until you have defined all procedures that will be needed in all applications.

3 On the **Compile Procedure List** panel, press PF3, or type End on the Command line and press Enter, to save your updates.

Defining Reason Codes

Use this option to enter all available reason codes and descriptions for unplanned permanent or temporary change packages. When creating this change package, the user must choose a code from the Reason Code List.

To define reason codes, take the following steps

1 Select Option 5 on the **Update Global Administration Options** menu (CMNGAMN1). The **Reason Code List** panel (CMNRSNCD) is displayed.

```
CMNRSNCD                        Reason Code List              Row 1 to 5 of 5
Command ===> _____________________________________________Scroll ===> PAGE

     Code Description                                    Order
____ 001  Reason code 001                                195
____ 010  Reason Code 010                                16384
____ 020  Reason Code 020                                16384
____ 030  Reason Code 030                                16384
____ 040  Reason Code 040                                16384
****************************** Bottom of data ********************************
```

2 Create or update the rows of the list, and type the End command to save your changes. The following tables describes the field on the **Reason Code List** panel.

Column	Description
Code	Type the reason code in alphanumeric format, for example, E01 or 01E.
Reason description	Type the reason description with a maximum of 44 alphanumeric characters.
Order	Enter a number to determine the order in which this list is displayed to users by default. Valid values are 0 to 65535. The display order option must be enabled in global parameters for the display order number to take effect.

Defining Sites

A site specifies target information for a promotion process or an install process. A site may be local or remote.

Site	Description
Local Site	A target that is on the same LPAR as the development ChangeMan ZMF instance. A target on a different LPAR from the ChangeMan ZMF instance can be defined as a local site if it shares DASD and catalogs with the ChangeMan ZMF development LPAR, and no DB2 binds are required.
Remote Site	A target that is on a different LPAR than the development ChangeMan ZMF instance that does not share DASD and catalogs, or that requires DB2 binds.

You must define a site for each production ChangeMan ZMF environment that is a target for installs. Every promotion level definition must be associated with a site.

Perform the following steps to define a site:

1 On the **Global Administration Options** menu (CMNGAMN1), select Option 6. The **Global Site List Part 1 of 2** panel (CMNGRST1) is displayed.

The first time you access this panel to define global sites, the panel is empty. This is an example of the panel after sites are entered.

```
CMNGRST1                  Global Site List Part 1 of 2          Row 1 to 2 of 2
Command ===> _____________________________________________________Scroll ===> PAGE

     Site Name Order
____ C001      0
____ C002      0
****************************** Bottom of data ********************************
```

The following table describes the fields on the **Global Site List Part 1 of 2** panel.

Field	Description
Line command	Type a line command to the left of a panel row. S Select to see the next panel for this site name. I Insert a blank site name row. R Repeat an existing site name row. D Delete an existing site name row.
Site name	Enter all production sites where ChangeMan ZMF is installed. The sites are displayed to the user during creating, updating or querying a change package.
Order	Enter a number to determine the order in which this list is displayed to users by default. Valid values are 0 to 65535. The display order option must be enabled in global parameters for the display order number to take effect.

The order of site names on the **Global Site List Part 1 of 2** panel (CMNGRST1) is not significant.

2 Type S in the line command field for the site and press Enter.

If the ChangeMan ZMF instance you are using to make this update is DP (Development/Production) environment, the **Site Information Part 2 of 2** panel (CMNGRST2)is displayed.

```
CMNGRST2            C001 Site Information - Part 2 of 2
Command ===> ____________________________________________________

ChangeMan ZMF subsytem id  . . 6
Logical unit name  . . . . . . SYSA                                  +
JES node name  . . . . . . . . C001
Default unit name  . . . . . . SYSDA    (Generic disk unit)
Default volume serial  . . . . _______
ChangeMan ZMF delay file . . . CMNTP.S8.CMNDELAY
Ser#parm . . . . . . . . . . . CMNTP.S813.C8.TCPIPORT
Prd staging model dsname . . . CMNTP.S8.????.STG8.#######
Prd staging model zFS  . . . . /cmntp/s8/????/stge/#######/d         +
Transmission vehicle . . . . . IEBCOPY  (IEBCOPY or Other)
Time difference  . . . . . . . +0000    (+/- HHMM)
IP address or DNS name . . . . _____________________________________ +
Port . . . . . . . . . . . . . ______

Site job statement information:
   //CMNSTART JOB ,'AACOUNT INFO',
   //             CLASS=A,MSGCLASS=X
   //* JOB CARD FROM GLBL SITE INFO - PART 2 OF 2
   //* SITE C001 JOB STATEMENTS
```

The following table describes the fields on these panels.

Field	Description
ChangeMan ZMF subsystem id	Type the subsystem ID of the target ZMF instance for this site. Not required in an A environment, and not displayed on the panel.
Logical unit name	Type the LOGICAL UNIT OR SYSTEM NAME used in Global Administration Parameters. **Note:** The Logical Unit Name for remote site definitions is 256 characters. However, delivered ZMF skeleton coding for DMBATCH SYSIN input effectively limits the usable length to 63 characters. Skeleton customization can expand the SYSIN input to more than 63 characters.
JES node name	If you are defining a remote site, type the logical unit or system name (SMF ID) that is used by your transmission software to locate the target site.
Default unit name	Type the generic device name for DASD where staging libraries, install JCL libraries, and other package distribution data sets are dynamically allocated. This field is optional if the Default Volume Serial field is used.
Default volume serial	Type the DASD volume serial number where staging libraries, install JCL libraries, and other package distribution data sets are dynamically allocated. This field is optional if Default Unit Name field is used. This field is required if the Default Unit Name field is blank.
ChangeMan ZMF delay file	Type the fully qualified data set name (no quotes) for the VSAM Delay file at the target site. (Not applicable for A environments.)
Ser#parm	Enter the fully-qualified dataset name for the SER#PARM data set for installs (apostrophes not needed). (Not applicable for A environments.)

Field	Description
Prd staging model dsname	Enter the model dataset name for staging libraries in the site environment. Four question marks (????) in the dataset name will be replaced with the appropriate application mnemonic. Seven pound signs (#######) will be replaced with the change package number. This identifies the libraries for each site to the development site. For rules for coding a staging model path name, see the field description for 'Staging Library Model Dataset Name' on Global Parameters - part 7 of 8 panel (CMNGGP07).
Prd staging model zFS	Enter the model zFS directory for staging libraries in the site environment. Four question marks (????) in the zFS file name will be replaced with the appropriate application mnemonic. Seven pound signs (#######) will be replaced with the change package number. This identifies the zFS directory for each site to the development site.
Transmission vehicle	Select the data transmission vehicle ChangeMan ZMF will use to transmit messages, change packages, and other data between the development system and the other sites. This variable will be used in file tailoring of site promote and install jobs. Type IEBCOPY if you are defining a local site and shared DASD. Type OTHER if you are defining a remote site and the transmission vehicle is XCOM, BDT, etc. This will require skeleton file tailoring of the site promote and install jobs.
Time difference	The time difference parameter is used to verify that the package install date and time that you enter when you create a package is a time that has not already passed at a remote site. Enter the time difference between the site you are working on and the development site where change packages are created. Enter the hours and minutes in the form +HHMM if the site time is ahead (east) of the development site or -HHMM if the site time is behind (west) the development site. The default time difference is +0000.
IP address or DNS name	Type a dotted decimal IP address or a text DNS up to 16 characters long if you are defining a site that is a P instance or another DP instance. IP ADDRESS OR DNS NAME is required to initiate package backout and revert for P instances from the D or DP site where the package originated. As a simple rule, always make an entry in this field when it appears on a global site definition panel. **NOTE:** IP ADDRESS OR DNS NAME and PORT on this panel are not used by SERNET to create the #SERx member in the SER#PARM library. SERNET uses the location of the started task and specified SERNET keyword options to build the SER#PARM member.
Port	Enter the port number of the remote site started task for remote connection to this site if you made an entry in the IP ADDRESS OR DNS NAME field. As a simple rule, always make an entry in this field when it appears on a global site definition panel.
Site job statement information	Enter up to 4 lines of standard valid job card information. ChangeMan ZMF will overlay the JOB name you specify with the JOB name it submits for install jobs.

3 When you finish updating fields on the **Site Information Part 2 of 2** panel, press Enter to return to the **Global Site List Part 1 of 2** panel.

4 When you finish updating site information on the **Global Site List Part 1 of 2** panel, press PF3 or type End and press Enter to store the site definitions in the ChangeMan ZMF package master file.

NOTE If you want to use a DP environment like an A (ALL) environment without defining production libraries:

1 Define a Global Site (=A.G.6) with:
   a **Site Name** that is the same as the **Site Node Name** in Global Parameters, and...
   b L**ogical Unit Name** that is the same as the **Logical Unit Or System Name** in Global Parameters.
3 Define this site as the only site in each application in Application Administration (=A.A.8).
4 Define each baseline library type with **Install In Prod** set to **N** in every application in Application Administration (=A.A.B).

With this configuration, several jobs are executed at package installation that perform no function other than to record completion in the package master and/or trigger submission of the next installation job.

Locking or Unlocking Application Definitions

As the Global Administrator, you can lock or unlock application definitions with the **Lock/ Unlock Applications** panel. When an application is locked, the Application Administration Options cannot be used to update the application definition, and application administration panels are displayed in browse mode.

The only functions an application administrator can execute when an application is locked are:

- Update the Global Notification File if that function is allowed by the global administration parameters.
- Submit reports from the **Report Selection List** panel.
- Submit the Baseline Analyzer Report and the Link Date Report.

Application Administration Options also display in browse mode when another administrator is updating an application. If that administrator's session is interrupted, the application status may display IN USE, even though no one is currently updating the application. The Global Administrator must unlock the application to make the application definition available for update.

To lock, unlock, or reset an application definition:

1 On the **ChangeMan Primary Option Menu** (CMN@PRIM), select Option A and press Enter. The **Administration Options** menu (CMNADMON) is displayed.

2 On the **Administration Options** menu, select Option G and press Enter. The **Update Global Administration Options** menu (CMNGAMN1) is displayed.

3 On the **Update Global Administration Options** panel, select Option 7 (application parameter locks) and press Enter. The **Lock/Unlock/Reset in use** panel (CMNGBULP) is displayed.

```
CMNGBULP                    Lock/Unlock/Reset in use           Row 1 to 5 of 5
Command ===> _____________________________________________ Scroll ===> CSR

  Appl  Description                                  Status
_ C001  C001 empty application
_ C009  C009 empty application
_ DEM   DEM application                              LOCKED
_ DEMO  DEMO application                             RESET
_ DEMX  DEMX application
****************************** Bottom of data ********************************
```

The following table describes the fields on the **Lock/Unlock/Reset in use** panel.

Field	Description	
Line Command	Type a line command to change the application status. **L** Lock the application to prohibit changes to application administration. **U** Unlock the application to allow changes to application administration. **R** Reset the "in use" indicator.	
APPL	Displays application mnemonics defined to ChangeMan ZMF.	
Description	Displays the application descriptions.	
Status	Indicates if the application is available for update.	
	LOCKED	The Global Administrator has locked the application. Application administration cannot be changed until the Global Administrator unlocks the application. Application administration panels are displayed in browse mode.
	UNLOCKED	The Global Administrator has just unlocked the application. Application administration is available for update.
	RESET	The Global Administrator has just reset the "in use" indicator. Application administration is available for update.
	IN USE	Another administrator is currently updating application administration. Application administration panels are displayed in browse mode.
	Blank	Application administration is available for update.

4 On the **Lock/Unlock/Reset in use** panel, type L (lock), U (unlock), or R (Reset) in the line command for an application and press Enter. The STATUS field is updated to LOCKED, UNLOCKED, or RESET. Application availability is changed immediately.

5 Press PF3, or type End on the Command line and press Enter to exit the **Lock/Unlock/Reset in use** panel. You cannot CANCEL changes you made.

High Level Language Exits

This function allows you to update the High Level Language functional exit definitions. You can choose to see a table of all available definitions or to see those for a specific function only. Locate on the internal exit name is available in all table displays.

1 On the **ChangeMan Primary Option Menu** (CMN@PRIM), select Option A and press Enter. The **Administration Options** menu (CMNADMON) is displayed.

2 On the **Administration Options** menu, select Option G and press Enter. The **Update Global Administration Option** menu (CMNGAMN1) is displayed.

3 Select Option 8, the **HLL Exit Definition - Function Selection** panel (CMNHLLMM) is displayed.

```
CMNHLLMM           HLL Exit Definition - Function Selection
Option ===> ____________________________________________

1  All             Full list

2  Build           Component checkin, build, recompile, relink, delete
3  Package Create  Initial create of a package
4  Package Update  Subsequent update of package attributes
5  File Tailoring  Define customized ISPF variables for file tailoring
6  Checkout        Component Checkout from baseline/promotion
7  Promote/Demote  Promotion and demotion of components
8  Audit           Audit job submission and audit process
9  Freeze          Package freeze and selective unfreeze/refreeze
A  Approve/Reject  Package approve and reject
R  Revert/Backout  Package revert and backout
U  Scratch/Rename  Utility functions

Z  Modify          Issue Reload, Detach, or Attach modify commands
```

The following table describes the fields on the **HLL Exit Definition - Function Selection** panel.

Field	Description
The valid options are:	
1	To see all definitions
2	To see those for the Build function only
3	To see those for the Package Create function only
4	To see those for the Package Update function only
5	To see those for the File Tailoring function only
6	To see those for the Checkout function only
7	To see those for the Promote/Demote function only
8	To see those for the Audit function only
9	To see those for the Freeze function only
A	To see those for the Approve/Reject function only
R	To see those for the Revert function only
U	To see those for the Scratch/Rename function only
Z	To issue HLLX 'modify' commands

1 You can select option 1 from HLL Exit Definition - Function Selection panel (CMNHLLMM) and press enter. The **HLL Exit Definition** menu for all definitions (CMNHLLMN) is displayed, see below.

Use this table display panel to update definitions for each High Level Language exit. Note that, once changes have been saved, you must reload the active exits table to have them take effect (see the HLL Getting Started Guide for the details and/or use option Z to reach panel CMNHLLMC to reload, attach or detach).

```
CMNHLLMN                      HLL Exit Definition          Row 1 to 12 of 199
Command ===> ____________________________________________________ Scroll ===> CSR

 HLL procedure name  . . SERS2HLL

Internal External  + Active  1=LE    Description  +
  Name     Name              2=REXX  Debug Userids  +
-------------------------------------------------------------------------------
APRV00XM APRV00XM     YES     2       pre  service call for approve
 Debug:  _________    NO      2       ____________________________________
-------------------------------------------------------------------------------
APRV01XM _________    NO      2       post service call for approve
 Debug:  _________    NO      2       ____________________________________
-------------------------------------------------------------------------------
APRV0101 _________    NO      2       list of packages to be approved
 Debug:  _________    NO      2       ____________________________________
-------------------------------------------------------------------------------
APRV0102 _________    NO      2       approve/reject option menu
 Debug:  _________    NO      2       ____________________________________
-------------------------------------------------------------------------------
APRV0103 APPV0103     YES     2       approver entity list
 Debug:  _________    NO      2       ____________________________________
-------------------------------------------------------------------------------
APRV0004 _________    NO      2       pre  checkoff comments
 Debug:  _________    NO      2       ____________________________________
-------------------------------------------------------------------------------
APRV0104 _________    NO      2       post checkoff comments
 Debug:  _________    NO      2       ____________________________________
-------------------------------------------------------------------------------
APRV0105 _________    NO      2       reject reasons entity selection
 Debug:  _________    NO      2       ____________________________________
-------------------------------------------------------------------------------
APRV0006 _________    NO      2       pre  reject reasons text
 Debug:  _________    NO      2       ____________________________________
-------------------------------------------------------------------------------
APRV0106 _________    NO      2       post reject reasons text
 Debug:  _________    NO      2       ____________________________________
-------------------------------------------------------------------------------
AUDT00AR _________    NO      2       pre  autoresolve job submission
 Debug:  _________    NO      2       ____________________________________
-------------------------------------------------------------------------------
AUDT01JB _________    NO      2       post all audit job processing
```

The following table describes the fields on the **HLL Exit Definition - Function Selection** panel.

Field	Description	
Use this table display panel to update definitions for each High Level Language exit. Note that, once changes have been saved, you must reload the active exits table to have them take effect (see the product documentation for details). There are two lines per exit definition. The second line (denoted 'Debug:') applies only to those users listed under 'Debug Userids'. The first line applies to all other users. You can make as many changes as you wish while moving through the table. Changed entries are written to the package master when you use the end(pf3) command. You may expand the longer fields (such as Description) by placing the cursor on the field and issuing the zexpand command(pf4).		
Primary Command	Cancel	cancel changes, exit.
	Locate	on internal exit name
	Refresh	cancel changes, re-display the table
	SETOFF	make all displayed entries inactive.
HLL procedure name	The name of the procedure member used by ChangeMan ZMF to start the HLL exit processing task.	
Internal name	The exit point names known to this ChangeMan ZMF instance.	
External name	The name of the program or REXX exec which will be executed when this exit point is invoked. You may specify different (or the same) names for the 'debug' exit and the standard exit.	
Active	The status of the exit point. Select Yes to show active. If the exit is not active no attempt to take it will be made by any client.	
LE/REXX	We need to know whether you are executing (1) a Language Environment supported program (e.g. COBOL, PL/1 etc.) or (2) a REXX exec.	
Description	256 bytes of free-form text which you can use to document what you are using this exit for.	
Debug Userids	Up to 10, comma separated, userids who will take the 'debug' version of this exit instead of the standard version.	

2 Select Option Z, the Modify option to issue Reload, Detach, or Attach modify commands.

```
CMNHLLMC                  HLL Exit MODIFY commands
Option ===> ____________________________________________________


1  Reload          Reload active HLL exit definitions
2  Detach          Stop HLLX
3  Attach          Start HLLX
```

The following table describes the fields and what they do on the **HLL Exit Modify commands** panel (CMNHLLMC).

Field	Description
The valid options are:	

1	**Reload** - Reloads active HLL exit definitions. This will issue a modfy command, the sylog will show similar to this:
	`S0429659 00000280  MODIFY SERSUPI2.SER2,CMN,RELOAD,HLLX`
	and SERPRINT will show
	`SER0850I Operator command: CMN,RELOAD,HLLX`
	then both will show similar to this:
	`CMN2485I CMNSTART HLLX active exit table has been reloaded.`
	`CMN2492I Start of HLLX active exits list:`
	`CMN2494I IntName  Typ Env  External Name  Debug Ids`
	`CMN2495I APRV00XM STD REXX APRV00XM`
	`CMN2495I APRV0103 STD REXX APPV0103`
	`...`
	`CMN2496I BULD00R0 DBG REXX CSRECOM2  USER015`
	`CMN2495I BULD01R0 STD REXX CSRECOMP`
	`CMN2493I End of HLLX active exits list.`

2	**Detach** - Stop HLLX. This will issue a modify command, the sylog will show similar to this:
	`MODIFY SERSUPI2.SER2,CMN,DETACH,HLLX`
	SERPRINT will show
	`SER0850I Operator command: CMN,DETACH,HLLX`
	then both will show:
	`CMN2482I CMNSTART Termination of HLL exit address space requested.`
	`CMN2483I CMNSTART Termination of HLL exit address space complete.`
	
	Note that attempts to execute functions with HLLXs defined will fail with the following message if HLLXs are defined for that function and HLLX is detached:
	
	`CMN1031A - This function relies on local exits which are currently unavailable. If problem persists contact Admin.`

3	**Attach** - Start HLLX. This will issue a modify command, the sylog will show similar to this:
	`MODIFY SERSUPI2.SER2,CMN,ATTACH,HLLX`
	`CMN2480I CMNSTART Waiting for HLL exit address space to initialize.`
	`$HASP100 SERS2HLL ON STCINRDR`
	`$HASP373 SERS2HLL STARTED`
	`CMN2481I CMNSTART Successfully connected to HLL exit address space.`
	SERPRINT will show
	`SER0850I Operator command: CMN,ATTACH,HLLX`
	`CMN2480I CMNSTART Waiting for HLL exit address space to initialize.`
	`CMN2481I CMNSTART Successfully connected to HLL exit address space.`
	then both will show:
	`CMN2492I Start of HLLX active exits list:`
	`CMN2494I IntName  Typ Env  External Name  Debug Ids`
	`CMN2495I APRV00XM STD REXX APRV00XM`
	`...`
	`CMN2496I BULD01R0 DBG REXX CSRECOM2  USER015`
	`CMN2493I End of HLLX active exits list.`

Field Names

This function allows you to change the default names displayed in panels and reports throughout the ChangeMan ZMF system. The panels will show the 'origin' values (what the field description is as shipped), and provides the ability to modify both the row name and column name

Follow these steps to access Field Names

1 On the **ChangeMan Primary Option Menu** (CMN@PRIM), select Option A and press Enter. The **Administration Options** menu (CMNADMON) is displayed.

2 Select option 9 from the **Update Global Administration Options** panel and press Enter. The **User Field Name Substitution** panel (CMNUFNSR) is displayed.:

```
CMNUFNSR                 User Field Name Substitution
Command ===> ____________________________________________

Row origin           Row name              Column origin     Column name
                     Row legend
Work request         NWRQ                  Work request      NWRQ
                     ____________________
Department           Version               Dept              Vers
                     ____________________
Requestor name       Main Developer        Name              Dvlp
                     ____________________
Requestor phone      Developer Phone       Phone             Ph#
                     ____________________
Release work request Release work request  Rls work request Rls work request
                     ____________________
Release department   Release department    Rls dept          Rls dept
                     ____________________
```

This function allows you to change the default names displayed in panels and reports throughout the Change Man system. The panels will show the 'origin' values (what the field description is as shipped), and provides the ability to modify both the row name and column name.

The following table describes the fields on the **HLL Exit Definition - Function Selection** panel.

Field	Description
Row Origin	The name used to name the row.
Row Name	Enter a substitute name for the row origin name
Row Legend	Enter a legend or description of what the field is to contain.
Column Origin	The name used to name the column.
Column Name	Enter a substitute name for the column origin name

Row names refer to the description which occurs down the left side of a panel, followed by leader dots and an entry field. For instance, a part of the 'package create' panel (CMNCRT0R) has these fields:

```
     Requester's name . . . . . . . REQNAME
     Requester's phone  . . . . . . REQPHNE
     Work request . . . . . . . . . WRKRQNO
     Department . . . . . . . . . . Z
     Package level  . . . . . . . . Z          (1. Simple 2. Complex ...
```

Column names refer to the description which occurs in panel column titles. For instance, in the 'package list' panel (CMNLIST3) the headings as supplied are:

```
Package   Sta Install Lvl Type    Work request Dept Promote Aud Creator
```

Enter End or PF3 to save changes.
Enter Cancel to exit without saving changes.
Enter just refreshes the panel.

NOTE Changes made to these field names only take effect when users start a ChangeMan session. To see the field name changes, refresh your ChangeMan session.

Global Component Options

In ChangeMan ZMF administration, you can assign three facilities to components based on component name:

- A general description, which is a 48 line by 72 character area for any text that you want to associate with a component
- A designated compile procedure, which is a fixed build procedure that ensures that the build for a component is performed consistently
- A security rule to restrict access to a component through ChangeMan ZMF by individuals or groups

These three component options are assigned by component name and library type. However, you can extend the scope of any of these options to groups of components that are related by a naming convention by using wild cards in the component name in the option definition.

A component option definition may exist in global administration, in application administration, or in both. A definition in application administration takes precedence over a definition in global administration.

NOTE Prior to ChangeMan ZMF 6.1, component options were entered in application administration, but since there was no application in the component master file key, the definition applied to all applications. When you migrate to ChangeMan ZMF 6.1 or higher from a version prior to Version 6.1, all of the existing application component options are converted into global component options. There is no behavior change with this conversion because when there is no option record at the application level, ChangeMan ZMF looks for the option at the global level.

Follow these steps to access the component options:

1 On the **ChangeMan Primary Option Menu** (CMN@PRIM), select Option A and press Enter. The **Administration Options** menu (CMNADMON) is displayed.

2 On the **Administration Options** menu, select Option G and press Enter. The **Update Global Administration Options** menu (CMNGAMN1) is displayed.

3 On the **Update Global Administration Options** panel, select Option C and press Enter. The **Global Component Options** panel (CMNCMPG0) is displayed.

```
CMNCMPG0                    Global Component Options
Option ===> ____________________________________________

A  Applications   Applications
G  General        General description information
P  Procedures     Designated compile procedures
S  Security       Security information
```

Component Applications

The Component Applications panel is used to restrict components to specific applications. Components may only be processed in the specified applications. If no entry is made, a component may be processed in any application. Leave both component name and component type blank to select from the list of components which are currently restricted.

To restrict components to specific applications:

1 On the **Global Component Options** panel (CMNCMPG0), select Option A and press Enter. The **Component Applications** panel (CMNCAPP1)is displayed.

```
CMNCAPP1                    Component Applications
Command ===> ____________________________________________

Component . . . . . ____________________________________________  +
                                  (Blank for all components)
Type  . . . . . . . ___           (Blank for all types)

Enter "/" to select option
  _ Mixed case
```

The following table describes the fields on the **Component Applications** panel

Field	Description
Component	Enter the component name or a pattern.
Type	Enter the component library type or a pattern.
Mixed case	By default, all fields are folded to upper case. However, if 'Mixed Case' option is set to YES then the component name is left as is and the case you enter will be processed.

On the **Component Applications** panel (CMNCAPP1) you can either input a component name, optionally with a trailing wildcard, and press Enter to search for a definition.

Either the short ISPF message of "NO INFORMATION FOUND" will be displayed, with a corresponding long ISPF message of "CMN5611I - No component application information found in the package master." if there is nothing found.

If found, then the **Component Applications List** panel (CMNCAPP0) will be displayed:

```
CMNCAPP0                  Component Applications List          Row 1 to 1 of 1
Command ===> ____________________________________________________ Scroll ===> CSR

  Name                                                              Type
_ COBOL2C1                                                        +  COB
****************************** Bottom of data ******************************
```

This entry can be deleted, or selected, and if selected, the **Component Applications List** panel (CMNCAPP2) will show the applications defined. Here you will be able to modify, create or delete definitions for selected component.

```
CMNCAPP2                  Component Applications List          Row 1 to 2 of 2
Command ===> ____________________________________________________ Scroll ===> CSR

Name:  COBOL2C1                                                             +
Type:  COB

     Appl
____ DEMO
____ DEMX
****************************** Bottom of data ******************************
```

The following table describes the fields on the **Component Applications List** panel:

Field	Description
Use this panel to list the applications to which a particular component will be restricted.	
Line Cmd	I Insert a new line R Repeat an existing line D Delete an existing line
Appl	Enter the application or a pattern to which the component will be restricted.

To update global component general information:

2 On the **Global Component Options** panel (CMNCMPG0), select Option G and press Enter. The **Global Component General Information** panel (CMNGENG1) is displayed:

```
CMNGENG1              Global Component General Information
Command ===> ____________________________________________

Library type  . . _____ (Blank for list)
```

The Component General Information function is used by ChangeMan to associate a component with a description file. The file can be edited by the Global Administrator using this facility; or by users via the Edit Description (ED) line command in the STAGE function. Editing by users is controlled by the Global Administrators via the CHECKOUT COMPONENT DESCRIPTION selection with the Global Administration option for Library Types.

The Global Administrator is not required to make any entries in the Component Description file. Users may open the file themselves by checking out a component to

Staging, if the CHECKOUT COMPONENT DESCRIPTION option is set to 'YES' for that component type.

By entering a Library Type and hitting Enter you will be presented with the current package master Global Component Description entries.

3 On the **Global Component General Information** panel, leave blank and press Enter. The **Library Type Selection List** panel (CMNLTPSL) is displayed.

```
CMNLTPSL                  Library Type Selection List          Row 1 to 7 of 7
Command ===> _____________________________________________ Scroll ===> PAGE

  Lib  Description
_ CLS  CLIST
_ JCL  JCL Library Type
_ LCT  Linkedit Control Cards
_ LST  Listing
_ NCL  NCAL subroutine load library
_ OBJ  Object module library
_ PKG  DB2 Bind Package Commands
****************************** Bottom of data ********************************
```

4 On the **Global Component General Information List** panel, you can:

- Delete a global general description - Type D on the line command for a component and press Enter.
- Update a component general description - Type S on the line command for a component and press enter. The **Global General Description** panel is displayed.

5 On the **Global General Description** (CMNGENG3) panel, update the text.

```
CMNGENG3                  Global General Description        Row 1 to 35 of 69
Command ===> _____________________________________________  Scroll ===> CSR

Component:   @MEM$001                                                    +
Libtype:     JCL

     Description
___  Dummy description line 1...______________________________________________
___  ...and line 2._______________________________________________________
```

6 When you are finished updating the Global General Description, press PF3 to save your changes and return to the **Global Component Information List** panel (CMNGENG5).

```
CMNGENG5              Global Component Information List       Row 1 to 8 of 8
Command ===> _____________________________________________   Scroll ===> CSR

  Name                                                        Type
  @MEM$001                                              +     JCL  CHANGED
  @MEM$002                                              +     JCL
  @MEM$003                                              +     JCL
  @MEMNS01                                              +     JCL
  @MEMNS02                                              +     JCL
  ZAP                                                   +     JCL
  ZAP1                                                  +     JCL
  ZAP2                                                  +     JCL
****************************** Bottom of data ********************************
```

Component Designated Compile Procedures

Use this panel to designate a compiling procedure for any SRC or Like SRC component. This procedure, and its accompanying parms, can be forced for some or all compiles, depending on the Force Level in effect. Leave the command line blank to display a list of existing designations. This list can be limited by making entries in the Component Name or Library Type fields.

To work with global designated compile procedures:

1 On the **Global Component Options** panel, select Option P and press Enter, the **Global Designated Compile Procedures** panel (CMNDCPG1) is displayed.

```
CMNDCPG1              Global Designated Compile Procedures
Option ===> ____________________________________________________

   blank List defined procedures             C Change/add component procedures
       D Delete component procedures

Component name . . . . . ____________________________________________________ +
                                  (Full name or pattern; blank for list)
Library type . . . . . ____      (Blank for list)
Compile procedure  . . . _________ (Blank for list)
Language name  . . . . . _________ (Blank for list)
Compile parms  . . . . . ____________________________
Binder parms . . . . . . ____________________________
Force level  . . . . . . _         (1-Before Freeze only, 2-Always required)

Enter "/" to select option
  _ DB2 processing
  _ Display more option panels
  _ Mixed case
```

The following table describes the fields on the **Global Designated Compile Procedures** panel:

Field		Description
Use this panel to designate a compiling procedure for any SRC or Like SRC component. This procedure, and its accompanying parms, can be forced for some or all compiles, depending on the Force Level in effect. Leave the command line blank to display a list of existing designations. This list can be filtered by making entries in the Component Name, Library Type, Compile Procedure, Language, DB2 Precompile, and Force Level fields. If the Component Name and Library Type are not masked, these other fields are ignored.		
Option	C	Change or add component procedure; enter the procedure name or a pattern (e.g. PR*).
	D	Delete a designated procedure definition for the component entered. **Note:** The C and D options are not available in browse mode.
	Blank	List existing component procedures; this field can be masked (e.g. PR*).

Field	Description	
Component name	Enter a full component name or pattern. **Note:** When you add or delete a designated procedure, a * wildcard in the component name is considered part of the designated procedure name. However, when you use this panel to filer a list of designated procedures on the **Global Designated Compile Procedures List** panel, a * is considered a wildcard character for the search.	
Library type	Enter the component library type. Leave this field blank to display a Library Type selection list.	
Compile procedure	Enter the designated compile procedure for the component. Leave this field blank for a selection list.	
Language name	Enter the language name of the component. Leave this field blank for Language Name selection list. The LANGUAGE NAME and COMPILE PROCEDURE combination must be valid.	
Compile parms	Enter any extra compile parms as needed (defaults are hardcoded in the compile skeleton for the specified procedure).	
Binder parms	This option allows you to enter additional link edit parms as needed. (defaults are hardcoded in the link edit skeleton for the specified procedure).	
Force level	1	Enter option 1 if the component will be compiled with this procedure during the last compile prior to Freezing the package. This option is the default, however interim compiles may use other procedures. Note: If the designated procedure was not used in the last stage operation when a package FREEZE is requested, the freeze will fail.
	2	Enter option 2 if every stage operation for this component must use the designated procedure.
DB2 processing	Indicates whether or not a DB2 pre-process or co-process is to be invoked during the compile. If the command line is blank, and both Component Name and Library Type fields are not masked, this field is ignored.	
Display more options panel	The User Options panel allows you to pass variables to your file tailored compile skeleton. Select (/) to display Global Designated Compile Procedure List panel (CMNDCPG2) to specify user options. Omit to bypass this options.	
Mixed cases	All fields are folded to upper case by default. Select (/) to allow 'Mixed case' option to be used, processing the Component Name in the case entered. A blank field will fold Component Name into upper case regardless of the case entered.	

2 If you leave the Component Name field blank on the **Global Designated Compile Procedures** panel, or type a pattern, the **Global Designated Compile Procedures List** panel (CMNDCPG2) is displayed.

```
CMNDCPG2            Global Designated Compile Procedure List   Row 1 to 1 of 1
Command ===> _____________________________________________ Scroll ===> CSR

  Component   +  Language Force  DB2 Compile parms
  name      Type Proc     option pre Binder parms
_ ACPSRC*
            SRC  COBOL2   1      NO  ____________________________________
                 CMNCOB2                ____________________________________
****************************** Bottom of data ******************************
```

The following table describes the fields on the **Global Designated Compile Procedures List** panel:

Field	Description	
Entering a * in the PROC or LANGUAGE fields provides a selection list. Enter S to display additional compile and link options. Enter D to delete a designated compiling procedure. In browse mode, only line command S is available.		
Option	C	Change or add component procedure; enter the procedure name or a pattern (e.g. PR*).
	D	Delete a designated procedure definition for the component entered. **Note:** The C and D options are not available in browse mode.
	Blank	List existing component procedures; this field can be masked (e.g. PR*).
Component name	Name of each component.	
Type	The Library Type associated with each component.	
Language Proc	The compile procedure and language associate with each component.	
Force option	1	Allow users to compile this component with alternate procedures, anytime prior to freezing the package(the last compile prior to freezing the package must be done with the designated procedure).
	2	Force users to use the designated procedure for ALL compiles.
DB2 pre	Enter 'YES' to run the DB2 pre-process or co-process step for this module, or use 'NO' to disregard this step.	
Compile parms Binder parms	Enter any additional parms; compile parms on the first line, and link edit parms on the second.	

Component Security Information

Use these panels to list or create the TSO IDs or Security Entities that are authorized to check out or stage a particular component. If no entries are made, all users having application access are permitted to check out or stage any of the application's components.

To create Global Component Security Information:

1 On the **Global Component Options** panel, select Option S and press enter, the **Global Component Level Security** panel (CMNSECG1) is displayed:

```
CMNSECG1                Global Component Level Security
Command ===>  ____________________________________________

Component . . . . . ____________________________________________  +
                                  (Blank for all components)
Type  . . . . . . . ___           (Blank for all types)

Enter "/" to select option
  _ Mixed case
```

The following table describes the fields on the **Global Component Level Security** panel:

Field	Description
Component name	Enter the name of the component to secure to specific TSO IDs or entities You may enter a pattern (e.g. PR*), and all the components in the Baseline library that fit the pattern will be protected. To select from the package master list of components which have been protected, leave both fields blank.
Type	Enter the component library type
Mixed case	Select this option to process component input exactly as you type it, upper and lower case.

2 We select Component Name of ACPTST02 and Component Type of SRC on the **Global Component Level Security Panel**, hit enter, and are presented with the **Global User List** panel (CMNSECG2) for Component ACPTST02.SRC

```
CMNSECG2                          Global User List            Row 1 to 21 of 21
Command ===> ____________________________________________  Scroll ===> CSR

Name:  ACPTS03                                                          +
Type:  SRC

               Entity
     User      (y/n)
____ ________    _
____ ________    _
____ ________    _
____ ________    _
...
____ ________    _
____ ________    _
****************************** Bottom of data ******************************
```

The following table describes the fields on the **Global User List** panel:

Field	Description
Line command	Enter one of the following valid line commands: I Insert a new line R Repeat an existing line D Delete an existing line

Field	Description
User	Enter the authorized TSO ID or ENTITY to which checkout or staging will be restricted.
Entity	Enter 'Y' to identify the USERID as a security ENTITY, or enter 'N' (or blank) to identify it as a TSO ID.

Setting the Planned Installation Calendar

The Planned Installation Calendar limits the number of planned packages that may be scheduled for install on the same calendar day. This restriction does not apply to unplanned packages.

To update the Planned Installation Calendar, perform the following steps:

1 On the **Update Global Administration Options** menu (CMNGAMN1), type D and press Enter.

- If the ChangeMan ZMF instance you are using to make this update is an A (All) environment, the **Planned Installation Calendar** panel is displayed immediately. This panel is described below.
- If the ChangeMan ZMF instance you are using to make this update is not an A (All) environment, the **Calendar Options** panel (CMNCLDOM) is displayed.

```
CMNCLDOM                          Calendar Options
Option ===> ____________________________________________________

1  Site           Display/update installation calendar by site
2  Composite      Display a composite installation calendar
```

2 On the **Calendar Options** panel, type 2 and press Enter, and the **Planned Installation Calendar** panel (CMNCLNDC) shows in display mode. This panels displays the total number of installs that may be scheduled across all sites and the total number of installs that have already been scheduled. The # and MAX numbers displayed for each day on this panel represent the sum of the # and MAX numbers for all sites.

```
CMNCLNDC              Planned Installation Calendar         Row 50 to 53 of 53
Command ===> ____________________________________________ Scroll ===> CSR

Starting      TUE      WED      THU      FRI      SAT      SUN      MON
date          #  Max   #  Max   #  Max   #  Max   #  Max   #  Max   #  Max
2017/11/14  000 0255 000 0255 000 0255 000 0255 000 0255 000 0255 000 0255
Totals:   00000    01785
2017/11/21  000 0255 000 0255 000 0255 000 0255 000 0255 000 0255 000 0255
Totals:   00000    01785
2017/11/28  000 0255 000 0255 000 0255 000 0255 000 0255 000 0255 000 0255
Totals:   00000    01785
2017/12/05  000 0255 000 0000 000 0000 000 0000 000 0000 000 0000 000 0000
Totals:   00000    00255
****************************** Bottom of data ******************************
```

3 On the **Calendar Options** panel, type 1 and press Enter. The **Global Site Selection List** panel (CMNRMTSG) is displayed.

```
CMNRMTSG                  Global Site Selection List          Row 1 to 2 of 2
Command ===> _____________________________________________ Scroll ===> CSR

  Site Name
_ C001
_ C002
```

4 On the **Global Site Selection List** panel, type S on the line command for a site name and press Enter. The ***site*** **Planned Installation Calendar** panel (CMNCLNDR) is displayed, here shown scrolled down).

```
CMNCLNDR            C001 Planned Installation Calendar      Row 46 to 53 of 53
Command ===> _____________________________________________ Scroll ===> CSR

Starting      TUE     WED     THU     FRI     SAT     SUN     MON     Totals
date          # Max   # Max   # Max   # Max   # Max   # Max   # Max    #   Max
2017/10/17  000 UNL 000 UNL 000 UNL 000 UNL 000 UNL 000 UNL 000 UNL  0000 1785
2017/10/24  000 UNL 000 UNL 000 UNL 000 UNL 000 UNL 000 UNL 000 UNL  0000 1785
2017/10/31  000 UNL 000 UNL 000 UNL 000 UNL 000 UNL 000 UNL 000 UNL  0000 1785
2017/11/07  000 UNL 000 UNL 000 UNL 000 UNL 000 UNL 000 UNL 000 UNL  0000 1785
2017/11/14  000 UNL 000 UNL 000 UNL 000 UNL 000 UNL 000 UNL 000 UNL  0000 1785
2017/11/21  000 UNL 000 UNL 000 UNL 000 UNL 000 UNL 000 UNL 000 UNL  0000 1785
2017/11/28  000 UNL 000 UNL 000 UNL 000 UNL 000 UNL 000 UNL 000 UNL  0000 1785
2017/12/05  000 UNL 000 000 000 000 000 000 000 000 000 000 000 000  0000 0255
****************************** Bottom of data ********************************
```

The following table describes the fields on the **Planned Installation Calendar** panel.

Field	Description
Starting date	This is the calendar date for the first day in the row. Each row displays seven days. The Starting Date in an ALL environment is the system date for today. The Starting Date in a D or DP environment is the system date for yesterday. If a package is scheduled for simultaneous installation at multiple sites (for example, at 00:01 GMT everywhere rather than at 00:01 local time everywhere), the installation date might be yesterday at a site because of a time zone difference.
#	Displays the total number of packages scheduled for installed on that day at this site.

Field	Description
Max	A data entry field for the maximum number of planned packages that may be scheduled for install on that day for this site. The maximums are initially set to zero for all dates. To reset MAX for all dates. type SETALL nnn on the command line. To set MAX for all occurrences of a day of the week, type SETddd nnn (example: SETMON 123). To reset the MAX for one date, over typing the MAX number for that day. To block scheduling installs for any planned packages on a given date, leave MAX at zero for that day. To set MAX to an unlimited number of unplanned packages for all days or for a specific day, type SETALL 255 or SETddd 255 on the command line. The value of the maximum number of planned packages is displayed as **UNL**. If a site was created only for promotion to a local site, leave MAX set to zero for all dates.
Totals #	Displays the total number of packages scheduled for install in that week at this site.
Totals Max	Displays the maximum number of planned packages that may be scheduled for install in that week at this site.
The # and TOTALS # fields are automatically incremented when change packages are created. These fields are automatically decremented when change packages are rescheduled or installed.	

Online Housekeeping

You can initiate the following two housekeeping functions online:

- Delete aged packages, staging data sets, and component history.
- Synchronize the implementation calendar.

Select option H, Housekeeping, on the **Update Global Administration Options** menu (CMNGAMN1). The **Housekeeping Tasks** (CMNHOUS0) panel is displayed.

```
CMNHOUS0                        Housekeeping Tasks
Option ===> ____________________________________________________________

1  Delete         Delete packages/staging datasets/component history
2  Synchronize    Synch implementation calendar
```

The options you can select are:

Option	Description
1	Option 1 deletes: ■ Packages in memo-delete status. ■ Component history for installed packages whose aging criteria are met. ■ Installed packages whose aging criteria are met. ■ Staging datasets whose aging criteria are met. A package must be in BAS, INS, or TCC status for the latter two options to be included in the delete process. You specify global aging criteria on the **Global Parameters Part 1 of 7** (CMNGGP01) panel. See page 55. You specify application aging criteria on the ***application*** **Parameters - Part 3 of 3** (CMNGLP03) panel. See page 133. The function submits a job created by file-tailoring the CMN$$HKP skeleton that deletes the packages, staging data sets, and component history that meet the deletion criteria. The job writes report CMN920 in step BAT10 that details the actions. A return code of 4 will be produced if there are no components or packages to be aged
2	Option 2 resynchronizes the implementation calendar by comparing planned installs for a given date against actual installs performed. The function submits a job created by file-tailoring the CMN$$HKP skeleton that resynchronizes the implementation calendar, and produces report CMN930 in step BAT10.

The reports for either of these functions are written to DDname CMNRPORT. You can use a display facility such as the Spool Display and Search Facility (SDSF) to view the report.

You can capture the JCL that is generated by either of these jobs to build a batch job of your own that you or your job scheduler can submit. See "Delete Aged Packages, Staging Libraries, And Component History" on page 229 and "Synchronize Installation Calendar" on page 231 for details.

Follow these steps to perform these functions:

1 Select the desired option from the Housekeeping Tasks (CMNHOUS0) panel. The **Generate Change Man Housekeeping Job** (CMNHOUS1) panel is displayed.

```
CMNHOUS1                   Generate Housekeeping Job
Command ===> ____________________________________________________

Application . . . ____ (Full name, pattern or blank for list)

Job statement information:
   //USER015R JOB (SM-1IKF-SM),'CHANGEMAN',
   //         CLASS=A,
   //         NOTIFY=USER015,
   //         MSGCLASS=X
```

2 Fill in the panel as follows and press **Enter** to submit the job:

Field	Description
Application	Specify the application(s) that you want included in the housekeeping function that you selected. Valid values: aaaa — Three- or four-character application mnemonic executes the housekeeping function for one application. pattern — Pattern ending in *. Examples: AB* executes the housekeeping function for applications with mnemonics starting in AB. * executes the housekeeping function for all applications. blank — Displays the **Application Selection List** panel (CMNREPT9) for you to select one application.
JOB Statement Information	Specify an appropriate JOB statement.

3 If you leave the **Application** field blank on the **Generate Change Man Housekeeping Job** panel (CMNHOUS1), the **Application Selection List** panel (CMNREPT9) is displayed.

```
CMNREPT9                  Application Selection List          Row 1 to 5 of 5
Command ===> ____________________________________________ Scroll ===> CSR

  Appl  Description                                    High #
_ C001  C001 empty application                         000000
_ C009  C009 empty application                         000000
_ DEM   DEM application                                000000
_ DEMO  DEMO application                               000001
_ DEMX  DEMX application                               000000
****************************** Bottom of data ********************************
```

Type the letter S in the selection field to the left of one application mnemonic and press **Enter** to submit the job.

NOTE You can select only one application from the **Application Selection List** panel. If you select more than one, only the first is processed.

Generating and Updating Impact Analysis Data

The impact analysis LDS contains records that describe relationships among components in ChangeMan ZMF baseline libraries.

Each relationship record in the impact analysis file names two components in a one-to-one relationship. One-to-many relationships and many-to-one relationships are expressed in the impact analysis file as multiple one-to-one relationship records.

The Query Impact and Query Component Bill of Materials functions use these relationship records to tell you what other components might be affected if you make a change to a particular component. ChangeMan ZMF audit programs use impact analysis records to validate the change process that is being used for components in a change package.

Types of Impact Analysis Relationships

This table describes the types of component relationships that are stored in impact analysis data:

Relationship Type	Component That Contains Object of the Relationship	Object of the Relationship
COPYBOOK	Like-source component that contains a COPY or similar statement for a like-copy component.	Like-copy member that is the object of a COPY or similar statement in source code.
SUBROUTINE	Like-load component that contains a statically linked like-load component.	Like-load component statically linked in a composite like-load.
JCL-PROCEDURE	Component type JCL or PRC (or component type designated in an exit as like-JCL) that contains an EXEC statement for a cataloged procedure.	The cataloged procedure following an EXEC statement or following the PROC= parameter in an EXEC statement.
PGM NAME/SYMBOL	Component type JCL or PRC (or component type designated in an exit as like-JCL) that contains a PGM= parameter In an EXEC statement.	Character string in the PGM= parameter. The string can be a program name, or it might be a symbolic parameter.
DSN NAME/SYMBOL	Component type JCL or PRC (or component type designated in an exit as like-JCL) that contains a DSN= parameter in a DD statement.	Character string in the DSN= parameter. The string can be a data set name, or it might be a symbolic parameter.

Creating / Updating Impact Analysis Data

Impact analysis records are stored in a VSAM LDS. Programs that use impact analysis data create a data space and load it from the LDS.

When you first implement ChangeMan ZMF, you run the impact analysis data extract. The extract parses members in baseline libraries to find relationships between components, and it creates impact analysis records in three sequential files, BUNSPACE, RELSPACE, and CMPSPACE. The data in these files is loaded to the impact analysis LDS with a separate batch job.

After the initial extract and load, impact analysis data is updated dynamically when a change package is installed and its components are baselined. Package master relationship records that were created when package components were staged are used to update the impact analysis data space and LDS with new or changed relationships.

After the impact analysis LDS is populated, if you use application administration to add or remove applications, change baseline libraries, or change library types, you must run the impact analysis data extract again to recreate the data for the impact analysis LDS.

CAUTION! Unlike ChangeMan ZMF releases prior to Version 6.1 with the DB2 Option, there is no "incremental" update for impact analysis data. If you exclude any applications from impact analysis maintenance, relationships for these applications are not created and will be missing from the Impact Analysis LDS.

This is the default processing order used by the impact analysis data extract to create impact analysis relationship records for a component:

1. Generate relationships from package master relationship records for the last package to baseline the component.

   But if there are no package master relationship records because the component is JCL or PRC, or the last package to baseline the component is archived, or if the component has never been processed through the ChangeMan ZMF package life cycle, then...

2. Propagate any existing I/A records for the component.

   But if there are no existing I/A records because the component has never been parsed by the impact analysis data extract, then...

3. Parse the baselined component to discover relationships.

The impact analysis data extract can be initiated through a panel in ChangeMan ZMF global administration, or you can manually submit a batch job to perform the extract.

After you have extracted the impact analysis information, you create and populate the impact analysis LDS through a batch process.

Instructions for executing the impact analysis data extract and loading the impact analysis LDS are provided in the next three topics:

- "Online Impact Analysis Data Extract"
- "Batch Impact Analysis Data Extract" on page 110
- "Impact Analysis LDS Load" on page 111

Online Impact Analysis Data Extract

Execute these steps to submit an impact analysis data extract from global administration.

NOTE This procedure assumes that you have customized skeleton CMN$$IAX according to the instructions in the *ChangeMan ZMF Installation Guide*.

1 Access the **I/A Data Extraction Job Statements** panel (CMNGBIM1) using one of these methods.

- **Using the Menu Hierarchy**
  - On the **Primary Option Menu** (CMN@PRIM), choose option **A Admin**.
  - On the **Administration Options** menu (CMNADMON), choose option **G Global**.
  - On the **Update Global Administration Options** menu (CMNGAMN1), choose option **I Impact**.
- **Using Direct Panel Access**

  On the **Command** or **Option** line of any panel, type **=A.G.I** and press **Enter**.

  The **I/A Data Extraction Job Statements** panel (CMNGBIM1) is displayed.

```
CMNGBIM1                I/A Data Extraction Job Statements
Command ===> ____________________________________________________

Job statement information:
   //USER015S JOB (SM-1IKF-SM),'CHANGEMAN',
   //         CLASS=A,
   //         NOTIFY=USER015,
   //         MSGCLASS=X
```

2 **I/A Data Extraction Job Statements** panel (CMNGBIM1) now only allows you define the desired job cards.

3 Define your job cards, and press **ENTER** to submit a batch job to perform the impact analysis data extract. The job is file tailored using the CMN$$IAX skeleton.

4 When the job completes, check the output.

   a Verify that the impact analysis data extract created three sequential files: BUNSPACE, CMPSPACE, and RELSPACE.

TIP Add a TYPRUN=SCAN to the jobcard and capture the resulting JCL with SDSF or similar to examine and save a copy for later use.

b Example of SYSPRINT at job step RUNIA:

```
ChangeMan(R) ZMF      CMNIA000 -  8.1.0 I/A Synch  TUESDAY OCTOBER 21, 2014  @ 09:25:14
CMN2698I - Processed by CMNIA000 version 2014/10/10  12.32
SYSIN: XTYP=LST
SYSIN: XTYP=AUD
SYSIN: XTYP=MFS
SYSIN: XTYP=FMT
SYSIN: APPL=$PET
SYSIN: APPL=STEV
The following applications will be included in this analysis:
$PET
STEV

 B a s e l i n e   L i b r a r y                                                    Meta-data         Baseline
-----------------------------------------------------------------      components        i/a rows         i/a rows
 WSER73.BASE0.CPY                                                            362               0                0
 WSER73.BASE0.LO1                                                             18               0                0
 WSER73.BASE0.JCL                                                             12               0               67
 WSER73.BASE0.SRC                                                            323               0              915
 WSER73.BASE0.LOD                                                             67               0              396
 WSER73.BASE0.PSS                                                             21               0                0
 /u/pwebb/BASE0/JAV                                                           16               0                0
 WSER73.BASE0.LCT                                                             12               0               15
 /u/pwebb/BASE0/HDR                                                           10               0                0
 WSER58.BASE.SRC                                                           1,284           3,346              763
 WSER58.BASE.SRO                                                              54               0                0
 WSER58.BASE.JCL                                                             168             738               22
 WSER58.BASE.PSB                                                              26               0                0
 WSER58.BASE.LOD                                                           1,751           4,783               40
 WSER58.BASE.CPY                                                             787               0                0
 WSER58.BASE.STL                                                              15              55                0
 WSER58.BASE.LCT                                                              88               0               85
 WSER58.BASE.CPS                                                              93               0                0
 WSER58.BASE.SUB                                                             257               0                0
 WSER58.BASE.SUS                                                             199              72                0
 /cmndev/STEV/Base00/LSH                                                      60               0                0
 WSER58.BASE.OBJ                                                             101               0                0
 /cmndev/STEV/Base00/JAR                                                      12             315                0
 WSER58.BASE.LO1                                                             108           9,437                0
 WSER58.BASE.SR1                                                              38              21                0
                                                          TOTAL            5,882          18,767            2,303

 BUNSPACE records written                  :          77
 CMPSPACE records written                  :       7,777
 RELSPACE records written                  :      21,069

CMNIA000 - Execution has completed -   RC : 00
******************************** BOTTOM OF DATA ********************************************************************
```

The three counts for each baseline library are derived as follows:

- components - Number of components in the baseline library
- Meta-data i/a rows - Number of I/A rows created from package master relationship records or propagated from rows in the existing impact analysis LDS
- Baseline i/a rows - Number of I/A rows created by parsing components in the baseline library

c If these four DD statements in skeleton CMN$$IAX are customized to send output to SYSOUT, check them for messages about relationships that are discovered by parsing but cannot be resolved.

DD Statement	Message Information
//LODMISS	Subroutine relationships where the subordinate component is not found in any baseline library.
//LODSAME	Subroutine relationship where the subordinate component is found in multiple baseline libraries.

DD Statement	Message Information
//CPYMISS	Copybook relationships where the subordinate component is not found in any baseline. library
//CPYSAME	Copybook relationship where the subordinate component is found in multiple baseline libraries.

Example of LODMISS at job step RUNIA:

```
ACTP/LOD ACPSRCCA includes COMSRS00. Not found in any relevant baseline.
ACTP/LOD ACPSRCCC includes COMSRS00. Not found in any relevant baseline.
ACTP/LOD ACPSRCCE includes COMSRS10. Not found in any relevant baseline.
ACTP/LOD ACPSRC6A includes ACRSCNU0. Not found in any relevant baseline.
```

NOTE The LODMISS DD SYSOUT may list relationships that include statically linked system subroutines. Example:

```
ACTP/LOD ACPSRCD1 includes CEESTART. Not found in any relevant baseline.
```

You can eliminate these messages with exit program CMNEX022.

5 If the data extract job is successful, go to "Impact Analysis LDS Load" on page 111.

Batch Impact Analysis Data Extract

Sample JCL for running an impact analysis data extract as a batch job is delivered in CNTL member IMPACT. This batch job can run with the ChangeMan ZMF instance running or stopped.

Execute these steps to customize and run job IMPACT:

NOTE Customization of the IMPACT JCL should parallel the customization of skeleton CMN$$IAX that is described in the *ChangeMan ZMF Installation Guide*.

1 Copy member IMPACT from the delivered CMNZMF CNTL library to your custom CMNZMF CNTL library. Edit member IMPACT in your custom CMNZMF CNTL library.

2 Code your JOB statement at the top.

3 In the JOBLIB statement, concatenate your CUSTOM LOAD libraries ahead of the delivered LOAD libraries. You can customize exit programs to modify the behavior of impact analysis data extract program CMNIA000.

4 If you are using GDGs for the BUNSPACE, CMPSPACE, and RELSPACE files, delete job step DELFILES at the top of the skeleton.

5 If you want to display messages that list relationships in which the subordinate component is found in no baseline library or in multiple baseline libraries, replace DUMMY with SYSOUT=* in these DD statements.

```
//LODMISS   DD DUMMY
//LODSAME   DD DUMMY
//CPYMISS   DD DUMMY
//CPYSAME   DD DUMMY
```

6 At DD names BUNSPACE, CMPSPACE, and RELSPACE:

a Replace the *somnode* placeholder with the high level qualifier that conforms to your standard for permanent ChangeMan ZMF sequential data sets.

7 Change these XTYP= SYSIN control statements to specify your library type(s) for exclusion:

XTYP=	Component Type	Option Sub-type
FMT	IMS MFS Load	IMS Option library sub-type F
MFS	IMS MFS Source	IMS Option library sub-type M

8 Submit job IMPACT. The ChangeMan ZMF instance can be running or stopped.

9 When the job completes, check the output.

a Verify that the impact analysis data extract created three sequential files: BUNSPACE, CMPSPACE, and RELSPACE.

b Examine job output for problems. See #b on page 109 and #c on page 109 for sample output.

10 If the data extract job is successful, go to the next topic.

Impact Analysis LDS Load

Sample job LDSLOAD creates a new impact analysis LDS and loads it with data from the three sequential files created by the impact analysis data extract.

Execute these steps to customize and run job LDSLOAD:

1 Copy member LDSLOAD from the delivered CMNZMF CNTL library to your custom CMNZMF CNTL library. Edit member LDSLOAD in your custom CMNZMF CNTL library.

2 Code your JOB statement at the top.

3 In the JOBLIB statement, concatenate the delivered CMNZMF LOAD library and SERCOMC LOAD library.

4 Change all occurrences of these placeholder file names to the output files names from the impact analysis data extract job. See "Online Impact Analysis Data Extract" on page 108 or "Batch Impact Analysis Data Extract" on page 110.

```
somnode.BUNSPACE
somnode.CMPSPACE
somnode.RELSPACE
```

5 Change all occurrences of somnode.CMNZMF.IADSP to the VSAM LDS name that is coded in the ChangeMan ZMF started procedure at DD statement CMNIMPCT.

6 Change the MEGABYTES parameter of the IDCAMS DEFINE CLUSTER statement according to the JCL comments near the parameter.

TIPS Change all the somnode values so the resulting dataset names are correct for your installation.

7 Shut down your ChangeMan ZMF instance, or close the impact analysis LDS by issuing a DETACH modify command.

See the *ChangeMan ZMF Installation Guide* for DETACH command syntax and cautions.

8 Submit job LDSLOAD.

9 Examine job LDSLOAD output for problems.

a Example of CMNPRINT from job step CMNIALC0:

```
                  ChangeMan(R) ZMF Impact Analysis Component Table Preparation
                                -- CMNIALC0 - 8.1.0 20141010 12.30
20141021 09325969        7,777 Component records Read
20141021 09325969        7,777 Component records written
20141021 09325969       21,069 Component records added
20141021 09325969       21,069 Relation  records read
20141021 09325969       21,069 Relation  records written

20141021 09325969 End of run
```

b Example of CMNPRINT from job step CMNIAIN0:

```
                 ChangeMan(R) ZMF Impact Analysis Dataspace Analysis and Initialization
                         -- CMNIAIN0 - 8.1.0 20141010 12.29
20141021 09330845           77 BUN records read
20141021 09330885       18,044 component records read
20141021 09330980       21,069 relation records read
20141021 09331042 I/A dataspace initialization complete
```

c Example of CMNPRINT from job step CMNIALB0:

```
                  ChangeMan(R) ZMF Impact Analysis Baseline Unique Number Table Load
                              --    CMNIALB0 - 8.1.0 20141010 12.27
20141021 09332044 I/A baseline load start
20141021 09332045           77 BUN Input records read
20141021 09332045           77 BUN Records loaded
20141021 09332045 I/A baseline load complete
20141021 09332045
20141021 09332045 I/A appl / libtype index create start
20141021 09332046 I/A appl / libtype index create complete
20141021 09332046 I/A libtype / appl index create start
20141021 09332047 I/A libtype / appl index create complete
20141021 09332047 I/A DSNAME/bun index create start
20141021 09332056 I/A DSNAME/bun index create complete

20141021 09332059 End of run
```

d Example of CMNPRINT from job step CMNIALR0:

```
                  ChangeMan(R) ZMF      Impact Analysis Relation Table Load
                                  -- CMNIALR0 - 8.1.0 20141010 11.21
20141021 09332613 I/A component table load start
20141021 09332663       18,044 component records read
20141021 09332663       18,044 component entries built
20141021 09332663 I/A component table load complete
20141021 09332663 I/A relation table load start
20141021 09332983       20,540 relation records read
20141021 09332983       20,540 relation entries built
20141021 09332983 I/A relation table load complete
20141021 09333006 I/A table load complete

20141021 09333011 End of run
```

e Example of CMNPRINT from job step CMNIALX0:

```
                  ChangeMan(R) ZMF Impact Analysis Relation Index Load
                                CMNIALX0 - 8.1.0 20141010 12.30
20141021 09333822 begin relation table index load
20141021 09334055       20,540 relation index records read
20141021 09334055       20,540 superior component relation index entries loaded
20141021 09334055       20,540 subordinate component relation index entries loaded
20141021 09334058  end  relation table index load

20141021 09334058 End of run
```

f Example of CMNIADSX from job step CMNIAIXC:

```
                  ChangeMan(R) ZMF (8.1.0 - 20141010) Impact Analysis Dataspace Index Integrity Rep
                  A return code of zero indicates that the I/A dataspace is structurally correct.
2014102109334118 Data space at Level 1.0.5
2014102109334118 Usage___ _Starts_ __Next__ __Size__ __Free__
2014102109334118 BUN      00001000 00001738 00007000 000068C8
2014102109334118 BUN  X   00008000 00008134 00001000 00000ECC
2014102109334118 DSN   X  00009000 00009134 00001000 00000ECC
2014102109334118 ATB   X  0000A000 0000A134 00001000 00000ECC
2014102109334118 TAB   X  0000B000 0000B134 00002000 00001ECC
2014102109334118 B FREE   0000D000 0000D000 00002000 00002000

2014102109334118 COMP T   0000F000 000557C0 000A2000 0005B840
2014102109334118 CMPX  X  000B1000 000C29F0 00024000 00012610

2014102109334118 RLN T    000D5000 001C5B40 00237000 001464C0
2014102109334118 RLN P X  0030C000 003200F0 00030000 0001BF10
2014102109334118 RLN B X  0033C000 003500F0 00030000 0001BF10
2014102109334118 RLN T F  0036C000 0036C000 00002000 00002000

2014102109334118 UPDB     0036E000 0036E000 00030000 00030000
2014102109334118 NMBLK    0039E000 003C545C 000A8000 00080BA4
2014102109334118 BUN index check starts
2014102109334118 BUN index check  ends
2014102109334118 DsName index check starts
2014102109334118 DsName index check  ends
2014102109334118 Appl / LibType index check start
2014102109334118 Appl / LibType index check  ends
2014102109334118 LibType / Appl index check start
2014102109334119 LibType / Appl index check  ends
2014102109334119 Component Name index check starts
2014102109334136     18,044 component table indexes examined
2014102109334136 Component Table Index name/BUN check  ends
2014102109334136 Relation Table SupComp index chck starts
2014102109334160     20,540 relation supcomp indexes examined
2014102109334160 Relation Table SupComp index check  ends
2014102109334160 Relation Table SubComp index chek starts
2014102109334162     20,540 relation subcomp indexes examined
2014102109334162 Relation Table SubComp index check ends
                  All checks completed, return code is  00
```

10 Start ChangeMan ZMF, or open the impact analysis LDS by issuing an ATTACH modify command.

This is an example of the ATTACH command for ZMF instance SERT3:

```
/F SERT3,CMN,ATTACH,IADS
```

See the *ChangeMan ZMF 8.1 Installation Guide* for ATTACH command details.

Forcing Component Parsing

While it is preferable to generate impact analysis records from package master relationship records that are created in the component build process, some customers may discover that their package master relationship records are unsuitable.

Program CMNIA000 in the impact analysis data extract and program CMNDSPTM in the baseline ripple process accept SYSIN keyword parameters to force component parsing to create impact analysis relationship records.

- CMNIA000 - Use the following SYSIN keyword parameters in skeleton CMN$$IAX or CNTL member IMPACT to force component parsing for the impact analysis data extract.

Keyword Parameter	Source for Impact Analysis Relationships
(default)	1 Generate from package master relationship records for the last package to baseline the component. **But** if there are no package master relationship records because the last package to baseline the component is archived, or if the component has never been through the ZMF package life cycle, then... 2 Propagate any existing I/A records. **But** if there are no existing I/A records because the component has never been analyzed by CMNIA000, then... 3 Parse the baseline component.
PARSE=ALL	Ignore existing impact analysis relationship records: 1 Generate from package master relationship records for the last package to baseline the component. 2 Parse the baseline component.
PARSE=ALL,NOPMAST	Parse the baseline component.
PARSE=ALL,NOPMCPY	Ignore package master ISIC records and all prior I/A information: 1 Generate from package master relationship records for the last package to baseline the component, but ignore copybook-to-source (ISIC) records. 2 Parse the baseline component.
PARSE=ALL,NOPMLOD	Ignore package master ILIC records and all prior I/A information: 1 Generate from package master relationship records for the last package to baseline the component, but ignore subroutine-to-composite load (ILIC) records. 2 Parse the baseline component.

- CMNDSPTM - Use the following SYSIN keyword parameter in the CMN30 job to force component parsing for impact analysis data update.

Keyword Parameter	Generate I/A Records
(default)	Generate from package master relationship records for the package currently being baselined.
PRS=NOPMLOD	Parse baseline like-load members

Fixing Unsuitable Package Master Relationship Records

Missing or invalid package master relationship records often result from errors in customizing component build processing. After build processes are fixed, valid relationship records are created on the package master going forward.

However, the impact analysis data extract cannot be run most efficiently until the existing relationship data on the package master is repaired.

Starting with ChangeMan ZMF 7.1.3, an analysis and repair facility is delivered that can detect and fix corrupted package master relationship records for baselined components. If you think you need to use this facility, contact Customer Support.

Increasing I/A Data Space Freespace

When the impact analysis data space is initialized, the space allocated is 12.5% more than what is requested. When the data space is loaded, 1/4 of the relationship rows are allocated as freelist.

Mass delete of relationship rows using XML Services depletes freelist and freespace. You should always reorganize the impact analysis LDS after each such operation.

If you run out of freespace, you can manually increase the allocation with the FREEPCT execution parameter for program CMNIAIN0. Examples:

- Add another 20% of the total request to freespace, and increase the proportion of freelist rows by 20%:

```
//CMNIAIN0 EXEC PGM=CMNIAIN0,PARM='FREEPCT=20'
```

- Add another 100% of the total request to freespace, and increase the proportion of freelist rows by 100%:

```
//CMNIAIN0 EXEC PGM=CMNIAIN0,PARM='FREEPCT=100'
```

Configuring the Global Notification File

Administrators use the Global Notification File to pass information to ChangeMan ZMF users. You can use this facility to inform users about:

- Scheduled down time.
- Scheduled maintenance changes to ChangeMan ZMF.
- Work-arounds for recently discovered problems.
- Upcoming ChangeMan ZMF education or discussion sessions.

When a user connects to ChangeMan ZMF after an administrator updates the Global Notification File, the ISPF short message NOTIFICATION UPDATED displays in the upper right corner of the **ChangeMan ZMF Primary Option Menu** (CMN@PRIM).

```
CMN@PRIM       Serena® ChangeMan(R) Primary Option Menu  NOTIFICATION UPDATED
Option ===> ____________________________________________________

1  Build          Create, update and review package data
2  Freeze         Freeze or unfreeze a package
3  Promote        Promote or demote a package
4  Approve        Approve or reject a package
5  List           Display (to process) package list
6  Reports        Generate ChangeMan ZMF batch reports
7  Release        Extended Release Management
A  Admin          Perform administrative functions
B  Backout        Back out a package in production
C  M+R            Merge+Reconcile
D  Delete         Delete or undelete a package
L  Log            Browse the activity log
M  Monitor        Monitor internal scheduler or packages in limbo
N  Notify         Browse the Global Notification File
O  OFMlist        Online Forms package list
Q  Query          Query packages, components and relationships
R  Revert         Revert a package to DEV status
T  Tutorial       Display information about ChangeMan ZMF
X  Exit           Exit ChangeMan ZMF
```

If the user presses **PF1**, this message is displayed:

```
CMN1116I - Option-N file last updated 09/21/2014  18:53 last read 09/10/2014 18:52.
```

The short message persists on the **ChangeMan ZMF Primary Option Menu** until the user selects option **N Notify** to display the contents of the Global Notification File.

```
 ISRBROBA  CMNTP.A014D.#C5F20DB.#F02849D.OUTLIST      Line 00000000 Col 001 080
 Command ===> ____________________________________________ Scroll ===> PAGE
******************************** Top of Data ********************************

GLOBAL ADMINISTRATION MESSAGE  09/21/2016
 1. New library types have been added to perform automatic JCLPREPs.
 2. Security request forms have been added to Online Forms. Discontinue
    the use of "paper" form SEC00140.

******************************* Bottom of Data ******************************
```

The global administrator allocates the Global Notification File, enables Global Notification, and updates the messages in the Global Notification File. A global administrator can also grant authority to application administrators to update messages in the file.

Enabling Global Notification

Follow these steps to allocate a Global Notification File and enable Global Notification.

1 Outside of ChangeMan ZMF, allocate a permanent Global Notification File as a partitioned or sequential data set. Use any of these file characteristics:

- Data Set Organization: DSORG=PS or PO
- Record Format: RECFM=FB, FBM, FBA, VB, VBM, or VBA

- Logical Record Length: LRECL maximum 256

It is recommended that you allocate a small sequential file with a fixed record length of 80 bytes. A single track of 3390 equivalent disk has room for over 600 lines of notification messages.

If you allocate a PDS, ChangeMan ZMF reallocates the library if it ever runs out of extents or directory space. However, the trade-off is that a PDS accumulates unusable space and should be compressed periodically.

NOTE If you allocate the Global Notification File as a PDS, create a member in the library with at least one (blank) record. When you specify the data set name in global administration parameters below, use the fully qualified PDS member name.

2 In your security system, grant the SERNET instance userid UPDATE access to the file you allocated. (Grant ALTER access if you allocated a PDS so ChangeMan ZMF can reallocate this library.) Administrators and users do not need access granted in your security system because they access the file through ChangeMan ZMF.

3 On the **Update Global Administration Options** menu (CMNGAMN1), select Option 1. The **Global Parameters Part 1 of 8** panel (CMNGGP01) is displayed.

4 Press **Enter** twice. The **Global Parameters Part 3 of 8** panel (CMNGGP03) is displayed.

5 On the **Global Parameters Part 3 of 8** panel (CMNGGP03), enter information to define the Global Notification Facility.

6 Select *Use Global notification file*.

7 In the *Allow Application Update To File* field, type **Y** if you want application administrators to update the Global Notification File that is displayed to all ChangeMan ZMF users.

8 In the *Global Notification File* field, type the data set name of the file you allocated.

9 Press **Enter** continuously until you are returned to the **Update Global Administration Options** menu (CMNGAMN1).

When Global Notification is activated, option **N Notify** is displayed on the **ChangeMan ZMF Primary Option Menu**.

Creating Global Notification Messages

Follow these steps to create your first Global Notification message for ChangeMan ZMF users.

1 On the **Update Global Administration Options** menu (CMNGAMN1), select Option **N**. An ISPF edit session opens for an empty ChangeMan ZMF temporary file.

2 Using ISPF functions, edit the temporary file to create the message that you want ChangeMan ZMF users to see.

```
ISREDDE2   CMNTP.A014D.#C5F20CE.#036F60D.OUTLIST          Columns 00001 00072
Command ===> _____________________________________________ Scroll ===> CSR
****** ***************************** Top of Data ******************************
000001
000002 APPLICATION ADMINISTRATION MESSAGE
000003
000004     APPLICATION ACTP  09/15/2016
000005     1. All baseline libraries will be compressed on Sunday.
000006     2. Audit level has been changed to 4.
000007
000008     APPLICATION GENL  09/23/2016
000009     1. Department number is now required when creating a new change
000010        package. Enter your Department Cost Center number in this field.
000011
****** **************************** Bottom of Data ****************************
```

3 Press **PF3** to exit the edit session. ChangeMan ZMF copies the temporary file back to the Global Notification File. Type **Cancel** to exit the edit session without saving your entries.

Updating the Global Notification Message

Follow these steps to update the Global Notification File with new messages for ChangeMan ZMF users.

1 On the **Update Global Administration Options** menu (CMNGAMN1), select Option **N**. An ISPF edit session opens for a ChangeMan ZMF temporary file that contains the current contents of the Global Notification File.

NOTE If the global administrator specified **Y** In the Allow Application Update To File field, you can access this function from the **Application Administration Functions** panel (CMNLAMEN).

```
ISREDDE2     CMNTP.A006D.#CDF1833.#82469B8.OUTLIST         Columns 00001 00072
Command ===> _____________________________________________ Scroll ===> CSR
****** ***************************** Top of Data ******************************
000100   Application ACTP October 31, 2016
000200   1. All baseline libraries will be compressed on Sunday
000300   2. Audit level has been changed to 4.
000400
000401   APPLICATION GENL  11/15/2016
000410
000500   1. Department number is now required when creating a new change
000600      package. Enter your Cost Center number in this field.
000700
****** **************************** Bottom of Data ****************************
```

2 Using ISPF functions, insert lines to type new a new message that you want displayed to all ChangeMan ZMF users. Add new messages at the top of the file.

```
ISREDDE2   CMNTP.A006D.#CDF1833.#82469B8.OUTLIST          Columns 00001 00072
Command ===> ____________________________________________ Scroll ===> CSR
****** **************************** Top of Data ******************************
000100  GLOBAL ADMINISTRATION MESSAGE  October 22nd 2016
000101  1. New library types have been added to perform automatic JCLPREPs.
000102
000103  2. Security request forms have been added to Online Forms.
000104  Discontinue the use of "paper" form SEC00140.
000110
000120   Application ACTP October 31, 2016
000200   1. All baseline libraries will be compressed on Sunday
000300   2. Audit level has been changed to 4.
000400
000401   APPLICATION GENL  Novermber 15, 2016
000410
000500   1. Department number is now required when creating a new change
000600      package. Enter your Department Cost Center number in this field.
000700
****** ***************************** Bottom of Data ****************************
```

3 Press **PF3** to exit the edit session. ChangeMan ZMF copies the temporary file back to the Global Notification File. Type **Cancel** to exit the edit session without saving your entries.

Accessing the Global Selectable Options

Selectable Options of ChangeMan ZMF often require configuration at the global administration level and at the application administration level.

To access global administration for a selectable option, follow these steps:

1 On the **Global Administration Options** menu (CMNGAMN1), select Option O and press Enter. The **Global Selectable Options** panel (CMNGBSOP) is displayed.

```
CMNGBSOP                  GLOBAL Selectable Options
Option ===> ____________________________________________

2  DB2            Maintain DB2 information
3  INFO           Specify Info/Management change rule
4  OFM            Configure Online Forms Manager
5  IMS            Control Region IDs and Library Sub-Type information
```

Licensed selectable options are highlighted on this panel. If no options are highlighted, no ChangeMan ZMF selectable options are licensed for this LPAR

The following table lists selectable options that may be displayed.

Option	Description
DB2	Manage changes to application DB2 components.
INFO	ChangeMan ZMF communication with other applications through: ■ A VSAM interface file. ■ The Tivoli Information Management for z/OS product from IBM.

Option	Description
OFM	Create and utilize customized online forms that are integrated with change packages.
IMS	Manage changes to IMS components.

2 On the **Global Selectable Options** panel, choose the highlighted option you want to configure at the global administration level, and press Enter.

See the ChangeMan ZMF manual for the selectable option for information about configuring the option at the global administration level.

Using Package User Information

Package User Information is an optional facility that stores data in 71 fields of various lengths on the package master. You enter Package User Information on panels that are displayed when you create a package and when you update package information. The information stored in Package User Information fields is available for processing by several exits, and it is available in file tailoring for installation JCL.

The Package User Information facility is designed to be flexible so that you can customize it to meet your needs for package-level user data. You can customize two data entry panels, selecting the fields you want to display, labeling the input fields with names you choose, and coding edit rules and other panel processing to satisfy your requirements. You can use Package User Information data in program logic in certain ChangeMan ZMF exit programs. You can choose your own names for the variables made available to file tailoring for install JCL.

For a full description of the Package User Information facility, and for instructions for implementing this feature, see the "User Data" chapter in the *ChangeMan ZMF Customization Guide*.

Chapter 5

Setting Up Application Administration

This chapter explains how to set up and change administration for ChangeMan ZMF applications. Entries in application administration define the rules for managing the change lifecycle in each application.

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Accessing Application Administration

Perform these steps to access the **Update Application Administration Options** panel.

1 Go to the ChangeMan ZMF **Primary Option Menu**.

NOTE If option **A Admin** is not shown on the **Primary Option Menu**, you are not authorized in your security system for any ChangeMan ZMF administration functions. See topic "Security Considerations" in the *ChangeMan ZMF Installation Guide* and then consult with your security administrator.

2 On the **Primary Option Menu**, select option **A Admin** and press **Enter**. The **Administration Options** panel (CMNADMON) is displayed.

```
CMNADMON                    Administration Options
Option ===> ____________________________________________

A  Application    Perform application administration functions
B  Application    Browse application administration configuration
G  Global         Perform global administration functions
H  Global         Browse global administration configuration
```

The **Administration Options** panel is built dynamically to show only those administration functions that you are authorized to browse or update.

NOTE If option **A Application** is not shown on the **Administration Options** panel, you are not authorized in your security system to update application administration. See topic "Security Considerations" in the *ChangeMan ZMF Installation Guide*, and then consult with your security administrator.

3 On the **Administration Options** panel, select option **A Application** and press **Enter**. The **Update Application Administration Options** panel (CMNLAMN1) is displayed:

```
CMNLAMN1          Update Application Administration Options
Option ===> ____________________________________________

   Application ===> ____     (Blank for list)

1  Parms          Global parameters
2  Library        Library types
3  Language       Language names
4  Procedures     Compiling procedures
5  Pln Approvals  Planned approval list
6  Upl Approvals  Unplanned approval list
7  Promotion      Promotion libraries
8  Sites          Site information
B  Baseline       Baseline libraries
C  Component      Component information, procedures, security
D  Delete         Delete application
N  Notify         Global notification file
O  Options        Selectable options
P  Production     Production libraries
R  Reports        ChangeMan ZMF batch reports
U  Update         Parameters across applications
Z  Copy           Application Copy Tool
```

You can use option **B Application** on the **Administration Options** panel to view application parameters on read-only panels.

Creating a New Application

Perform these steps to create a new application.

1 On the Application Administrative Options panel, type the mnemonic for the new application in the APPLICATION field. The application mnemonic must be three or four characters long, and the first character of the mnemonic must be alphabetic or national (@ $ #).

NOTE Your security administrator must add the new application mnemonic to the resource class you use for ChangeMan ZMF and grant you UPDATE access before you can create the application in ChangeMan ZMF. See "Pre-Implementation Decisions" on page 27.

2 Type 1 on the Option line and press Enter. A popup window Create New Application - *application* (CMNGLP00) is displayed over the Update Application Administration Options panel.

```
CMNLAMN1          Update Application Administration Options
Option ===> 1

   Application ===> DEMX     (Blank for list)
       +-----------------------------------------------------------------+
1  Par | CMNGLP00      Create New Application - DEMX                      |
2  Lib |                                                                 |
3  Lan | Command ===> ____________________________________________       |
4  Pro |                                                                 |
5  Pln | Optional model to copy: . . ____                                |
6  Upl |                                                                 |
7  Pro |                                                                 |
8  Sit |                                                                 |
B  Bas +-----------------------------------------------------------------+
C  Component      Component information, procedures, security
D  Delete         Delete application
N  Notify         Global notification file
O  Options        Selectable options
P  Production     Production libraries
R  Reports        ChangeMan ZMF batch reports
U  Update         Parameters across applications
Z  Copy           Application Copy Tool
```

3 If you want to create your new application from Global Administration defaults, leave the fields on the Create New Application - *application* popup window (CMNGLP00) blank. If you want to copy the configuration of an existing application into your new application, type the application mnemonic of the model into the Optional Model to

Copy Forward field. You can modify the copied configuration later using the Update Application Administration Options panel.

```
+-------------------------------------------------------------+
| CMNGLP00      Create New Application - DEMX                 |
|                                                             |
| Command ===> _____________________________________________  |
|                                                             |
| Optional model to copy: . . ____                            |
|                                                             |
|                                                             |
|                                                             |
+-------------------------------------------------------------+
```

4 Press Enter, and the *application* Parameters - Part 1 of 4 panel (CMNGLP01) is displayed with the short ISPF message "Application created".

```
CMNGLP01              DEMX Parameters - Part 1 of 4
Command ===> ____________________________________________________

Application description  . . . . DEMX application_____________________________
Skeleton release id  . . . . . . ____          (* for list)
Normal business hours: from  . . 0001
                         to  . . 2300
Audit level  . . . . . . . . . . 0             (0,1,2,3,4,5)
Checkout enforcement rule  . . . 1             (1,2,3)
Entity check if rule 2 . . . . . ________
Staging restriction level  . . . 1             (1,2,3)
Entity check if level 2  . . . . ________
Promotion/demotion rule  . . . . 0             (0,1,2,3,4)
Cmnaudrc entity check  . . . . . ________
Audit package lock . . . . . . . OPTIONAL      (Always/Never/Optional)

Enter "/" to select option
  _  Keep baseline by site
  /  Allow temporary packages
  _  Disallow concurrent checkout
  /  Allow checkout to personal lib
  /  Overlay prior staged module
  _  Validate version during staging
```

5 You can proceed to enter and change application parameters for your new application on this and subsequent *application* Parameters panels (see "Setting Application Parameters" on page 126), or you can press END/PF3 to return to the Update Application Administration Options panel without making changes.

NOTE If you use END/PF3 to return to the Update Application Administration Options panel, the short ISPF message "Request Cancelled" is displayed. The message means that any application parameter changes you made are cancelled; the application has still been successfully created.

Updating Existing Applications

There are two ways to access an existing application for update:

- Single application

- Application list

Single Application

1 On the Update Application Administration Options panel, type the application mnemonic in the APPLICATION field.

2 Type one of the administration options on the Option line, and press Enter. The first panel for that option is displayed.

Application List

1 On the Update Application Administration Options panel, leave the APPLICATION field blank, leave the Option line blank, and press Enter. The Application List panel (CMNPLIST) is displayed.

```
CMNPLIST                        Application List              Row 1 to 5 of 5
Command ===> ____________________________________________________ Scroll ===> CSR

  Appl  Description                                  Highest #  Status
_ C001  C001 empty application                        000000
_ C009  C009 empty application                        000000    LOCKED
_ DEM   DEM application                               000000
_ DEMO  DEMO application                              000001
_ DEMX  DEMX application                              000000
****************************** Bottom of data ********************************
```

The following table describes the fields on the Application List panel.

Field	Description
Line Command	Type a one-character application administration option listed at the top of the panel.
Appl	Displays application mnemonics defined to ChangeMan ZMF.
Description	Displays the application descriptions.
Highest #	Displays the number of change packages that have been created in an application since the application was first defined.
Status	Indicates whether or not the application is available for update. LOCKED — The Global Administrator locked the application. Application administration cannot be changed until the Global Administrator unlocks the application. Application administration panels are displayed in browse mode. IN USE — Another administrator is currently updating application administration. Application administration panels are displayed in browse mode. Blank — Application administration is available for update.

2 On the Application List panel, type an application administration option number in the line command for the application you want to update and press Enter. The first panel for that option is displayed.

Locks on Application Administration

You cannot update application administration if the application is locked or in use.

- The Global Administrator can lock access to application administration. In this case, the following short ISPF message is displayed when you select an Application Administration Option: APPLICATION LOCKED and the following long ISPF message is displayed when you select an Application Administration Option:

  CMN5175I - Application parameters globally locked for update.

  The Global Administrator must unlock the application before you can update the application definition. See "Locking or Unlocking Application Definitions" on page 86.

- Another administrator is currently updating the application definition. In this case, the following long ISPF message is displayed when you select an Application Administration Option:

  CMN5176I - Application parameters currently being updated by USER238.

  When the other administrator finishes the update, the application definition becomes available for update.

  If message CMN5176I is displayed when no other administrator is updating the application, the Global Administrator must reset the "in use" indicator. See "Locking or Unlocking Application Definitions" on page 86.

How Global Settings Affect Application Settings

Application fields can only be configured within the scope of the corresponding global fields.

For example, a global administration entry might restrict the corresponding application administration, while a global administration entry could allow an application administration entry to be set on or off. In the case of a numeric parameter, a global entry might restrict the corresponding application entry to a value less than the global entry.

There is no general rule for how global administration entries restrict application administration entries. See the field descriptions for each administration field to determine the relationship between global and application settings.

Setting Application Parameters

You set and generate your ChangeMan ZMF application parameters from the Application Parameters panels. Many of the application level parameters are a subset of global parameters, but they are tailored for the individual needs of each of the application developers. The information you enter during this process is used as a default for change package creation; and in some cases, as boundaries for the change package process. By individually defining each application, you manage the implementation process through ChangeMan ZMF.

You can think of the parameter generation as a set of rules by which the users are governed. Many of the parameters set in these panels are originally set at the global level. Typically, these global parameters are very permissive, allowing the full spectrum of choice. The individual application level parameters can be more restrictive, tightening down on any sensitive application areas while allowing other applications more latitude.

If the parameter is governed by the Global Administrator's choices for the same parameters, a reference back to the global tables has been included.

NOTE If the Global Administrator restricts any settings at the global level, you cannot change the field definition to a less restricted setting at the application level.

1 Select Option 1 on the Update Application Administration Options menu (CMNLAMEN). The *application* Parameters - Part 1 of 4 panel (CMNGLP01) is displayed.

```
CMNGLP01              DEMX Parameters - Part 1 of 4
Command ===> ____________________________________________________

Application description  . . . . DEMX application_____________________________
Skeleton release id  . . . . . . ____         (* for list)
Normal business hours: from  . . 0001
                         to  . . 2300
Audit level  . . . . . . . . . . 0            (0,1,2,3,4,5)
Checkout enforcement rule  . . . 1            (1,2,3)
Entity check if rule 2 . . . . . ________
Staging restriction level  . . . 1            (1,2,3)
Entity check if level 2  . . . . ________
Promotion/demotion rule  . . . . 0            (0,1,2,3,4)
Cmnaudrc entity check  . . . . . ________
Audit package lock . . . . . . . OPTIONAL     (Always/Never/Optional)

Enter "/" to select option
  _  Keep baseline by site
  /  Allow temporary packages
  _  Disallow concurrent checkout
  /  Allow checkout to personal lib
  /  Overlay prior staged module
  _  Validate version during staging
```

The following table describes the fields on the panel and the valid information that you can enter on the panel.

Field	Description
Application description	A 44-character description of this application.
Skeleton release id	Type the release identifier to be used at this site. If you want to select from a list of available release IDs, type ***** to display the **Release ID List**.
Normal business hours	Enter the start and end times which define a normal business day. Use military notation (24-hour clock). All packages created during this time frame use the Planned Approval list. An 'Unplanned' package, created outside of these hours, will use the Unplanned Approval list before being installed. When the start and end times are the same, the business day is 24 hours in length, and the Planned Approval list will always be used.

Field	Description
Audit level	This numeric value dictates the Audit level that must be passed before a developing change package can be Frozen. If the Audit Level is made more restrictive after a package is frozen, packages with audit return codes that do not comply with the new Audit Level setting must be reverted, corrected and re-frozen, before they can be approved. 0 Audit is recommended but entirely optional. 1 Audit is required, but any return code (except ABEND) is acceptable. This means that any out-of-sync condition is permitted. This is the default option. 2 Audit is required and the return code must not exceed 12, which implies that there are "out-of-synch" situations within the staging libraries 3 Audit is required and the return code must not exceed 8, which implies that there are no "out-of-synch" situations within the staging libraries, but are "out-of-synch" situations with respect to the Baseline libraries 4 Audit is required and the return code must not exceed 4, which implies that there are no "out-of-synch" situations within the staging or Baseline libraries, but at least one module of a staging library is a "duplicate" of its Baseline counterpart. 5 Audit is required and the return code must not exceed 0, which implies that there are no "out-of-synch" situations with either the staging or Baseline libraries, and no "duplicates" exist.
Checkout enforcement rule	This numeric value dictates the rule that must be passed before a component may be staged. This rule allows the administrator to restrict who may stage components which are not first checked out from baseline. (Not for new components, but components that exist in the baseline). 1 Any component may be staged regardless of whether it has been checked out to the package. ChangeMan ZMF will not check for the component's existence in the baseline libraries. 2 Users attempting to stage a component that exists in baseline but has not been checked out must pass a security system ENTITY CHECK before the stage can proceed. The entity name is specified in the following field (**Entity Check if Rule 2**). Staging will not be allowed if the user does not pass the security check. 3 Disallow anyone from staging a component which exists in the baseline library but has not been checked out to the package requesting the stage.
Entity check if rule 2	If choice '2' is selected in the previous field (**Checkout Enforcement Rule**), enter the security system entity name that ChangeMan ZMF will check. Users whose TSO-ID has been associated with this entity will be allowed to stage components which have not been checked out to their package (but exist in the baseline).

Field	Description
Staging restriction level	This regulates the Stage Development Driven option. The setting for this parameter in Global Administration restricts Application Administration settings. An application setting cannot be numerically less than the global setting. 1 Allow all users access to both Package Driven and Development driven (new components) Stage Options. 2 All users are required to pass an entity check before being allowed to use Stage - Development. The started task must be given access to this ENTITY, as well as the TSO-IDs which will use this stage option. 3 All users are required to CHECKOUT all components, effectively disabling the Stage Development Driven option.
Entity check if level 2	If choice '2' is selected in the previous field (**Staging Restriction Level**), enter the security system entity name for ChangeMan ZMF to check.
Promotion/ demotion rule	This rule regulates the movement of components from Promotion libraries to staging (for editing) and back again. The setting for this parameter in Global Administration restricts Application Administration settings. An application setting cannot be numerically less than the global setting. 0 Allows the promotion and demotion of components even if the change package has not yet been frozen. This is liberal promotion and demotion. Rules 1 thru 4 restrict promotion to Frozen (status FRZ) packages only: 1 Requires selective demotion of a component followed by selective unfreeze, edit and promotion directly back to the package's promotion level. 2 Requires selective demotion of a component followed by selective unfreeze, edit and promotion through all intermediate promotion levels. 3 Requires full demotion of the entire package followed by a selective unfreeze, edit and promotion through all intermediate promotion levels. 4 Requires full demotion of the entire package followed by a revert of the entire package to DEV status.
CMNAUDRC entity check	This restricts which users are authorized to run program CMNAUDRC to set the audit return code for packages. This applies to users running CMNAUDRC outside of ChangeMan ZMF control. Users must have UPDATE access to this entity to run CMNAUDRC outside of ChangeMan ZMF. Enter the security system entity name for ChangeMan ZMF to check. Users must have UPDATE access to the application to run CMNAUDRC as part of a normal package lifecycle job running under the ChangeMan ZMF started task authority on behalf of the user.

Field	Description
Audit package lock	This value dictates whether a package is locked to prevent the contents from being updated while the package is being audited. The allowed values are restricted by the global administration option for audit package lock. Enter one of the following values: ALWAYS — Packages will be locked during audit. NEVER — Packages will not be locked during audit. OPTIONAL — Packages will be locked if the user requests that they be locked when the audit is submitted.
Keep baseline by site	Select to have one set of baseline libraries for each production site defined for this application. Omit to have only one set of baseline libraries for this application.
Allow temporary packages	Temporary change packages are placed into production concatenated ahead of production libraries. They are never rippled into baseline and are deleted from the production environment after the number of days specified at package creation. Select to allow their use.
Disallow concurrent checkout	Select to prevent users from checking out components included in other change packages. This rule is disregarded for Unplanned (emergency) packages. Omit to allow concurrent checkout of components which are already included in other change packages. Enter 'YES' to prevent users from being able to do a concurrent checkout.
Allow checkout to personal lib	Select to allow users to check out to a personal library. Edit and other Stage functions will update both the personal and Stage libraries the first time. Subsequent actions will affect one or both libraries depending on the status of SAVE TO PERSONAL & STAGING LIBS. Deleting a component from a package will not result in the member being deleted from a personal library. ChangeMan ZMF will not delete members from personal libraries.
Overlay prior staged module	If one user in an application has staged source code, and another user attempts to stage another version of the same module in the same change package, overlaying the first module, entering 'YES' allows this to take place (a warning will be issued if CONFIRM REQUEST=YES). A 'NO' entry enforces a single owner of any module and stops other users from overlaying a previously staged module. This option will not be enforced against members that were checked out to the package in batch.
Validate version during staging	This function ensures the integrity of a Baseline library component between Checkout and Staging. Users must check out components (not stage from development libs) for this function to be in effect. After a component is checked out, if its baseline version has been altered, staging will be prevented. Select to enforce this validation, omit to disable.

2 After you finish entering information in the fields of the panel, press Enter. The *application* Parameters Part 2 of 4 panel (CMNGLP02) is displayed.

```
CMNGLP02              DEMX Parameters - Part 2 of 4
Command ===> ____________________________________________

Default job scheduler . . . . . . . CMN     (CMN, Manual, Other)

Enter "/" to select option
  _  Job name increment override
  _  Use zprefix in batch jobs
  _  Suppress msgs in dis/ins/bas jobs
  /  Create component work records
  /  Force audit of unplanned packages
  /  Allow link packages
  _  Memo delete empty packages only
  _  Use appl in current history
  Approval Restrictions:
  _  Package creator cannot approve
  _  Package worker cannot approve
  _  Only 1 approval per user
  Install job scheduler:
  /  CMN
  /  Manual
  /  Other
```

The following table describes the fields on the *application* Parameters - Part 2 of 4 panel (CMNGLP02) and the valid information that you can enter on the panel:

Field	Description
Default job scheduler	Specify the default scheduling system to be used when creating a package. Only schedulers allowed above may be specified. If CMN is specified, the ChangeMan ZMF started task will schedule the submission of the package installation jobs. If MANUAL is specified, the installation process will begin as soon as the package is approved. MANUAL allows you to install a package before it's scheduled install date. If OTHER is specified, ChangeMan ZMF will perform a batch interface to add the package install job information to the external scheduler's database.
Job name increment override	Select to prevent ChangeMan ZMF from incrementing the jobname suffix when submitting batch jobs. Under normal circumstances, ChangeMan ZMF will increment a jobname if it consists of the user id and a 1-character suffix. This ensures that multiple submissions get a different jobname for each job submitted. If jobs must single thread, and a similar jobname is required for each submission, then this option should be used. The jobname is only incremented for the following types of jobs: When you are doing a Batch Stage ('SB') of a component(s) within a package. When doing a Batch Stage from Development ('S1').

Field	Description
Use zprefix in batch jobs	When ChangeMan ZMF attaches a batch TSO session (during API functions such as checkout, freeze, stage), it constructs a TSO profile using 'PROFILE PREFIX(Userid)' to identify the variable pools for the session. This can be changed to 'PROFILE PREFIX(*userprefix*) by this option. Refer to the IBM ISPF Dialog Developer's Guide and Reference for more information.
Suppress msgs in dis/ins/bas jobs	Select this option to suppress the ChangeMan ZMF status notification messages issued by the distribution, install, and baseline jobs. This will suppress the messages that are normally sent to the broadcast log at completion of the individual job.
Create component work records	See also 'package worker cannot approve'. This option maintains a history of all update access to a component within a package (checkout, stage, recompile, relink, etc.). It builds component work records within the package and provides a complete dossier of component updates. The information is available for browse through the package list function.
Force audit of unplanned packages	Select this option to force unplanned packages to be audited prior to freeze. (Unplanned packages normally bypass audit rules). Audit return codes will not be enforced, but the audit must be run. This flag is inoperative if the application audit level is set to 0.
Allow link packages	Select option to allow the use of the Package Linking option where packages may be associated with other packages on other platforms. Linked packages are subject to delete, freeze, approval, revert and deletion restrictions when linked.
Memo delete empty packages only	Select option to require users to delete all the components from a package before memo-deleting the package.
Use appl in current history	Select to limit searches for current history information to this application. Omit to allow all applications to be considered.
Approval Restrictions	Approval restrictions can be used to limit a user's approval authority within planned packages, even though they may otherwise be permitted to apply an approval to that package. Approval restrictions do not apply to unplanned approval lists.
Package creator cannot approve	Select option to prevent the user who created the package from being part of the approval process.
Package worker cannot approve	Select option to prevent any user whose user id is associated with any of the package components from taking part in the approval process. A user id is attached by each function (checkout, edit, stage etc.) This option will work in conjunction with the 'Create component work records' option. With the option turned on, a history is maintained of each user's access to any component in the package. With the option turned off, only the last user id is stored.
Only 1 approval per user	Use this option to restrict any user id from approving more than one entry in the approval list. It is possible that users may have the authority to apply several approvals, if they have update access to several entity names, and two or more of those entities appear in a package. This option restricts them to a single approval, no matter how many they are authorized for.

Field	Description	
Install job scheduler	Specify which scheduling systems can be used to control submission of the package installation batch jobs. This restricts which scheduler can be specified when a package is created or updated. Only schedulers allowed in global administration can be allowed in application administration.	
	CMN	ChangeMan ZMF internal scheduling.
	Manual	Manually control the submission of installation jobs.
	Other	Scheduling software such as CA7, ADC2 or CA-Scheduler.

3 After you finish entering information in the fields of the panel, press Enter. The *application* Parameters - Part 3 of 4 panel (CMNGLP03) is displayed.

```
CMNGLP03               DEMX Parameters - Part 3 of 4
Command ===> _____________________________________________

Enter "/" to select option
  Enable display order
  _  Library types
  _  Languages
  _  Build procedures
  _  Sites
  _  DB2 logical subsystems
  _  IMS control regions
  _  IMS DBD overrides
  _  IMS PSB overrides
  _  XML reports
```

4 Enable display order
Select to activate the default display order defined in application administration. The default display order is defined by a display order number defined for items in application administration. If activated, this is used as the default order in which lists are displayed. Users can use the SORT command to sort lists by various columns. Users can use the 'SORT DEFAULT' command to sort lists by the administration defined default display order, if activated. If not activated, 'SORT DEFAULT' sorts by predefined columns. Some options may be unavailable due to unlicensed options.

5 After you finish entering information in the fields of the panel, press Enter. The *application* Parameters - Part 4 of 4 panel (CMNGLP04) is displayed.

```
CMNGLP04              DEMX Parameters - Part 4 of 4
Command ===> ____________________________________________________

Aging - installed packages  . . . . . 180     (0 to 9999 days)
      - staging datasets  . . . . . . 180     (0 to 9999 days)
      - component history . . . . . . 3660    (0 to 9999 days)
      - staging versions  . . . . . . 0       (0 to 9999 days)
Default unit name . . . . . . . . . . SYSDA   (Generic disk unit)
Default volume serial . . . . . . . . ______

Job statement information:
  //CMNSTART JOB , 'ACCOUNT INFO',
  //             CLASS=A,MSGCLASS=X
  //* JOBCARD FROM LOCAL PARAMETERS - PART 4 OF 4
  //* SYSTEM=DEMX

Enter "/" to select option
  _  Require Work request
  _  Require Department
  _  Hierarchical approval process
  _  Eliminate save to personal library
  _  Edit staging recovery mode on
  _  Build install JCL at approve
  /  Use like-lod in syslib
```

The following table describes the fields of the Application Parameters - Part 4 of 4 panel (CMNGLP04) and the information that you can enter on the panel.

Field	Description
Aging	Enter the number of calendar days for aging resources as follows: The value can be from 0 to 9999 days. A zero (0) value turns off the aging function, and packages, staging libraries, and component history records will not be deleted.
	Installed packages Enter the number of days a package record is to remain within the package master. The corresponding change package itself must be in BAS, INS or TCC status for this value to take effect. If the package is in Memo Delete status this value has no effect and the records will be deleted regardless. This value should be greater than or equal to the aging value for staging datasets.
	Staging datasets Enter the number of days staging datasets from a package should remain on the the systems catalog. The corresponding change package must be in BAS, INS or TCC status for this value to take effect. If the package is in Memo Delete status this value has no effect and the datasets will be deleted regardless.

Field	Description
	Component history Enter the number of days component history records should remain in the component master file. The corresponding change package must have been aged off for this value to take effect. If the package is in Memo Delete status this value has no effect and the history will be deleted regardless. This value should be greater than or equal to the aging value for installed packages.
	Staging versions Enter the number of days that saved staging versions from a package should remain. The corresponding change package must be in BAS, INS or TCC status for this value to take effect. If the package is in Memo Delete status this value has no effect and the saved staging versions will be deleted regardless.
Default unit name	Enter the type of disk device to use for allocation of non-temporary datasets by ChangeMan ZMF (e.g. 'SYSDA').
Default volume serial	Enter the serial number of the volume to use for allocation of non-temporary ChangeMan ZMF datasets. This field may be left blank if the Default Unit Name was entered.
Job statement information	Enter job card information. Batch Stage jobs will run using this information. ChangeMan ZMF also builds the install jobs with these cards (the .X dataset), changing the jobname.
Require Work request	Enter '/' if users will be required to enter a Work request during package creation. (A Work request may be required under the INFO MANAGEMENT CHANGE RULE). Leave blank if it is to be optional.
Require Department	Enter '/' if users will be required to enter a Department during package creation. Leave blank if it is to be optional.
Hierarchical approval process	Select this option to notify approving entities of packages pending approval according to the order number specified in the approval lists. Notification is only passed along as the package is approved at each level. If omitted, all entities will be notified simultaneously.
eliminate save to personal lib	This rule applies to edit in staging when a personal or development library is involved. If a component is checked out to a personal lib, or staged from development, edits in staging will be performed on both the package's stage lib and the personal or development lib. After the first edit, changes are saved to both libraries regardless of this rule. Subsequent edits are saved in BOTH places if this rule is set to 'NO'. Selecting this opton breaks this connection, and edit changes are saved to the staging library only.
Edit staging recovery mode on	Select to turn edit recovery on. With recovery on, edit keeps track of any changes that are made while editing a component within ChangeMan ZMF. If the user's TSO session fails, the user will be able to recover and continue editing from the point of the last 'enter'. After the failure, upon reentering ChangeMan ZMF, the user has the choice of recovering or cancelling the recovery. This is similar to ISPF edit recovery. Enter NO to disable this function.

Field	Description
Build install JCL at approve	This option will delay the construction of the Package Installation JCL (often known as the 'x.node JCL') until the last approval takes place. Normally Package Installation JCL is built each time the package is frozen.
Use like-lod in syslib	ChangeMan ZMF will always include like-OBJ and like-NCL libraries in program binder SYSLIB concatenations. You can optionally choose to include like-LOD libraries too.

6 Press Enter to save and generate the application parameters. You are returned to either the Update Application Administration Options panel (CMNLAMN1) or the Application List panel (CMNPLIST), wherever you started.

If you updated any field on any of the four *application* Parameters panels, the short ISPF message "Parameters Generated" message is displayed.

If you did not change any fields on these panels, the short ISPF message "Browse Only" is displayed.

Defining Library Types And Staging Library Attributes

A library type definition sets processing rules for the components stored under that library type. The definition also sets the data set attributes for the package stage library that is allocated for the library type. The Application Administrator defines the library types in each application.

Application library types are copied from global library type definitions. Only library types defined in global administration can be defined in an application. However, an application does not have to contain all of the library types defined in global administration, and application library types copied from global administration can be modified.

Defining Library Types for a New Application

Perform these steps to define the library types for a new application.

1 On the Update Application Administration Options panel, type 2 on the Option line and press Enter. The *application* - Library Types Part 1 of 2 panel is displayed.

```
CMNCLLT0              DEMX - Library Types Part 1 of 2          Row 1 to 7 of 7
Command ===> _____________________________________________ Scroll ===> CSR

     Lib                                        Order Lke Seq Defer Target Sel
     type Description                         +                      type   Opt
____ CLS  CLIST                                 0     C   ___   Y    ___    __
____ JCL  JCL Library Type                      0     P   ___   Y    ___    __
____ LCT  Linkedit Control Cards                0     P   ___   Y    ___    __
____ LST  Listing                               0     P   ___   Y    ___    __
____ NCL  NCAL subroutine load library          0     N   ___   Y    ___    __
____ OBJ  Object module library                 0     O   ___   Y    ___    __
____ PKG  DB2 Bind Package Commands             0     P   ___   Y    ___    __
****************************** Bottom of data ********************************
```

The following table describes the fields on the Application Library Types Part 1 of 2 panel.

Field	Description
Line Command	Type a line command to the left of a panel row. S Select to see the next panel for this library type. I Insert a blank library type row. R Repeat an existing library type row. D Delete an existing library type row. * Display a selection list of available library types.
Lib type	Enter a three-character library type. The following library types are defined by ChangeMan ZMF and are reserved, and if used, they must have the following attributes: CPY Copylib - RECFM=F/FB, LRECL=80 CTC Control Cards - RECFM=F/FB, LRECL=80 DOC Documentation - RECFM=F/FB/V/VB JCL Job Control Language - RECFM=F/FB, LRECL=80 LCT Link Edit Control - RECFM=F/FB, LRECL=80 LOD Load Modules - RECFM=U, LRECL=0 LST Compressed listings - RECFM=F/FB, LRECL=80, BLKSIZE=23440 PRC Procedures - RECFM=F/FB, LRECL=80 SRC Source Code - RECFM=F/FB, LRECL=80
Description	Enter free-form text describing the library type.
Order	Enter a number to determine the order in which this list is displayed to users by default. Valid values are 0 to 65535. The display order option must be enabled in application parameters for the display order number to take effect.

Field	Description
Lke	If you choose to create library types other than those designated by ChangeMan ZMF, indicate how they should be processed as follows: S like-SRC: staging is done in batch and the library type must have an associated load library type. C like-CPY: staging is done online and the library type will be concatenated where ever CMN$$SYC is used and the library type allocated. L like-LOD: staging is done in batch and may be concatenated in the CMN$$SYL skeleton wherever used and the library type allocated. N like-NCAL: staging is done in batch and will be concatenated in the CMN$$SYL skeleton wherever used and the library type allocated. O like-Object: staging is done in batch and will be concatenated in the CMN$$SYL skeleton wherever used and the library type allocated. P allocated like any PDS: users may specify the RECFM and BLKSIZE required. Staging is done online, checkout in batch OR online. Blank creates an 'Other' library type: staging and checkout are done in batch only - for which skeletons must be file-tailored. 'Other' library types are displayed in the Query and Unfreeze functions with the Source and Load Components. Skeleton names to be associated with an 'other' type must be in the following format: CMN$$XXX (where XXX is the library type).
Seq	This column is applicable to like-copy and like-load library types only. Enter a value between 001 and 255. To remove a sequence number blank out this field. The library sequence number determines the syslib concatenation for copybook and link library datasets in the stage, relink and recompile JCL generated when components are submitted for build. There are no other restrictions on sequence numbers, you may duplicate numbers and use the same sequence numbering for like-copy and like-load library types if you wish. Any unsequenced library types will be sorted to the top of the concatenation lists. The package staging libraries, promotion and baseline libraries are sorted by library sequence number when the build JCL is created. If the library sequence number is not defined, the libraries are placed in random sequence (in the order they appear in the Package records.)
Defer	Y To allow users to defer allocation of the staging library until a component of that type is actually staged or checked out. N To require allocation of the library at the time the change package is created.
Target type	For SRC or Like-SRC library types, enter the load library type where the binder will stage the executable module created by the build process.

Field	Description
Sel Opt	This indicates that the library type has a selectable option attached to its definition. By removing the selectable option from this panel you will remove any associated selectable option information. You can associate a selectable option from here if you are licensed for that option, but you must go to the selectable option to define the associated data for the library type. D=DB2 Option I=IMS Option

2 When the Application Library Types Part 1 of 2 panel is first displayed for a new application, all of the library types defined on the Global Library Types Part 1 of 2 panel display. The definitions displayed on this panel are the same as those in global administration.

3 If a library type is not needed for this application, type D (Delete) in the line command for the library type on the Application Library Types Part 1 of 2 panel and press Enter. The library type is deleted.

4 To add a library type to the Application Library Types Part 1 of 2 panel that you previously deleted:

a Type I (Insert) in the line command above where you want to insert the library type and press Enter. An empty library type entry is inserted on the panel.

b Type * in the line command for the empty library type definition and press Enter. The Global Library Type Selection List panel is displayed.

```
CMNGLTPL              Global Library Type Selection List      Row 1 to 7 of 7
Command ===> _____________________________________________ Scroll ===> CSR

_ Lib  Description
_ CLS  CLIST
_ JCL  JCL Library Type
_ LCT  Linkedit Control Cards
_ LST  Listing
_ NCL  NCAL subroutine load library
_ OBJ  Object module library
_ PKG  DB2 Bind Package Commands
****************************** Bottom of data ********************************
```

c On the Global Library Type Selection List panel, type S in the line command for any global library type that you want to add at the insert point on the Application Library Type Part 1 of 2 panel. You may select multiple library types, but you can not scroll down to select global library types from multiple pages of the Global Library Type Selection List at one time.

d Press Enter to return to the Application Library Type Part 1 of 2 panel, where the new library types have been added at the insertion point.

5 There is a second panel for each library type that defines additional processing rules and the staging library attributes for a library type. Type S in the line command for a

library type and press Enter. The Application Library Types Part 2 of 2 panel is displayed.

```
CMNCLLT1              DEMX - Library Types Part 2 of 2
Command ===> ____________________________________________________

Library type: CLS -  CLIST
Like value:   C     Defer value:   Y

Staging dataset attributes:
 Generic unit name . . . . . SYSDA    (Generic group name or unit)
 Volume serial . . . . . .  ______    (Required if generic unspecified)
 Space units . . . . . .    TRK       (trk, cyl or blk)
 Primary quantity  . . . . . 3        (In above units)
 Secondary quantity  . . . . 1        (In above units)
 Directory blocks  . . . . . 5
 Record format . . . . . .  FB
 Record length . . . . . .  80
 Block size  . . . . . .    27920
 Data set type . . . . . .  PDS       (library, pds, hfs or blank)
 Data set version  . . . . . _        (pdse version)
 Extended attributes . . . . ___      (no, opt or blank)
 Save staging versions . . . . NONE   (always/none/prompt)

Enter "/" to select option:
  _ Checkout component description
  _ Checkout component activity file   Library type . . . . ___
```

The following table describes the fields on the *Application Library Type Part 2 of 2* panel.

Field	Description
Library Type (read only)	The type of being specified (as defined to ChangeMan ZMF) and description in free-form text describing the type.
Like value (read only)	Indicates what the type will be staged "like" (e.g. PDS, SRC, etc.).
Defer value	Indicates whether the staging dataset allocation will occur upon creation ('N'), or if ChangeMan ZMF will wait until the dataset is needed.
Generic unit name	Enter the generic unit device name (e.g. 'SYSDA') for allocating staging datasets.
Volume serial	Enter a specific volume. This is required only if Generic unit name is blank.
Space units	Enter a valid unit for space, as follows: TRK Allocate space in tracks. CYL Allocate space in cylinders. BLK Allocate space in blocks.
Primary quantity Secondary quantity Directory blocks	Enter the primary, secondary, and directory block allocations for the staging datasets. These are considered MINIMUM allocations, and will be increased automatically (dynamically reallocated) by ChangeMan ZMF if larger dataset sizes are necessary. The dataset's actual size is passed to ChangeMan ZMF ISPF skeletons; any unused space is freed at Freeze time.

Field	Description
Record format	Type the appropriate record format for this library type. Valid values include: F, FA, FB, FBA, FBM, FM, FS, V, VA, VB, VBA, VBM, VM, U Legend: F - Fixed length records V - Variable length records U **-** Undefined format records B - Blocked records S - Standard blocks A - ASA printer control characters M - Machine code printer control characters
Record length	Type the logical record length for components in this library type.
Block size	Type the staging library block size for this library type. Type 0 to let SMS calculate the best block size for the storage device.
Dataset type	Leave blank for PDS staging library, or type one of the following: LIBRARY — By specifying dataset type of LIBRARY, a Partitioned Data Set Extended (PDSE) will be allocated. Except for BLKSIZE, all other DCB attributes will be ignored. HFS — HFS directory PDSE — PDS library
Extended attributes	NO — Data set cannot have extended attributes or reside in EAS. OPT — Data set can have extended attributes and reside in EAS. blank — Use default based on data type.
Save staging versions	This value dictates whether prior versions of a component in a change package are saved when a component is updated in the staging. This value may be restricted by global administration types. This value has no effect if this facility is not installed. Prior versions can be displayed and acted upon using the Version Control function within the package Staging and Query functions. ALWAYS — Prior versions are always saved for this type. NONE — Prior versions are not saved for this type. PROMPT — Prior versions are saved for this type except when all of the following conditions are satisfied: 1. The component in staging is being replaced - not deleted. 2. The userid associated with the component already in staging is the same as the user about to replace it. 3. The user requests that the prior version is not saved. The prompt option allows a user to make a single logical change to a component over multiple checkout, stage and edit sessions without saving the versions from each session.
Checkout component description	Component Descriptions are initially entered on the Application Administrator Component panels. Selecting this option will make the component description available for update when a user checks out a component of this type. Omit to prevent description update.

Field	Description
Checkout component activity file	This optional file, a free-form record of a component's activity, is maintained as a separate component within a package. When a component is checked out, its Activity File will automatically be checked out with it; users can then update activity records. Select to activate this feature, omit to disable.
Component activity file type	If the option is selected for CHECKOUT COMPONENT ACTIVITY FILE, enter the type (3 characters) that will contain the Activity File for this component. Each component type can have its own Activity File, which must be defined as a type, with Baseline and (if necessary for this component) Promotion and Production libs. NOTE: Establish Activity Files as LIKE PDS in Part 1 of 2.

When this panel is first displayed for a library type in a new application, the fields on the panel are the same as the fields on the Global Library Types Part 2 of 2 panel for the library type.

NOTE You may adjust the values displayed on the Application Library Types Part 2 of 2 to fit the needs of the application you are defining. Library type standardization does not need to include the attributes and rules displayed on this panel.

6 When you finish updating fields on the Application Library Type Part 2 of 2 panel, press END/PF3 to return to the Application Library Types 1 of 2 panel.

7 When you finish creating library type definitions on the Application Library Types Part 1 of 2 panel, press PF3 or type End and press Enter to store the application library type definitions in the package master file.

Updating Application Library Types

Perform these steps to update application library type definitions.

1 On the Update Application Administration Options panel, type 2 on the Option line and press Enter. The Application Library Types Part 1 of 2 panel is displayed.

```
CMNCLLT0              DEMX - Library Types Part 1 of 2          Row 1 to 7 of 7
Command ===> _____________________________________________ Scroll ===> CSR

     Lib                                        Order Lke Seq Defer Target Sel
     type Description                         +                      type   Opt
____ CLS  CLIST                                 0     C   ___   Y    ___    __
____ JCL  JCL Library Type                      0     P   ___   Y    ___    __
____ LCT  Linkedit Control Cards                0     P   ___   Y    ___    __
____ LST  Listing                               0     P   ___   Y    ___    __
____ NCL  NCAL subroutine load library          0     N   ___   Y    ___    __
____ OBJ  Object module library                 0     O   ___   Y    ___    __
____ PKG  DB2 Bind Package Commands             0     P   ___   Y    ___    __
****************************** Bottom of data ********************************
```

See the table that starts on page 137 that describes fields on this panel.

2 To delete a library type from the Application Library Types Part 1 of 2 panel, type D (Delete) in the line command for the library type and press Enter.

3 To add a library type to the Application Library Types Part 1 of 2 panel:

a Type I (Insert) in the line command above where you want to insert the library type and press Enter. An empty library type entry is inserted on the panel.

b Type * in the line command for the empty library type definition and press Enter. The Global Library Type Selection List panel is displayed.

```
CMNGLTPL              Global Library Type Selection List      Row 1 to 7 of 7
Command ===> ____________________________________________________ Scroll ===> CSR

_ Lib  Description
_ CLS  CLIST
_ JCL  JCL Library Type
_ LCT  Linkedit Control Cards
_ LST  Listing
_ NCL  NCAL subroutine load library
_ OBJ  Object module library
_ PKG  DB2 Bind Package Commands
****************************** Bottom of data ********************************
```

c On the Global Library Type Selection List panel, type S in the line command for any global library type that you want to add at the insert point on the Application Library Type Part 1 of 2 panel. You may select multiple library types, but you can not scroll down to select global library types from multiple pages of the Global Library Type Selection List at one time.

d Press Enter to return to the Application Library Type Part 1 of 2 panel, where the new library types have been added at the insertion point.

4 To update additional processing rules or the staging library attributes for a library type, type S in the line command for the library type on the Application Library Types Part 1 of 2 panel. The Application Library Types Part 2 of 2 panel is displayed.

```
CMNCLLT1              DEMX - Library Types Part 2 of 2
Command ===> ____________________________________________________

Library type: CLS -  CLIST
Like value:   C     Defer value:   Y

Staging dataset attributes:
 Generic unit name . . . . . SYSDA___  (Generic group name or unit)
 Volume serial . . . . . . . ______    (Required if generic unspecified)
 Space units . . . . . . . . TRK       (trk, cyl or blk)
 Primary quantity  . . . . . 3_______  (In above units)
 Secondary quantity  . . . . 1_______  (In above units)
 Directory blocks  . . . . . 5___
 Record format . . . . . . . FB
 Record length . . . . . . . 80___
 Block size  . . . . . . . . 27920
 Data set type . . . . . . . PDS____   (library, pds, hfs or blank)
 Data set version  . . . . . _         (pdse version)
 Extended attributes . . . . ___       (no, opt or blank)
 Save staging versions . . . NONE__    (always/none/prompt)

Enter "/" to select option:
  _ Checkout component description
  _ Checkout component activity file   Library type . . . . ___
```

See the table that starts on page 140 that describes fields on this panel.

NOTE You can adjust the values displayed on the Application Library Types Part 2 of 2 to fit the needs of the application you are defining. Library type standardization does not need to include the attributes displayed on this panel.

5 When you finish updating library type definition fields on the Application Library Type Part 2 of 2 panel, press Enter to return to the Application Library Types 1 of 2 panel.

On the Application Library Type Part 1 of 2 panel, press PF3 or type End and press Enter to store the application library type definitions in the ChangeMan ZMF package master file.

Defining Language Names

Build processing for a like-source component is determined by the language name and compile procedure that are assigned to the component. Language names are defined in an application, and the pairs of language name and compile procedure that are defined in the application are verified against application language names.

Only language names defined in global administration can be defined in an application. However, an application does not have to contain all of the language names defined in global administration.

When you create a new application, the initial list of language names depends on how you create the application:

- If you create a new application without copying an existing application, all global language names are copied into the application.
- If you create a new application by copying an existing application, the language names for the new application are copied from the existing application.

Follow this procedure to update the application language names.

1 On the Update Application Administration Options panel, type 3 on the Option line and press Enter. The *application* - Language Names panel is displayed.

```
CCMNCLLNG                   DEMX - Language Names            Row 1 to 11 of 11
Command ===> _____________________________________________ Scroll ===> CSR

     Language Order
____ ASM      0
____ C        0
____ COBOL    0
____ COBOL2   0
____ JAVA     0
____ JCLGEN   0
____ LINK     0
____ MFS      0
____ PLI      0
____ REX      0
____ SQL      0
****************************** Bottom of data ********************************
```

2 To delete a language name from the *application* - Language Names panel, type D (Delete) in the line command for the language name and press Enter.

3 To add a language name to the *application* - Language Names panel:

a Type I (Insert) in the line command above where you want to insert the language name and press Enter. An empty language name entry is inserted on the panel.

b Type * in the line command for the empty entry and press Enter. The Language Selection List panel is displayed.

```
CMNLNGSL                    Language Selection List          Row 1 to 11 of 11
Command ===> ____________________________________________________ Scroll ===> CSR

_ Language
_ ASM
_ C
_ COBOL
_ COBOL2
_ JAVA
_ JCLGEN
_ LINK
_ MFS
_ PLI
_ REX
_ SQL
****************************** Bottom of data ********************************
```

c On the Language Selection List panel, type S in the line command for any global language name that you want to add to the application. You may select multiple language names, but you can not scroll down to select global language names from multiple pages of the Language Selection List at one time.

d Press Enter to return to the *application* - Language Names panel, where the new language name or names are added at the insertion point.

4 Press PF3 to exit the *application* - Language Names panel and define the language names to the application.

Defining Compile Procedures

Build processing for a like-source component is determined by the language name and compile procedure that are assigned to the component. Each compile procedure is paired with one or more language names to create the list of compile procedure that can be assigned to components.

Only compile procedures defined in global administration can be defined in an application. However, an application does not have to contain all of the compile procedures defined in global administration.

When you create a new application, the initial list of compile procedures depends on how you create the application:

- If you create a new application without copying an existing application, all global compile procedures are copied into the application.
- If you create a new application by copying an existing application, the compile procedures for the new application are copied from the existing application.

Follow this procedure to update the application compile procedures.

1 On the Update Application Administration Options panel, type 4 on the Option line and press Enter. The *application* - Compile Procedures panel is displayed.

```
CMNCLPRC                 DEMX - Compile Procedures              Row 1 to 5 of 5
Command ===> ____________________________________________________ Scroll ===> CSR

     Language  Procedure  Description                                    Order
____ ASM       CMNASM    Assembler build procedure                      0
____ C         CMNCEE    C build procedure                              0
____ COBOL2    CMNCOB2   COBOL2 build procedure                         0
____ PLI       CMNPLI    PL/I build procedure                           0
____ SQL       CMNSQL    Translate compile link SQL Stored Proc         0
****************************** Bottom of data ********************************
```

2 To delete a compile procedure from the *application* - Compile Procedures panel, type D (Delete) in the line command for the compile procedure and press Enter.

3 To add a compile procedure to the *application* - Compile Procedures panel:

a Type I (Insert) in the line command above where you want to insert the compile procedure and press Enter. An empty compile procedure entry is inserted on the panel.

b Type * in the line command for the empty entry and press Enter. The Global Compile Procedure List panel is displayed.

```
CMNGPRCL                 Global Compile Procedure List          Row 1 to 5 of 5
Command ===> ____________________________________________________ Scroll ===> CSR

_ Language Procedure  Description
_ ASM      CMNASM     Assembler build procedure
_ C        CMNCEE     C build procedure
_ COBOL2   CMNCOB2    COBOL2 build procedure
_ PLI      CMNPLI     PL/I build procedure
_ SQL      CMNSQL     Translate compile link SQL Stored Proc
****************************** Bottom of data ********************************
```

c On the Global Compile Procedure List panel, type S in the line command for any global compile procedure that you want to add to the application. You may select multiple compile procedures, but you can not scroll down to select global compile procedures from multiple pages of the Global Compile Procedure List at one time.

d Press Enter to return to the *application* - Compile Procedures panel, where the new compile procedure or procedures are added at the insertion point.

4 Press PF3 to exit the *application* - Compile Procedures panel and define the language names to the application.

Setting Up Planned Approvals

The Planned Approvals definition determines who must approve packages, the order of approvals, and how approvers are notified that their approval is required.

See "Package Approvals" on page 36 for a discussion of the difference between Planned and Unplanned Approval lists.

To create or update a Planned Approvals list, follow these steps.

1 On the Update Application Administration Options panel, type 5 on the Option line and press Enter. The Planned Approvals Part 1 of 2 panel is displayed.

```
CMNCAPLD            ACTP - Planned Approvals Part 1 of 2       Row 1 to 3 of 3
Command ===> _____________________________________________ Scroll ===> CSR

                                                 Security    Order  Int.
     Approver description                        entity      no.    apr.
____ Development Team Lead                       DEVLEAD     10     ___
____ Quality Assurance                           QA          20     ___
____ Program Manager                             PGMMGR      30     YES
****************************** Bottom of data ********************************
```

The following table describes the fields on the Application Planned Approvals Part 1 of 2 panel.

Field	Description
Line Command	Type a value line command. S Select to see the next panel for this approval I Insert a blank approval row. R Repeat an existing approval D Delete an existing approval
Approver description	Type a description of the approval. To avoid excessive maintenance, do not use an approver's name.
Security entity	Type the security entity name that is used to grant authority to TSO userids to enter this approval. You must define this security entity in your security system. Grant the appropriate authority to TSO userids in your security system to grant approver authority to individuals. See "Pre-Implementation Decisions" on page 27 for details.
Order no.	Type an order number if an approval hierarchy is required. Order number 00 may be approved at any time. A group of approvals with the same non-zero order number may be approved in any order. Start with order numbers 10 and increment by 10 so that other approvers can be added later. Link Package approvals automatically reset their order numbers to 00.
Int. apr.	Indicates whether this approval is added to a participating package in another application when that package specifies this application as an Affected Application. This approval is added to that package only if it is different from approvals already assigned to the package. YES — Add this approval to participating packages in other applications when those packages specify this application as an Affected Application. Blank or NO — Do not add this approval to participating packages when they specify this application as an Affected Application.

2 On the *Application* - Planned Approvals Part 1 of 2 panel, type S on the line command for an approval and press Enter. The *Application* - Planned Approvals Part 2 of 2 panel is displayed.

```
CMNCAPL1            DEMX - Planned Approvals Part 2 of 2       Row 1 to 2 of 2
Command ===> _____________________________________________ Scroll ===> CSR

Approver: Development Team Lead
Entity:   DEVLEAD
Order no: 10

     Vehicle  User(s) to Notify                          Order

____ MVSSEND  USER010 ____________________________________ 10
____ MVSSEND  USER020 ____________________________________ 20
****************************** Bottom of data ********************************
```

The following table describes the fields on the Planned Approvals Part 2 of 2 panel.

Field	Description
Vehicle	Enter the NOTIFICATION VEHICLE(s) that are defined in the Global parameters (MVSSEND, EMAIL or BATCH). You may enter more than 1 vehicle, and you can repeat the same vehicle on multiple lines. BATCH — BATCH - File tailor skeleton CMN$$NTF and submit the generated JCL with Job Card Information defined in Application Administration Parameters. MVSSEND — Issue an MVS SEND message to TSO user IDs. EMAIL — Send notification through SERNET to the internal email server for delivery to the specified recipient. The IP address of the EMAIL server is defined in global administration on the Global Parameters - Part 5 of 7 (CMNGGP05) panel. See "Setting up Global Parameters" on page 51.
User(s) to Notify	Type the appropriate user identifications for the notification vehicle. Separate multiple user identifications with commas: E-mail Address or Mailing List — Use with the EMAIL vehicle. Also use with the BATCH vehicle if REXX program CMNSMTP has been activated in skeleton CMN$$NTF. TSO Userid — Use for vehicle MVSSEND,
Order	A number generated from the order of the notifications in the package master. Notifications are saved in the order they were last sorted. Valid values are 0 to 65535.

The information on the Planned Approvals Part 2 of 2 panel is used to:

- Notify an approver that there is a package awaiting for his or her approval.
- Allow queries for packages awaiting approval based on TSO userids entered in User(s) to Notify.

These rules apply when you are setting up approval notifications:

- Approver notification is not required for an approval.
- You can create multiple notifications for an approval.
- You can create multiple notifications using the same vehicle.

Setting Up Unplanned Approvals

The Unplanned Approvals definition determines who must approve packages, the order of approvals, and how approvers are notified that their approval is required.

See "Package Approvals" on page 36 for a discussion of the difference between Unplanned and Planned Approval lists.

To create or update an Unplanned Approvals list, follow these steps:

1 On the Update Application Administration Options panel, type 6 on the Option line and press Enter. The *application* - Unplanned Approvals Part 1 of 2 panel is displayed.

```
CMNCAPLD            ACTP - Planned Approvals Part 1 of 2       Row 1 to 3 of 3
Command ===> ____________________________________________________ Scroll ===> CSR

                                                  Security    Order  Int.
     Approver description                         entity      no.    apr.
____ Development Team Lead                        DEVLEAD     10     ___
____ Quality Assurance                            QA          20     ___
____ Program Manager                              PGMMGR      30     YES
****************************** Bottom of data ********************************
```

The following table describes the fields on the Application Planned Approvals Part 1 of 2 panel.

Field	Description
Line Command	Type a line command: S Select to see the next panel for this approval. I Insert a blank approval row. R Repeat an existing approval. D Delete an existing approval.
Approver description	Type a description of the approval. To avoid excessive maintenance, do not use an approver's name.
Security entity	Type the security entity name that is used to grant authority to TSO userids to enter this approval. You must define this security entity in your security system. Grant the appropriate authority to TSO userids in your security system to grant approver authority to individuals. See "Pre-Implementation Decisions" on page 27 for details.
Order no.	Type an order number if an approval hierarchy is required. Order number 00 may be approved at any time. A group of approvals with the same non-zero order number may be approved in any order. Start with order numbers 10 and increment by 10 so that other approvers can be added later. Link Package approvals automatically reset their order numbers to 00.

2 On the *application* - Unplanned Approvals Part 1 of 2 panel, type S on the line command for an approval and press Enter. The *application* - Unplanned Approvals Part 2 of 2 panel is displayed.

```
CMNCAPL1            DEMX - Planned Approvals Part 2 of 2       Row 1 to 2 of 2
Command ===> _____________________________________________ Scroll ===> CSR

Approver: Development Team Lead
Entity:   DEVLEAD
Order no: 10

     Vehicle  User(s) to Notify                          Order

____ MVSSEND  USER010 ____________________________________ 10
____ MVSSEND  USER020 ____________________________________ 20
****************************** Bottom of data ********************************
```

The following table describes the fields on the Planned Approvals Part 2 of 2 panel.

Field	Description
Vehicle	Type the vehicle used to notify approvers about packages pending approval. You may use any vehicle activated in Global Administration Parameters. You can also use MVSSEND. BATCH — BATCH - File tailor skeleton CMN$$NTF and submit the generated JCL with Job Card Information defined in Application Administration Parameters. EMAIL — Send notification through SERNET to the internal email server for delivery to the specified recipient. MVSSEND — Issue an MVS SEND message to TSO user IDs. The IP address of the EMAIL (or SERNET) server is defined in global administration on the Global Parameters - Part 5 of 7 (CMNGGP05) panel. See "Setting up Global Parameters" on page 51.
User(s) to Notify	Type the appropriate user identifications for the notification vehicle. Separate multiple user identifications with commas.: E-mail Address or Mailing List — Use with the EMAIL vehicle. Also use with the BATCH vehicle if REXX program CMNSMTP has been activated in skeleton CMN$$NTF. TSO Userid — Use for vehicle MVSSEND.

The information on the Unplanned Approvals Part 2 of 2 panel is used to:

- Notify an approver that there is a package awaiting for their approval.
- Allow queries for packages awaiting approval based on TSO userids entered in User(s) to Notify.

These rules apply when you are setting up approval notifications:

- Approver notification is not required for an approval.
- You can create multiple notifications for an approval.
- You can create multiple notifications using the same vehicle.

Defining Application Sites

A site specifies target information for a promotion process or an install process. A site may be local or remote.

Site	Description
Local Site	A target that is on the same LPAR as the development ChangeMan ZMF instance. A target on a different LPAR from the ChangeMan ZMF instance can be defined as a local site if it shares DASD and catalogs with the ChangeMan ZMF development LPAR, and no DB2 binds are required.
Remote Site	A target that is on a different LPAR than the development ChangeMan ZMF instance that does not share DASD and catalogs, or that requires DB2 binds.

Sites are defined in global administration. Application Administrators select sites for an application from those global definitions.

You must define an application site for each production ChangeMan ZMF environment that is a target for installs. Every promotion level definition must include a site.

Defining Sites For A New Application

Perform these steps to defines sites for a new application:

1 On the Update Application Administration Options panel, type 8 on the Option line and press Enter. The Application Site List Part 1 of 2 panel is displayed. The first time you access this panel to define sites for a new application, the panel is empty:

```
CMNCLRST               DEMX - Site List Part 1 of 2           Row 1 to 2 of 2
Command ===> _____________________________________________ Scroll ===> CSR

     Site name
____ ________
____ ________
****************************** Bottom of data ********************************
```

2 Type * in the line command for the first blank Site Name and press Enter. The Global Site Selection List panel is displayed.

```
CMNGRSTL                  Global Site Selection List          Row 1 to 2 of 2
Command ===> _____________________________________________ Scroll ===> CSR

  Site
s C001
_ C002
****************************** Bottom of data ********************************
```

3 On the Global Site Selection List panel, type S in the line command field for one or more global sites that you want to define in the new application. Press Enter, and all selected sites are added to the Application Site Part 1 of 2 panel at the insertion point.

4 Continue selecting sites from the Global Site Selection List panel until all sites needed for the application are listed on the Application Site Part 1 of 2 panel.

5 There is a second panel of information for each site listed on the Application Site Part 1 of 2 panel. Type S in the line command for a site and press Enter. The Application Site Information List Part 2 of 2 panel is displayed.

```
CMNRSTJB            C001 Site Information - Part 2 of 2
Command ===> ____________________________________________

Site job statement information:
   //CMNSTART JOB ,'AACOUNT INFO',
   //             CLASS=A,MSGCLASS=X
   //*
   //* SITE C001 JOB STATEMENTS
```

6 The JOB statement information displayed on the Application Site Information Part 2 of 2 panel is used to build JCL for jobs that run at the selected site. Update this information as required.

7 When you finish updating the jobcard information Application Site Information Part 2 of 2 panel, press Enter to return to the Application Site List Part 1 of 2 panel.

8 When you finish updating site definitions on the Application Site List Part 1 of 2 panel, press PF3, or type End and press Enter, to store the site definitions in the ChangeMan ZMF package master file.

Updating Application Site Information

Perform these steps to update application site definitions:

1 On the Update Application Administration Options panel, type 8 on the Option line and press Enter. The Application Site List Part 1 of 2 panel is displayed.

```
CMNCLRST               DEMX - Site List Part 1 of 2          Row 1 to 2 of 2
Command ===> ____________________________________________ Scroll ===> CSR

     Site name
____ C001
____ C002
****************************** Bottom of data ********************************
```

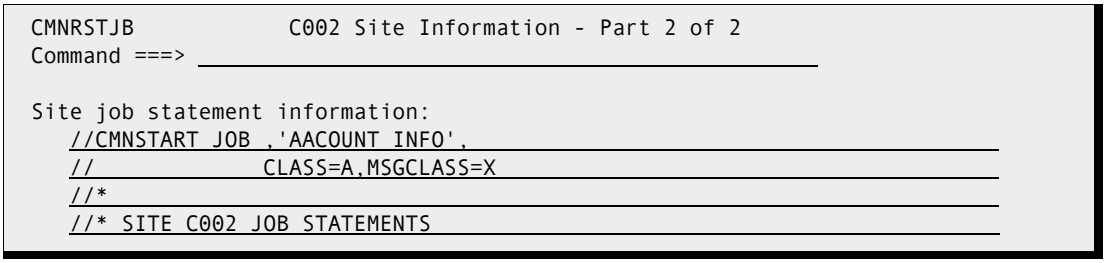
- To delete an application site on the Application Site List Part 1 of 2 panel, type D (Delete) in the line command for the site and press Enter.
- To add another site on the Application Site List Part 1 of 2 panel, type I (Insert) in the line command above where you want to insert the site and press Enter. An empty site entry is inserted on the panel.
- Type * in the line command for the site definition and press Enter. The Global Site Selection List panel is displayed.

```
CMNGRSTL                  Global Site Selection List          Row 1 to 2 of 2
Command ===>                                                 Scroll ===> CSR

  Site
  C001
  C002
****************************** Bottom of data ********************************
```

On the Global Site Selection List panel, type S in the line command for one or more global sites that you want to add to the application. Press Enter, and all selected sites are added to the Application Site Part 1 of 2 panel at the insertion point.

2 To update JOB statement information for a site, type S in the line command for a site on the Application Site Part 1 of 2 panel and press Enter. The Application Site Information List Part 2 of 2 panel is displayed.



The jobcard information displayed on the this panel is used to build JCL for jobs that run at the selected site.

3 When you finish updating the JOB statement information on the Site Information Part 2 of 2 panel, press Enter to return to the Application Site List Part 1 of 2 panel.

4 When you finish updating site definitions on the Application Site List Part 1 of 2 panel, press PF3 or type End and press Enter to store the site definitions in the ChangeMan ZMF package master file.

Configuring Promotion Sites, Levels, and Libraries

The Application Administrator configures promotion for an application by defining a hierarchy of sites, promotion levels, library types, and test library names. When developers, project managers, and test coordinators promote or demote a package in the application, they choose a site and a promotion level as the target for their action.

For a discussion of the promotion function, see "Promotion And Demotion" on page 37.

Promotion Definition Order

The order that promotion sites, levels, and library types appear on application administration panels determines the order that promotion libraries are concatenated in batch job JCL.

The following table lists some library concatenations that depend on the promotion definition order.

JCL ddname	Library Type	Used in batch jobs...
SYSLIB	LIKE-C types	Copybook expansion steps running CMNWRITE Copybook libraries in compile and assemble jobs Copybook libraries in BMS MAP gens Copybook libraries in IMS PSB/DBD gens
SYSLIB	LIKE-L types	Load libraries in link edit Load libraries in IMS PSB/DBD gens
INCLIB	Target Type	Load libraries in link edit.
OBJLIB	Object library types defined in skeleton CMN$$VAR	Object libraries in link edit

Configuring Promotion For A New Application

Perform these steps to set up promotion for a new application:

1 On the Application Administration Option panel, type 7 on the Option line and press Enter. The *Application* - Promotion Site List panel is displayed. When this panel is first accessed for a new application, it is empty:

```
CMNLRPMS                 DEMX - Promotion Site List          Row 1 to 21 of 21
Command ===> _____________________________________________ Scroll ===> CSR

                      Force           Internal Reader class
     Site            demotion           site       local
____ _________          _                _           _
____ _________          _                _           _
____ _________          _                _           _
____ _________          _                _           _
____ _________          _                _           _
____ _________          _                _           _
____ _________          _                _           _
____ _________          _                _           _
____ _________          _                _           _
____ _________          _                _           _
____ _________          _                _           _
____ _________          _                _           _
____ _________          _                _           _
____ _________          _                _           _
____ _________          _                _           _
____ _________          _                _           _
____ _________          _                _           _
____ _________          _                _           _
____ _________          _                _           _
****************************** Bottom of data ********************************
```

2 To populate the Application Promotion Site List panel, type * in the line command for the first empty Site Name entry and press Enter. The *Application* - Site Selection List panel (CMNRMTSL) is displayed.

```
CMNRMTSL                 DEMX - Site Selection List            Row 1 to 2 of 2
Command ===> ____________________________________________________ Scroll ===> CSR

  Site Name
_ C001
_ C002
******************************* Bottom of data ********************************
```

3 On the *Application* - Site Selection List panel, type S in the line command for each site that you want to define as a promotion target for the new application. Press Enter to return to the *Application* - Promotion Site List panel, where the selected sites are displayed.

4 Complete the other fields on the *application* - Promotion Site List panel. The following table describes the fields on that panel.

Field	Description
Line Command	Type a line command to the left of a panel row. S Select to see the next panel for this site. I Insert a blank site row. R Repeat an existing site. D Delete an existing site. * Display a selection list of available sites.
Site	The names of all promotion sites at which a change package may be promoted to or demoted from.
Force demotion	If this value is set to 'Y', promotion is forbidden to this site if any other sites are in promotion status. Also, no other sites may be promoted to until this site has been demoted.
Internal Reader class	Defines the output class for submitting job JCL to the internal reader. **site**: This is the internal reader class that will be used to submit promotion jobs for a remote site. **local**: This is the internal reader class that will be used to submit promotion jobs for the local site.

5 When you finish entering site information on the Application Promotion Site List panel, it might look like this.

```
CMNLRPMS                 DEMX - Promotion Site List            Row 1 to 2 of 2
Command ===> ____________________________________________________ Scroll ===> CSR

                      Force           Internal Reader class
     Site            demotion           site       local
____ C001____           N                A           A
____ C002____           N                A           A
******************************* Bottom of data ********************************
```

6 You must define promotion levels for each promotion site. On the Application Promotion Site List panel, type S in the line command for a Site Name, and press

Enter. The Application/Site Promotion Levels panel is displayed. When this panel is first displayed for a site, it is empty:

```
CMNLRPM2              DEMX/C001 - Promotion Levels           Row 1 to 12 of 12
Command ===> _____________________________________________  Scroll ===> CSR

     Nickname   Entity    Level   Procedure
___ ________   ________   __     ________
___ ________   ________   __     ________
___ ________   ________   __     ________
___ ________   ________   __     ________
___ ________   ________   __     ________
___ ________   ________   __     ________
___ ________   ________   __     ________
___ ________   ________   __     ________
___ ________   ________   __     ________
___ ________   ________   __     ________
___ ________   ________   __     ________
___ ________   ________   __     ________
******************************* Bottom of data ********************************
```

7 Complete a promotion level entry for each promotion environment you want for this application in this site. The table that follows describes fields on the Application/Site Promotion Levels panel.

Field	Description
Line Command	Type a line command to the left of a panel row. S Select to see the next panel for this promotion level. I Insert a blank promotion level row. R Repeat an existing level. D Delete an existing level.
Nickname	Enter an easily-recognizable name for the promotion libraries. This nickname will be used as a reference on the Promotion/Demotion panels.
Entity	Your security package will perform a check against this entity to determine whether or not the user is authorized to promote to this level.
Level	Type a numeric promotion level. Number promotion levels in increments of 5 or 10 so that more levels can be added in between later. ChangeMan ZMF can accommodate up to 99 levels of promotion. Enter the number for the level associated with this level of promotion.
Procedure	Type the name of the skeleton procedure to be used in ISPF file tailoring to build JCL for promotion jobs. This must be the member name from the ISPF library that contains the skeleton JCL for the procedure. ChangeMan ZMF will search the SKELS concatenation for procedures to display from which the Administrator may select. Enter an '*' in this field if a list is to be displayed. CMN$$PRM For promotion levels with libraries on a local site. If no entry is made, ChangeMan ZMF automatically inserts this skeleton name. CMN$$RPM For promotion levels with libraries on a remote site.

8 When you finish defining promotion levels on the Application/Site Promotion Levels panel, might look like this.

```
CMNLRPM2              DEMX/C001 - Promotion Levels              Row 1 to 2 of 2
Command ===> ____________________________________________________ Scroll ===> CSR

     Nickname   Entity    Level   Procedure
____ ONE        CMN8LCAD   10     CMN$$PRM
____ TWO        CMN8LCAD   20     CMN$$PRM
****************************** Bottom of data ******************************
```

9 For each promotion level on the Application/Site Promotion Levels panel you must define target library types and data set names. Type S on the line command of a promotion level, and the Application/Site Promotion Libraries panel is displayed. The first time this panel is displayed for a promotion level it is blank:

```
CMNLRPM3              DEMX/C001 - Promotion Libraries           Row 1 to 2 of 2
Command ===> ____________________________________________________ Scroll ===> CSR

Promotion name: ONE         Level: 10

         Syslib Cleanup
     Lib exclude Level Target libraries
____ ___   _       _   ____________________________________________   + Shadow
                    _   ____________________________________________   + Library 1
                    _   ____________________________________________   + Library 2
                    _   ____________________________________________   + Library 3
____ ___   _       _   ____________________________________________   + Shadow
                    _   ____________________________________________   + Library 1
                    _   ____________________________________________   + Library 2
                    _   ____________________________________________   + Library 3
```

10 To add library types on the Application/Site Promotion Libraries panel, type * in the line command for the first blank entry on the panel and press Enter. The Library Type Selection List panel is displayed.

```
CMNLTPSL                 Library Type Selection List            Row 1 to 7 of 7
Command ===> ____________________________________________________ Scroll ===> CSR

  Lib  Description
_ CLS  CLIST
_ JCL  JCL Library Type
_ LCT  Linkedit Control Cards
_ LST  Listing
_ NCL  NCAL subroutine load library
_ OBJ  Object module library
_ PKG  DB2 Bind Package Commands
****************************** Bottom of data ******************************
```

11 On the Library Type Selection List panel, type S in the line command for any application library type that you want to add at the insert point on the Application/Site Promotion Libraries panel. You may select multiple library types, but you can not scroll down to select library types from multiple pages of the Library Type Selection List at one time.

NOTE Promotion library types usually include executable library types that are tested. However, you may also wish to promote other types to allow for checkout from promotion.

12 Press Enter to return to the Application/Site Promotion Libraries panel, where the new library types have been added at the insertion point.

13 On the Application/Site Promotion Libraries panel, type information in the remaining fields for each library type. The following table describes the fields on the Application/ Site Promotion Libraries panel:

Field	Description
Promotion name	Promotion nickname that you selected on the previous panel.
Level	Promotion level that is defined on the previous panel.
Line Command	Type a line command to the left of a row: I Insert a blank library type row. R Repeat an existing library type. D Delete an existing library type. * Display a selection list of available library types.
Lib	Enter a 3-character library type. Enter * to select from the list of defined library types for the current application.
SYSLIB EXCLUDE	Enter a Y in this field to exclude the library type from file tailoring during staging functions (like-source component stage, recompile or relink). This setting effectively excludes the dataset from the promotion library table (RPMLIBTB), and subsequent inclusion in the SYSLIB concatenations for the compilation and binder process. You can use this parameter to exclude like-copy and like-load libraries from SYSLIB concatenations and to exclude like-copy libraries from audit. If you change this flag during a package lifecycle, audit may find SYNCH15!. Y Exclude promotion libraries from stage, recompile, and relink jobs. Exclude the libraries from audit processing. N Include library in normal processing. **NOTE** Two facilities work together to designate the criteria that audit uses to issue SYNCH15! errors during a package audit: The SYSLIB EXCLUDE flag, which is described here. User exit CMNEX044. Refer to the ChangeMan ZMF Customization Guide and to the comments in module CMNEX044 of the CMNZMF.ASMSRC library for more information about this exit.

Field	Description
Target libraries Shadow Library 1 Library 2 Library 3	Enter the fully-qualified dataset names of all promotion targets which ChangeMan ZMF will associate with the library type for this level of promotion. Up to three libraries may be specified. The Shadow Library resides at the local site for common module and overlay checking, and may be defined as one of the three target libraries, if they are located at the local site (accessible via IEBCOPY). If the target libraries are located at a site, then the shadow library must be defined as a separate dataset, and you should use the promotion procedure CMN$$RPM (promote to a site) for promotion and demotion purposes, rather than CMN$$PRM. This procedure will synchronize the shadow library with the targeted components during promotion and demotion, to provide a mirror image of the local site (accessible via IEBCOPY). If the target libraries are located at a site, then the shadow library must be defined as a separate dataset, and you should use the promotion procedure CMN$$RPM (promote to a site) for promotion and demotion purposes, rather than CMN$$PRM. This procedure will synchronize the shadow library with the targeted components during promotion and demotion, to provide a mirror image of the site promotion datasets. The CMN$$PRM skeleton does not synchronize the components. You may specify 'NULLFILE' as the Shadow Library dataset name if you wish to bypass physical member overlay checking, and rely only on the data stored in the promotion history records. If you do this, overlay messages will not show a 'common' overlay (the component exists in both promotion history AND the target library), nor 'unknown' (the member exists in the target library, but there is no promotion history), but it will show the 'history' status (component not found in the target library, but exists in the promotion history records).

NOTE Promotion library types usually only include, as a minimum, executable library types. However, you may want to promote other types to allow for checkout from promotion.

14 To save the new application promotion definition:

a On the *Application*/*Site* Promotion Libraries panel, press PF3 or type End on the Command Line and press Enter.

b On the *Application*/*Site* Promotion Levels panel, press PF3 or type End on the Command Line and press Enter.

c On the *Application* - Promotion Site List panel, press PF3 or type End on the Command Line and press Enter.

Update Promotion For An Application

Perform these steps to update the promotion definitions for an application.

1 On the *Application* - Administration Option panel, type 7 on the Option line and press Enter. The *Application* - Promotion Site List panel is displayed.

```
CMNLRPMS                 DEMX - Promotion Site List            Row 1 to 2 of 2
Command ===> ____________________________________________ Scroll ===> CSR

                      Force           Internal Reader class
     Site            demotion           site       local
____ C001____           N                A           A
____ C002____           N                A           A
****************************** Bottom of data ********************************
```

See the table that starts on page 155 that describes the fields on Application Promotion Site List panel.

- To delete a site from the Application Promotion Site List panel, type D (Delete) in the line command field for the site and press Enter.
- To add a site to the Application Promotion Site List panel, type I (Insert) in the line command field above where you want to insert the site and press Enter. An empty site row is inserted on the panel.
- Type * in the line command field for the empty site definition and press Enter. The *Application* - Site Selection List panel is displayed.

```
CMNRMTSL                 DEMX - Site Selection List            Row 1 to 2 of 2
Command ===> ____________________________________________ Scroll ===> CSR

  Site Name
_ C001
_ C002
****************************** Bottom of data ********************************
```

2 On the *Application* - Site Selection List panel, type S in the line command for each site that you want to add. Press Enter, and you return to the Application Promotion Site List panel, where the selected sites are displayed.

3 Complete the other fields on the *Application* - Promotion Site List panel.

To update promotion levels for a promotion site:

1 On the *Application* - Promotion Site List panel, type S in the line command field for a Site Name, and press Enter.

The *application/Site* Promotion Levels panel is displayed.

```
CMNLRPM2              DEMX/C002 - Promotion Levels             Row 1 to 2 of 2
Command ===> ____________________________________________ Scroll ===> CSR

     Nickname   Entity    Level   Procedure
____ ONE_____   CMN8LCAD   10     CMN$$PRM
____ TWO_____   CMN8LCAD   20     CMN$$PRM
****************************** Bottom of data ********************************
```

See the table that starts on page 156 for a description of the fields on this panel.

2 Complete the other fields on the *Application/Site* Promotion Levels panel.

To update the library types and promotion libraries for a promotion level:

1 On the *Application/Site* - Promotion Levels panel, type S on the line command field for a promotion level.

The *Application/Site* - Promotion Libraries panel is displayed.

```
CMNLRPM3            DEMX/C002 - Promotion Libraries          Row 1 to 1 of 1
Command ===> ____________________________________________ Scroll ===> CSR

Promotion name: ONE         Level: 10

         Syslib Cleanup
     Lib exclude Level Target libraries
____ CLS   N       Y   CMNTP.S8.ONE.C002.DEMX.CLS.SHADOW      + Shadow
                   _   CMNTP.S8.ONE.C002.DEMX.CLS             + Library 1
                   _   ____________________________________   + Library 2
                   _   ____________________________________   + Library 3
```

See the table that starts on page 158 for a description of the fields on this panel.

- To delete a library type with its promotion libraries from the Application/Site Promotion Libraries panel, type D (Delete) in the line command field for the library type and press Enter.
- To add a library type with promotion libraries to the Application/Site Promotion Libraries panel, type I (Insert) in the line command field above where you want to insert the library type and press Enter. An empty library type row is inserted on the panel.
- Type * in the line command field for the empty library type row and press Enter. The Library Type Selection List panel is displayed.

```
CMNLTPSL                Library Type Selection List          Row 1 to 7 of 7
Command ===> ____________________________________________ Scroll ===> CSR

  Lib  Description
_ CLS  CLIST
_ JCL  JCL Library Type
_ LCT  Linkedit Control Cards
_ LST  Listing
_ NCL  NCAL subroutine load library
_ OBJ  Object module library
_ PKG  DB2 Bind Package Commands
****************************** Bottom of data ******************************
```

2 On the Library Type Selection List panel, type S in the line command for any application library type that you want to add at the insert point on the Application/Site Promotion Libraries panel. You may select multiple library types, but you cannot scroll down to select library types from multiple pages of the Library Type Selection List at one time.

NOTE Promotion library types usually include executable library types that are tested. However, you may also wish to promote other types to allow for checkout from promotion.

3 Press Enter to return to the *Application/Site* Promotion Libraries panel, where the new library types have been added at the insertion point.

4 Complete the rest of the fields on the *Application/Site* Promotion Libraries panel.

5 To save your updates to the application promotion definition:

a On the *Application/Site* Promotion Libraries panel, press PF3 or type End on the Command Line and press Enter.

b On the *Application/Site* Promotion Levels panel, press PF3 or type End on the Command Line and press Enter.

c On the *Application* - Promotion Site List panel, press PF3 or type End on the Command Line and press Enter.

Configuring Baseline Libraries

Baseline libraries are the permanent repositories for application components. Use the baseline configuration function to specify physical baseline library names and to set the following related parameters:

- The technology or file type used to store current and prior versions of components
- How many prior versions of components are held in baseline libraries
- Whether components are copied to separate production libraries as well as to baseline libraries when a change package is installed.

If you have set the parameter for **Keep Baseline by Site** on the *Application* Parameters - Part 1 of 4 panel, baseline libraries must be configured for each site. See "Configuring Remote Sites" on page 257 for details.

Allocating Baseline Libraries

1 Select Option B on the Update Application Administration Options panel. The Application - Baseline Configuration Part 1 of 2 panel (CMNCBAS1) is displayed.

```
CMNCBAS1     DEMX -  Baseline Configuration Part 1 of 2        Row 1 to 7 of 7
Command ===> _____________________________________________ Scroll ===> CSR

                                Baseline
                    Install     storage
     Type  Levels   in prod     means
____ CLS     10        Y        SD
____ JCL     10        Y        SD
____ LCT     10        N        SD
____ LST     3         N        P
____ NCL     3         N        P
____ OBJ     3         N        P
____ PKG     10        N        SD
****************************** Bottom of data ********************************
```

The following table describes the field of the *Application* - Baseline Configuration Part 1 of 2 panel (CMNCBAS1) and the information that you can enter when you create new libraries.

Field	Description
Type	Type the library type. Enter a ***** to select from the list of valid library types.
Levels	Enter the number of baseline levels to maintain for each library type. The range is from 2 to 10. Baseline libraries with storage means SD can retain a maximum of 999 levels; LA can retain up to 255.
Install in prd	Enter 'Y' if the library type is to be moved into the production libraries upon installation. Enter 'N' if the library type is not to be moved into the production libraries. Enter 'C' if the movement of the library type into the production libraries is dependent on their existence at the site.
Baseline storage means	Specify the means of maintaining the baseline libraries. Valid values for this field are as follows: SD STACKED REVERSE DELTA - The 0 level baseline version is stored in a PDS or PDSE. All prior versions are stored as reverse delta records in a single PDS or PDSE. **Note:** This is the most efficient storage means for text components that can be compressed with delta technology. P PDS or PDSE - The 0 level baseline library is a PDS or a PDSE, and each prior version level is stored in a separate PDS or PDSE library without compression. H Hierarchical File System - The 0 level baseline library is an HFS directory, and each prior version level is stored in a separate HFS directory without compression. L LIBRARIAN managed master files LA LIBRARIAN ARCHIE managed master files PV PANVALET managed files

2 To update an existing library, type S to select a row to specify the actual data set names for the item. The Application Baseline Configuration Part 2 of 2 panel (CMNCBAS2) is displayed.

```
CMNCBAS2    DEMX -  Baseline Configuration Part 2 of 2         Row 1 to 2 of 2
Command ===> _____________________________________________ Scroll ===> CSR

   Library type:        CLS
   Levels maintained:   10
   Storage means:       Stacked Reverse Delta

   Lvl Dataset name      +                                  Status
_ -000 CMNTP.S8.V813.BASE.DEMX.CLS
_ -009 CMNTP.S8.V813.BASE.DEMX.CLS.DELTA
****************************** Bottom of data ********************************
```

The Application Baseline Configuration Part 2 of 2 panel (CMNCBAS2) specifies the names of an application's baseline libraries. The rows are already generated when you access the panel. From this panel you can verify or allocate (specify V or A) the baseline library data sets. ChangeMan ZMF uses these names when it creates batch jobs to ripple an application's baseline libraries after a change package has been

installed. These libraries must exist and ChangeMan ZMF must be able to update them.

If you have set the parameter for **Keep Baseline by Site** on the Application Parameter Part 1 of 2 panel (CMNGLP01), baseline libraries must be configured for each site. "Configuring Remote Sites" on page 257.

3 In a row of the Application Parameter Part 1 of 2 panel (CMNGLP01), type A or V and press Enter to allocate or verify these baseline library. Verify will display the allocation details.

NOTE This option is not available for Librarian or Panvalet.

- If you typed V in a row, the Dataset Information panel (CMNDSINF) is displayed.

```
CMNDAIPO                       Dataset Information
Command ===> ____________________________________________

Library Type  CLS
Dataset Name  CMNTP.S8.V813.BASE.DEMX.CLS

General Data:                          Current Allocation:
 Volume serial . . . . SRSM31           Allocated tracks  . . 1
 Device type . . . . . 3390             Allocated extents . . 1
 Organization  . . . . PO               Maximum dir. blocks . 5
 Record format . . . . FB
 Record length . . . . 80
 Block size  . . . . . 27920           Current Utilization:
 1st extent tracks . . 1                Used tracks . . . . . 1
 Secondary tracks  . . 1                Used extents  . . . . 1
                                        Used dir. blocks  . . 1
 Extended Attributes .                  Number of members . . 0

Extended Information:                  Date Information:
 Creation Time . . . .                  Creation  . . . . . . 2014/10/07
 Creation Job  . . . .                  Last referenced . . . 2014/10/08
 Creation Step . . . .                  Expiration  . . . . . ***NONE***
```

- If you verify, and a baseline library data set does not exist, the message "Dataset not catalogued" is displayed in the upper right-hand corner, and *ERROR is displayed in the STATUS column next to the data set name.

- If you typed A, in a row, the Allocate Dataset panel (CMNALCDS) is displayed.

```
CMNALCDS                        Allocate Dataset
Command ===> ____________________________________________________

Library type: CLS
Dataset name: CMNTP.S8.V813.BASE.DEMX.CLS

Generic unit name . . . . SYSDA     (Generic group name or unit)
Volume serial . . . . . . SRSM31    (Required if Generic unit unspecified)
Space units . . . . . . . TRK       (Trk, cyl or blk)
Primary quantity  . . . . 3         (In above units)
Secondary quantity  . . . 1         (In above units)
Directory blocks  . . . . 5         (Must be greater than zero if PDS)
Record format . . . . . . FB
Record length . . . . . . 80
Block size  . . . . . . . 27920
Dataset type  . . . . . . PDS       (LIBRARY for PDSE, PDS, or blank)
Dataset version . . . . . _         (PDSE version)
Extended attributes . . . ___       (NO, OPT or blank)
```

Specifying Component Description, Procedures, and Security

Use the Component option of Application Administration to define and update optional facilities for a component.

- Component general description - 48 lines of free-form text containing information about the component.
- Designated compile procedure - The language, compile procedure, and other build options that must be used to stage, recompile, or relink a component.
- Component level security - List of userids or security entities that are allowed to check out or stage a component.

The data you specify for these three facilities is stored in component history by component name and library type.

To access these component-level facilities, select option C Component on the Update Application Administration Options panel, and the *application* - Component Options panel (CMNCMPA0) is displayed.

```
CMNCMPA0                 DEMX - Component Options
Option ===> ____________________________________________

G  General        General description information
P  Procedures     Designated compile procedures
S  Security       Security information
```

Defining Component General Descriptions

A component general description consists of up to 48 lines of free-form text stored on the component master for a component name and library type.

NOTE A component general *description* and component general *information* are the same thing. Most application administration panels use the word *information*, and package panels use *description*.

This description can be created and updated through the Component General Information function in application administration. The information can also be created and updated in change packages if the library type is defined with the Checkout Component Description parameter set to Yes.

To create or update a component information description in application administration, follow these steps:

1 Select option G General on the *application* - Component Options panel to display the *application* - Component General Information panel (CMNGENA1).

```
CMNGENA1            DEMX - Component General Information
Option ===> ____________________________________________

Library type  . . ___   (Blank for list)

1  Baseline       Select from baseline libraries
2  Package Master Process existing component information records
```

2 Type a library type (CLS in this case), or leave the Library Type field blank to display the Library Type Selection List panel where you can choose a library type.

3 If you select option 1 Baseline on the *application* - Component General Information panel, the *application* Baseline Library List panel (CMNGENA2) shows you a list of components in the baseline library for the specified library type (CLS).

```
CMNGENA2               DEMX Baseline Library List           Row 1 to 9 of 9
Command ===> ____________________________________________ Scroll ===> CSR

  Baseline library:  CMNTP.S8.V813.BASE.DEMX.CLS
  Library type:      CLS

   Name     Status   vv.mm Created    Changed    Time  Size   Init   User
 _ ACPCPY00          01.01 2008/09/08 2008/09/08 14:14 000023 000023 WSER239
 _ ACPCPY1A          03.01 2002/05/07 2010/02/21 10:29 000004 000001 WSER239
 _ ACPCPY1B          03.01 2002/05/07 2010/02/21 10:29 000003 000001 WSER239
 _ ACPCPY1C          03.01 2002/05/07 2010/02/21 10:30 000003 000001 WSER239
 _ ACPCPY1X          03.01 2002/05/07 2010/02/21 10:30 000003 000001 WSER239
 _ ACPCPY2A          02.01 2002/05/07 2010/02/21 10:30 000004 000001 WSER239
 _ ACPCPY2B          02.01 2002/05/07 2010/02/21 10:30 000003 000001 WSER239
 _ ACPCPY2X          02.01 2002/05/07 2010/02/21 10:31 000003 000001 WSER239
 _ ACPCPY3A          02.01 2002/05/07 2010/02/21 10:31 000004 000001 WSER239
****************************** Bottom of data ******************************
```

- Type line command S to create or update a component general description.
- Type line command D to delete the component general description.

4 If you select option 2 Package Master on the *application* - Component General Information panel, the Component Information List panel (CMGENA5) shows you a list of component general descriptions that have been created previously.

```
CMNGENA5 ----------- DEMZ - Component Information List ------- Row 1 to 1 of 1
Command ===> _____________________________________________ Scroll ===> CSR

    Name                                                      Type
_ ACPCPY00                                                 +  CLS
****************************** Bottom of data ********************************
```

- Type line command S to update a component general description.
- Type line command D to delete the component general description.

5 When you select a component on one of the list panels, the *application* - Component General Description panel (CMNGENA3) is displayed.

```
CMNGENA3            DEMZ - Component General Description     Row 1 to 21 of 21
Command ===> _____________________________________________ Scroll ===> CSR

Component:     ACPCPY00                                                    +
Library type:  CLS

     Description
____ ACPCPY00 general purpose component_____________________________________
____ _______________________________________________________________________
____ _______________________________________________________________________
____ _______________________________________________________________________
____ _______________________________________________________________________
____ _______________________________________________________________________
____ _______________________________________________________________________
____ _______________________________________________________________________
____ _______________________________________________________________________
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____ _______________________________________________________________________
____ _______________________________________________________________________
____ _______________________________________________________________________
____ _______________________________________________________________________
____ _______________________________________________________________________
****************************** Bottom of data ********************************
```

Type text in the lines provided. Use line commands I (insert), R (repeat), and D (Delete).

6 Press PF3 to exit the *application* - Component General Description panel and update the component general description. You are returned to previous the selection list panel where the ISPF short message INFORMATION CHANGED is displayed, and the Status of the member is CHANGED. The ISPF long message is CMN5640I - ACPCPY00's general information record has been changed.

Defining Designated Compile Procedures

Designated compile procedures can completely eliminate variation in build processing for components before they are installed into production, and designated compile procedures can eliminate variation in development build processing as well. See "Designated Compile Procedures" on page 34.

If you choose to designate compiling procedures for the application's components, any user who wants to freeze a change package with the selected component must stage with the procedures entered on the panel (force level 2). If you designate a compiling procedure with force level 1, ChangeMan ZMF allows staging with alternate procedures during package development. However, the final stage (before you attempt to freeze) should be performed with the designated compile procedure for each component.

Follow these steps to define a designated compile procedure for a component or a group of components.

1 Select Option P on the Component Information Option panel and press Enter. The *Application* - Designated Compile Procedures panel is displayed.

```
CMNDCPA1            DEMX - Designated Compile Procedures
Option ===> ____________________________________________________

   blank List defined procedures            C Change/add component procedures
       D Delete component procedures

Component name . . . . . ____________________________________________  +
                                 (Full name or pattern; blank for list)
Library type . . . . . . ___      (Blank for list)
Compile procedure  . . . ________ (Blank for list)
Language name  . . . . . ________ (Blank for list)
Compile parms  . . . . . ____________________________________
Binder parms . . . . . . ____________________________________
Force level  . . . . . . _        (1-Before Freeze only, 2-Always required)

Enter "/" to select option
  _ DB2 precompile
  _ Display more option panels
  _ Mixed case
```

The following table describes the fields on the *application* - Designated Compile Procedures panel (CMNDCPA1).

Field	Description	
Option	C	Change an existing designated procedure definition Add a new designated procedure definition
	D	Delete a designated procedure definition
	Blank	List existing component procedures

Field	Description
Component name	To add a new component or change an existing component, enter C on the command line and enter the component name or a pattern (e.g. PR*). Enter D on the command line to delete the designated procedure for the component entered. The C and D options are not available in browse mode. If the command line is blank this field can be masked (e.g. PR*). **Note:** When you add or delete a designated procedure, a * wildcard in the component name is considered part of the designated procedure name. However, when you use this panel to filter a list of designated procedures on the *application* - Designated Compile Procedures panel, a * is considered a wildcard character for the search.
Library type	Enter the component library type. Leave this field blank to display a Library Type selection list. If the command line is blank this field can be masked (e.g. SR*).
Compile procedure	Enter the designated compile procedure for the component. Leave this field blank for a selection list. If the command line is blank this field can be masked (e.g. CMN*). If the command line is blank, and both Component Name and Library Type fields are not masked, this field is ignored.
Language name	Enter the language name of the component. Leave this field blank for a Language Name selection list. Must match language on procedure above. If the command line is blank this field can be masked (e.g. PL*). If the command line is blank, and both Component Name and Library Type fields are not masked, this field is ignored.
Compile parms	Enter any extra compile parms as needed (defaults are hardcoded in the compile skeleton for the specified procedure).
Binder parms	Enter any extra binder parms as needed (defaults are hard coded in the link edit skeleton for the specified procedure).
Force level	1 Component is to be compiled with this procedure only on the last compile prior to Freezing the package. Interim compiles may use other procedures. This is the default. 2 All compiles of this component must use the designated procedure.
DB2 precompile	Select to run the DB2 precompile step for this module, or omit to bypass this step. If the command line is blank, and both Component Name and Library Type fields are not masked, this field is ignored.
Display more option panels	Select to specify user options, or omit to bypass options. The User Options panel allows you to pass variables to your file tailored compile skeleton.
Mixed case	By default, all fields are folded to upper case. However, if 'Mixed Case' option is set to YES then the component name is left as is. Whichever case you enter will then be processed.

2 You can use the *application* - Designated Compile Procedures panel to:

- Define a new designated compile procedure - Choose option C, complete the panel fields, and press Enter.
- Update an existing designated compile procedure - Choose option C, update the desired panel fields, and press Enter.

- Delete an existing designated compile procedure - Choose option D, type the Component Name and Library Type fields to match the designated procedure you want to delete, and press Enter.
- Produce a full or filtered list of existing designated compile procedures - Leave the option line blank, use the Component Name and Library Type fields as filter criteria (blank, data, or patterns), and press Enter.

3 If you used the *application* - Designated Compile Procedures panel to list existing designated compile procedures, the results are shown on the *application* - Designated Compile Procedures List panel (CMNDCPA2).

```
CMNDCPA2 ------- DEMX - DESIGNATED COMPILE PROCEDURES LIST --- Row 1 to 2 of 2
COMMAND ===> _____________________________________________________ SCROLL ===> CSR

Enter END command to save changes or CANCEL to exit.

Enter S line command to select additional options or D to delete procedure.
Enter * in PROC or LANGUAGE field, for list.

  COMPONENT      LANGUAGE FORCE  DB2 COMPILE PARMS
  NAME      TYPE PROC     OPTION PRE LINK EDIT PARMS
  ------------------------------------------------------------------------
_ ACPSRC00                                                              +
            SRC  COBOL2   1      NO  ____________________________________
                 CMNCOB2             ____________________________________
  ------------------------------------------------------------------------
_ ACPSRC99                                                              +
            SRC  COBOL2   1      NO  ____________________________________
                 CMNCOB2             ____________________________________
```

4 You can use the *application* - Designated Compile Procedures List panel to:

- Update an existing designated compile procedure - Overtype the fields shown for the designated procedure and press Enter.
- Delete an existing designated compile procedure - Type line command D on a designated procedure and press Enter.

5 If you use line command S on the *application* - Designated Compile Procedures List panel, or if you set Other Options to Y on the *application* - Designated Compile Procedures panel when you create or update a procedure, the Stage: User Options

panels are displayed for the component. This is the first User Option panel as delivered. Your panels may have been customized.

```
CMNUSR01 -------------------- STAGE: USER OPTIONS ----------------------------
COMMAND ===> ____________________________________________________

        NAME:                 TYPE:            LANGUAGE: ASM

        COMPILE ONLY        ===> N           IMS DLITxxx ENTRY  ===> N
        CICS PRECOMPILE     ===> N           DROP INCLUDE STMTS ===> N
        EASYTRIEVE OBJECT   ===> N           USER OPTION 06     ===> Y
        USER OPTION 07      ===> Y           USER OPTION 08     ===> Y
        USER OPTION 09      ===> Y           USER OPTION 10     ===> Y
        USER OPTION 11      ===> Y           USER OPTION 12     ===> Y
        USER OPTION 13      ===> Y           USER OPTION 14     ===> Y
        USER OPTION 15      ===> Y           USER OPTION 16     ===> Y
        USER OPTION 17      ===> Y           USER OPTION 18     ===> Y
        USER OPTION 19      ===> Y           USER OPTION 20     ===> Y

Use Y or N to select or deselect additional processing options;
Press ENTER to continue; Enter END command to exit.
```

6 Complete the fields on the Stage: User Options panel, and press Enter to save your changes.

Setting Component Level Security

Use the Component Level Security facility to create rules that are based on component name and library type that restrict who can check out and stage a component or a group of components that are related by component naming patterns and/or library type patterns.

To create, update, or delete a component level security rule:

1 On the *application* - Component Options panel, select Option S and press enter. The *application* - Component Level Security panel is displayed:

```
CMNSECA1              DEMX - Component Level Security
Command ===> ____________________________________________________

Component . . . . . ____________________________________________________  +
                                 (Blank for all components)
Type  . . . . . . . ___          (Blank for all types)

Enter "/" to select option
  _ Mixed case
```

The following table describes the fields on the *application* - Component Level Security panel:

Field	Description
Component	Enter the name of the component to secure to specific TSO IDs or entities. You may enter a pattern (e.g. PR*), and all the components in the Baseline library that fit the pattern will be protected. To select from the Package Master list of components which have been protected, leave both fields blank.
Type	Enter the component's library type.

Field	Description
Mixed case	By default, all fields are folded to upper case. However, if 'Mixed case' option is set to YES then the component name is left as is. Whichever case you enter will then be processed.

NOTE Component level security rules can be generalized by defining them with patterns in the component name and/or library type. For example, if you create a component level security rule for component name ABC* and library type X*, then the rule applies to all components with names starting in ABC in all library types starting with X.

2 You can use the *application* - Component Level Security panel to:

- Define a new component level security rule - Type a component name or pattern, a library type or pattern, and press Enter. The *application* - User List panel is displayed where complete the rule.
- Update an existing component level security rule - Type the component name (which could be a pattern) and library type (which could be a pattern) used in an existing rule and press Enter. The *application* - User List panel is displayed where you update the rule.
- List existing rules - Leave the component name blank, type a library type or pattern, and press Enter. The *application* - Component Level Security List panel is displayed where you can delete a rule or select a rule for update.

3 If you left the component name blank on the *application* - Component Level Security panel to list existing component level security rules, and rules are found, the *application* - Component Level Security List panel is displayed.

```
CMNSECA0            DEMX - Component Level Security List       Row 1 to 1 of 1
Command ===> ____________________________________________________ Scroll ===> CSR

  Name   +                                                          Type
_ SECREVOK                                                         JCL
****************************** Bottom of data ********************************
```

4 You can use the *application* - Component Level Security List panel to:

- Delete a component level security rule - Type D in the line command for a rule and press Enter.
- Select a component level security rule for update - Type S in the line command for a rule and press Enter. The *application* - User List is displayed where update the rule.

5 When you create a new component level security rule or select a rule for update, the *application* - User List is displayed.

```
CMNSECA2                       DEMX - User List                 Row 1 to 3 of 3
Command ===> _____________________________________________ Scroll ===> CSR

Name: SECREVOK                                                          +
Type: JCL

              Entity
     User     (y/n)
____ USER15__   N
____ USER25__   N
____ USER35__   N
****************************** Bottom of data ******************************
```

The following table describes the fields on the *application* - User List panel.

Field	Description
Line command	Enter one of the following valid line commands: I Insert a new line R Repeat an existing line D Delete an existing line
Userid	Enter the authorized TSO ID or ENTITY to which checkout or staging will be restricted.
Entity	Enter 'Y' to identify the USERID as a security ENTITY, or enter 'N' (or blank) to identify it as a TSO ID.

6 When you are finished with entries on the *application* - User List, press PF3 to save your changes and return to the previous panel.

Deleting an Application

If there are no package in an application, you can delete the records from the package master that define the application. If packages have been created in the application, these package must be physically deleted:

- Memo deleted packages must be physically deleted.
- Installed packages must be aged and archived or deleted.

The Delete function in global Housekeeping Tasks will physically delete memo deleted packages, and it will delete aged packages. Instructions for executing this function are in "Online Housekeeping" on page 103.

After all packages are deleted from an application, follow these steps to delete the application.

1 On the Update Application Administration Options panel, type the application mnemonic in the Application field, select Option D, and press Enter. The Confirm Delete panel (CMNDPROJ) is displayed.

```
CMNDPROJ                        Confirm Delete
Command ===> ____________________________________________________

Application:     C009
Description:     C009 empty application
Highest package: 000000
Release:
```

This table describes the fields of the Confirm Delete panel (CMNDPROJ).

Field	Description
Application	The application mnemonic to be deleted.
Description	The description of the application to be deleted.
Highest package	The total number of packages created for the application.
Release	The release ID associated with this application (if any).

2 Press Enter to delete the application, or press PF3 to cancel the delete. If you press PF3 the ISPF short message will be DELETE CANCELLED, and the ISPF long message will be CMN5190A - Request to delete an application has been cancelled.
NOTE: The Cancel command here will go ahead and delete the application.

Accessing the Application Selectable Options Panel

Selectable Options of ChangeMan ZMF often require configuration at the global administration level and at the application administration level.

To access application administration for an selectable option, follow these steps:

1 On the Update Application Administration Options panel (CMNAPSOP), type the application mnemonic in the Application field, select Option O, and press Enter. The *application* - Selectable Options panel is displayed.

```
CMNAPSOP                  C001 - Selectable Options
Option ===> ____________________________________________________

2  DB2            Maintain DB2 information
3  INFO           Specify Info/Management change rule
5  IMS            Control Region IDs and Library Sub-Type information
```

Selectable options are the optional support for a variety of software products, such as DB2, INFO, OFM and IMS.

Options will not be unavailable if the options are not licensed.

To set Global Administration options for a Selectable Option, enter the number on the Option command line. Additional administration panels for each of the options will be displayed to allow product specific options to be set.

The following table lists selectable options that will be displayed if they are licensed.

Option	Description
DB2	Manage changes to application DB2 components.
INFO	ChangeMan ZMF communication with other applications through: ■ A VSAM interface file. ■ The Tivoli Information Management for z/OS product from IBM.
IMS	Manage changes to IMS components.

2 On the *application* - Selectable Options panel (CMNAPSOP), choose the option you want to configure at the application administration level, and press Enter.

See the ChangeMan ZMF manual for the selectable option for information about configuring the option at the application and global administration level.

Updating the Global Notification File

Administrators use the Global Notification facility to pass information to ChangeMan ZMF users. The global administrator allocates the Global Notification File and enables the Global Notification Facility. Global administrators update the file with information for users, and they can grant application administrators the same privilege.

If option N Notify is displayed on the Update Application Administration Options panel, then application administrators can update the Global Notification File. Instructions for updating the file are in "Updating the Global Notification Message" on page 118.

Configuring Production Libraries

Baseline libraries are the permanent repository for current and prior versions of application components. In a relatively simple data center environment where production applications have access to ChangeMan ZMF baseline libraries, you may choose to have baseline libraries serve as production execution libraries.

However, if you want to maintain a separate set of production execution libraries, you must configure production libraries in ChangeMan ZMF application administration. If production applications run on other LPARs or CPUs without shared DASD, you must configure ChangeMan ZMF applications to manage one or more installation sites, each with a set of production libraries.

There are three kinds of production libraries

- Production execution libraries - These libraries contain the application components that execute in the production environment.
- Production backup libraries - These libraries contain the prior version of production library components. Before a component is installed in a production library, the existing production component is copied to the backup library. If a package is backed out, components in the backup libraries are copied back into the production libraries.

- Temporary libraries - These production override libraries contain components installed with temporary packages. When the temporary change package duration has passed, package components are removed from the temporary libraries.

Before you configure production libraries in a D or DP environment, you must define installation sites. See "Defining Application Sites" on page 151. For any kind of development environment, you must set the Install In Prod indicator to Y or C for each library type on the Baseline Configuration Part 1 of 2 panel for which you want to set up production libraries. See "Configuring Baseline Libraries" on page 162.

NOTE For the special case of an ALL environment where the only production libraries you need are temporary production override libraries, see "Configuring Temporary Override Libraries for ALL Environments" on page 181.

NOTE If you want to use a DP environment like an A (ALL) environment without defining production libraries:

1 Define a Global Site (=A.G.6) with:
   a **Site Name** that is the same as the **Site Node Name** in Global Parameters, and...
   b L**ogical Unit Name** that is the same as the **Logical Unit Or System Name** in Global Parameters.
3 Define this site as the only site in each application in Application Administration (=A.A.8).
4 Define each baseline library type with **Install In Prod** set to **N** in every application in Application Administration (=A.A.B).

With this configuration, several jobs are executed at package installation that perform no function other than to record completion in the package master and/or trigger submission of the next installation job.

Defining Production Libraries For A New Application

Perform these steps to set up production libraries for a new application.

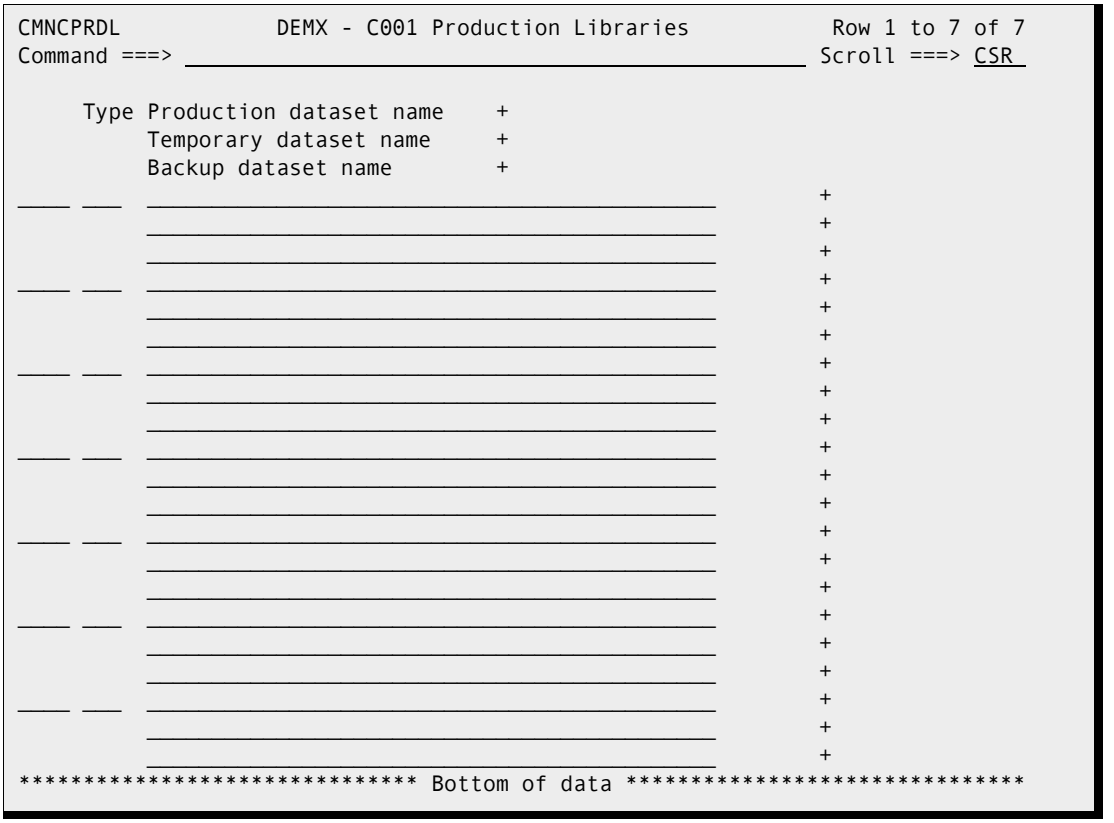
1 On the Update Application Administration Options panel, select Option P and press Enter. If you are configuring a DP environment, the *application* - Site Selection List panel (CMNRMTSL) is displayed.

```
CMNRMTSL                 DEMX - Site Selection List            Row 1 to 2 of 2
Command ===> _____________________________________________ Scroll ===> CSR

  Site Name
_ C001
_ C002
****************************** Bottom of data ********************************
```

2 On the *application* - Site Selection List panel, select a site by typing S in the line command for the site, and press Enter.

3 The *application* - *site* Production Libraries panel (CMNCPRDL) is displayed.



This table describes the fields on the *application* - *site* Production Libraries panel (CMNCPRDL).

Field	Description
Line Command	Valid line commands: I Insert a new line. R Repeat an existing line. D Delete a line.
Type	Enter the library type. Enter '*' to select from a list of valid library types defined by Application Admin. HINT: To enter several library types that have similar dataset names, enter all information for one library type, then repeat the lib type line and change the necessary characters.
Production dataset name	Enter the fully-qualified dataset name for the production library associated with the respective library type. This becomes the target library for components within Permanent change packages upon installation. NOTE: In an ALL environment, production datasets are optional.

Field	Description
Temporary dataset name	Enter the fully-qualified dataset name for the temporary library associated with the respective library type. Components in Temporary packages are installed in this library. NOTE: Temporary datasets are required regardless of environment type.
Backup dataset name	Enter the fully-qualified dataset name for the backup production library associated with the respective library type. At install time, production libraries are backed up into this library. NOTE: In an ALL environment, backup datasets are optional.

4 On the *application* - *site* Production Libraries panel, type * in the line command of the first empty library type and press Enter. The Library Type Selection List is displayed.

```
CMNLTPSL                  Library Type Selection List          Row 1 to 7 of 7
Command ===> ____________________________________________________ Scroll ===> CSR

  Lib  Description
_ CLS  CLIST
_ JCL  JCL Library Type
_ LCT  Linkedit Control Cards
_ LST  Listing
_ NCL  NCAL subroutine load library
_ OBJ  Object module library
_ PKG  DB2 Bind Package Commands
****************************** Bottom of data ******************************
```

Field	Description
Lib	Display of all valid defined library types.
Description	The descriptive free-form text associated with each library type.

This list includes only those library types for which you specified Y or C in the Install In Prod field on the *application* - Baseline Configuration panel.

5 On the on the Library Type Selection List panel, type S in the line command for every library type and press Enter. You are returned to the *application* - *site* Production Libraries panel, where library types are filled in.

6 On the *application* - *site* Production Libraries panel, complete the set of production library names for each library type.

NOTE Type NULLFILE in the Temporary Dataset Name field if you prohibit temporary packages in this application by setting the Allow Temporary Packages indicator to NO in application administration parameters.

```
CMNCPRDL            DEMX - C001 Production Libraries          Row 1 to 2 of 2
Command ===> _____________________________________________ Scroll ===> CSR

     Type Production dataset name    +
          Temporary dataset name     +
          Backup dataset name        +
____ CLS  CMNTP.S8.V813.PROD.DEMX.C001.CLS
          CMNTP.S8.V813.TEMP.DEMX.C001.CLS
          CMNTP.S8.V813.BACK.DEMX.C001.CLS
____ JCL  CMNTP.S8.V813.PROD.DEMX.C001.JCL
          CMNTP.S8.V813.TEMP.DEMX.C001.JCL
          CMNTP.S8.V813.BACK.DEMX.C001.JCL
****************************** Bottom of data ******************************
```

7 Press PF3 to save your changes and return to the *site* - Site Selection List (for a D or DP environment) or the Update Application Administration Options panel (in an ALL environment.).

Updating Production Libraries

Perform these steps to update production libraries for an application.

1 On the Update Application Administration Options panel, select Option P and press Enter. If you are configuring a DP environment, the *application* - Site Selection List panel (CMNRMTSL) is displayed.

```
CMNRMTSL                DEMX - Site Selection List            Row 1 to 2 of 2
Command ===> _____________________________________________ Scroll ===> CSR

  Site Name
_ C001
_ C002
****************************** Bottom of data ******************************
```

2 On the *application* - Site Selection List panel, select a site by typing S in the line command for the site, and press Enter.

3 The *application* - *site* Production Libraries panel (CMNCPRDL) is displayed. (If you are configuring an ALL environment, this is the first panel you see.)

```
CMNCPRDL            DEMX - C001 Production Libraries          Row 1 to 2 of 2
Command ===> _____________________________________________ Scroll ===> CSR

     Type Production dataset name    +
          Temporary dataset name     +
          Backup dataset name        +
____ CLS  CMNTP.S8.V813.PROD.DEMX.C001.CLS
          CMNTP.S8.V813.TEMP.DEMX.C001.CLS
          CMNTP.S8.V813.BACK.DEMX.C001.CLS
____ JCL  CMNTP.S8.V813.PROD.DEMX.C001.JCL
          CMNTP.S8.V813.TEMP.DEMX.C001.JCL
          CMNTP.S8.V813.BACK.DEMX.C001.JCL
****************************** Bottom of data ******************************
```

This table describes the fields on the *application* - *site* Production Libraries panel (CMNCPRDL).

Field	Description
Line Command	Valid line commands: I Insert a new line. R Repeat an existing line. D Delete a line.
Type	Enter the library type. Enter '*' to select from a list of valid library types defined by Application Admin. HINT: To enter several library types that have similar dataset names, enter all information for one library type, then repeat the lib type line and change the necessary characters.
Production dataset name	Enter the fully-qualified dataset name for the production library associated with the respective library type. This becomes the target library for components within Permanent change packages upon installation. NOTE: In an ALL environment, production datasets are optional.
Temporary dataset name	Enter the fully-qualified dataset name for the temporary library associated with the respective library type. Components in Temporary packages are installed in this library. NOTE: Temporary datasets are required regardless of environment type.
Backup dataset name	Enter the fully-qualified dataset name for the backup production library associated with the respective library type. At install time, production libraries are backed up into this library. NOTE: In an ALL environment, backup datasets are optional.

4 If you want to remove a set of production libraries for a library type, type D in the line command for the library type and press Enter. The library type and its production libraries are removed from the *application* - *site* Production Libraries panel.

NOTE If you remove a library type from the *application* - *site* Production Libraries panel, you must reset the Install In Prod indicator to N or C for that library type on the Baseline Configuration Part 1 of 2 panel. See "Configuring Baseline Libraries" on page 162.

5 To add a library type and a set of production libraries to the *application* - *site* Production Libraries panel, follow these steps:

a Type I (Insert) in the line command above where you want to insert the library type and press Enter. An empty library type entry is inserted on the panel.

b Type * in the line command for the empty library type entry and press Enter. The Global Library Type Selection List panel is displayed.

```
CMNLTPSL                 Library Type Selection List          Row 1 to 7 of 7
Command ===> ____________________________________________ Scroll ===> CSR

  Lib  Description
_ CLS  CLIST
_ JCL  JCL Library Type
_ LCT  Linkedit Control Cards
_ LST  Listing
_ NCL  NCAL subroutine load library
_ OBJ  Object module library
_ PKG  DB2 Bind Package Commands
****************************** Bottom of data ******************************
```

This list includes only those library types for which you specified Y or C in the Install In Prod field on the *application* - Baseline Configuration panel.

c On the on the Library Type Selection List panel, type S in the line command for the library type you want to add and press Enter. You are returned to the *application* - *site* Production Libraries panel, where the new library type is filled in at the insertion point.

6 On the *application* - *site* Production Libraries panel, add a set of production libraries for each new library type, or change existing library names.

NOTE Type NULLFILE in the Temporary Dataset Name field if you prohibit temporary packages in this application by setting the Allow Temporary Packages indicator to NO in application administration parameters.

```
CMNCPRDL            DEMX - C001 Production Libraries           Row 1 to 2 of 2
Command ===> ____________________________________________ Scroll ===> CSR

     Type Production dataset name    +
          Temporary dataset name     +
          Backup dataset name        +
____ CLS  CMNTP.S8.V813.PROD.DEMX.C001.CLS
          CMNTP.S8.V813.TEMP.DEMX.C001.CLS
          CMNTP.S8.V813.BACK.DEMX.C001.CLS
____ JCL  CMNTP.S8.V813.PROD.DEMX.C001.JCL
          CMNTP.S8.V813.TEMP.DEMX.C001.JCL
          CMNTP.S8.V813.BACK.DEMX.C001.JCL
****************************** Bottom of data ******************************
```

7 Press PF3 to save your changes and return to the *site* - Site Selection List (for a D or DP environment) or the Update Application Administration Options panel (in an ALL environment).

Configuring Temporary Override Libraries for ALL Environments

Temporary change packages populate temporary override libraries concatenated over production execution libraries. These override libraries are defined in ChangeMan ZMF application administration as production libraries.

If you are configuring an ALL environment where you use baseline libraries for production execution libraries, and you do not need to define a full set of production libraries, follow these steps to define production override libraries for temporary packages.

1 On the Application Administration Option panel, type the application mnemonic in the Application field, type B on the Option line, and press Enter. The *application* - Baseline Configuration Part 1 of 2 panel is displayed.

2 On the *application* - Baseline Configuration Part 1 of 2 panel, type Y or C in the Install In Prod field for each library type for which you want a production execution override library.

3 When you are finished making entries on the *application* - Baseline Configuration Part 1 of 2 panel, press Enter to save your changes, and you are returned to the Update Application Administration Options panel.

4 On the Update Application Administration Options panel, type P in the Options field and press Enter. The *application* - Production Libraries panel is displayed.

5 On the *application* - Production Libraries panel, type * in the line command for an empty row. The Library Type Selection List is displayed. This list includes only those library types for which you specified Y in the Install In Prod field on the *application* - Baseline Configuration panel.

6 On the on the Library Type Selection List panel, type S in the line command for every library type and press Enter. You are returned to the *application* - Production Libraries panel.

7 On the *application* - Production Libraries panel, make these entries for every library type:

- **a** Type NULLFILE in the Production Dataset Name field
- **b** Type the dataset name of the temporary production execution override library in the Temporary Dataset Name field.
- **c** Type NULLFILE in the Backup Dataset Name field

8 Press PF3 to save your changes and return to the Update Application Administration Options panel.

Update Parameters Across Applications

Select option U - Update Parameters across applications and you will see panel CMNPLST4 - ***Application* - Update Options**. You have these choices:

```
CMNPLST4                    ACTP - Update Options
Option ===> _____________________________________________________

1  Library Type   Update Library types
2  Baseline       Update Baseline libraries
3  Production     Update Production libraries
```

The Update function allows for copying or deleting of application parameters from one application to mulitple target applications.

To copy or delete parameters, enter the associated option in the Option field and press the ENTER key.

Then on the next panel CMNPLST3, use the list of applications to select applications to propagate the desired administrative changes.

LINE COMMANDS
S Update parameters to this application
APPL
All application mnemonics that the user has update access to.
DESCRIPTION
The short description of the application entered when the application was created.
HIGHEST #
The total number of change packages ever created for each application.
STATUS
Indicates whether the application is LOCKED , IN USE or *Select. LOCKED applications cannot be updated. IN USE denotes that another administrator is currently updating the application. *Select indicates this will be a target application for the update.

Application Copy Tool

This copies an application's administrative, package and history data. The first part is accessed in Application Admin option Z, this option will call CMNADMAC to copy an application's administration, package and history records to flat package and component master files. The flat package and component files are allocated using the global development model dsnames with a package number of zeros.

For example the Component file CMNTP.S8.ACTP.STG8.#000000.COMPNT and package file CMNTP.S8.ACTP.STG8.#000000.PACKAGE, where ACPT is the application being copied and 000000 is the zero package number.

The second part to this process is the loading of the application's administrative, package and history records at the target system. To accomplish this, the job provided in the CNTL member ACTLOAD (which executes CMNADMAL) must be modified to your shop standards and executed. You will need to provide the datasets for the JOBLIB, parms for SUBSYS (target system id) and USER (userid with authority), SER#PARM dataset, and CMAST and PMAST DDs (component/package master names produced by the first part). Note that you should take a secure backup of the package master and component master before running this job.

Chapter 6

Custom Modifications

It is recommended to not include ChangeMan ZMF load libraries in the LINKLIST; therefore, some ISPF skeletons must be modified to add JOB and JOBLIB statements to batch jobs submitted by ChangeMan ZMF. Other skeletons must be modified to provide data set names for system libraries that comply with local data center standards.

Initial skeleton customization is detailed in the *ChangeMan ZMF Customization Guide*.

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Customizing ChangeMan ZMF

ChangeMan ZMF provides a rules-based environment for software configuration management. Its architecture and design provide processes based on best practices for managing application components through the development lifecycle to guarantee the integrity of production systems and data. The basic definitions of ChangeMan ZMF processing rules are established by settings in Global and Application Administration.

SCM best practices can be expressed differently in different companies. ChangeMan ZMF architecture is intended to provide customers with the opportunity to modify details of the development lifecycle process. User exits provide you with access to core processes to expand the options. While user interfaces have expanded beyond the mainframe, many key functions are based on batch processing that can be modified to fit your requirements.

User Exits In ChangeMan ZMF

ChangeMan ZMF exits are programs that are called by base product programs. Exits permit you to alter the processing of base product programs depending on the information passed to the exit. Using exits, you can:

- Change defaults and settings for interaction with the operating system.
- Alter what ChangeMan ZMF will do under specific component, package, or life cycle conditions.
- Change who has authority to initiate specific ChangeMan ZMF tasks.
- Change when authorized users can initiate certain tasks.

Common reasons for using exits include:

- Adapt ChangeMan ZMF to your data center standards and environment.
- Enforce your company's standards, processes, and procedures for software change management.
- Implement custom processes to manage unique component build processes.
- Add rule-based flexibility to standard ChangeMan ZMF processing.

The use of exits to provide custom ChangeMan ZMF functions is described in the *ChangeMan ZMF Customization Guide*.

ISPF Skeletons In ChangeMan ZMF

ChangeMan ZMF uses standard ISPF services to build batch job JCL from ISPF skeletons. This approach provides extraordinary flexibility through the use of standard IBM facilities. You can build your own batch processes inside ChangeMan ZMF for component builds and other processes. ChangeMan ZMF maintains the integrity of your software change management environment by securing development and production libraries and allowing only authorized access to its functions.

Modification of ISPF skeletons to provide custom ChangeMan ZMF functions is described in the *ChangeMan ZMF Customization Guide*.

ChangeMan ZMF Utilities

Utility programs included in ChangeMan ZMF batch processes run under the control of program parameters and SYSIN keyword parameters. You can change utility parameters in delivered ChangeMan ZMF skeletons to adjust component processing to fit your standards and requirements. These utilities can also be included in custom skeletons to provide unique functions you design.

ChangeMan ZMF utilities are described in the *ChangeMan ZMF Customization Guide*.

Chapter 7

Monitoring Site and Application Packages

ChangeMan ZMF lets you monitor your site and applications for change package discrepancies as well as monitor and override user-provided installation information. To access any of this functionality the security administrator must have given you access to the monitor functional area.

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Installation Jobs	195
Monitoring the ChangeMan ZMF Installation Scheduler	199

Introduction

ChangeMan ZMF allows you to monitor your applications for change packages that show discrepancies or abnormalities including the following:

- Distribution without distribution acknowledgment
- Installation date has passed
- Package in APR status in ALL environment
- Package in INS status in ALL environment
- Package status not being changed in TCC after duration
- All Complex/Super packages with OPN status

Change packages that have these discrepancies are considered to be in limbo. You can query the applications for these packages, and act upon the package (such as delete it or postpone its installation).

By querying the applications (or the site) for this information and marking them as being in limbo, you provide filtering criteria for the packages that you want to query.

Although the monitor function is similar to the query function, the functionality has been extended to let authorized users:

- Change install dates
- Change a package's status
- Edit and submit jobs to production

If your site uses ChangeMan ZMF for scheduling, you can monitor a list of packages scheduled for installation, and selectively change, hold, or release installation of the package.

The Monitor Option panel (CMNMONIT) allows you to perform the above tasks.

Accessing the Monitor Option Panel

The Monitor Options panel (CMNMONIT) lets you select and monitor packages in limbo or packages under the control of the internal scheduler for installation or promotion. To access this panel, select Option M on the Primary Option Menu.

```
CMNMONIT                          Monitor Options
Option ===>  ____________________________________________________

1  Limbo          Packages in limbo
2  Install        CMN installation scheduler
3  Promotion      CMN promotion scheduler
4  All            All packages
```

Querying Package Information

The Monitor Packages in Limbo panel (CMNQRYL1) lets you provide Change Package information to query.

1 From the Monitor Option panel, type 1. The Monitor Packages in Limbo panel (CMNQRYL1) is displayed.

```
CMNQRYL1                  Monitor Packages in Limbo
Command ===> ____________________________________________________

Specify selection criteria:
Package . . . . . . . . . . ____________(Full name, pattern, blank or *)
Install date: from  . . . . ___________  (yyyymmdd)
              to  . . . . . ___________  (yyyymmdd)
Creation date: from . . . . ___________  (yyyymmdd)
               to . . . . . ___________  (yyyymmdd)
Package status  . . . . . .             (APR, BAK, DEV, DIS, FRZ,
                                         INS, OPN, REJ, or blank)
```

2 In the Package field, type the name of the package you are going to monitor, or select a package based on the following filter criteria:

To select from a list of:	Do this:
Applications	**1** Leave the Package field blank, and press Enter. The Application Selection List (CMNQRYL3) panel is displayed. **2** Select an application by entering S in the line command field. Press Enter. The Limbo Package List (CMNQRYL2) panel is displayed. **3** Select one or several packages by entering S in the line command field.
All packages at your site	Enter an * in the PACKAGE ID field and press Enter.
All packages of a certain pattern	Use * pattern masking in the PACKAGE ID field and press Enter. For example, ACT* displays all packages in limbo whose names begin with the characters ACT.

To select from a list of:	Do this:
All packages to be installed in a given date range	**1** In year, month, day format (YYYYMMDD), specify the FROM INSTALL DATE and the TO INSTALL DATE to list all packages that are scheduled to be installed in that date range and press Enter. Or, leave the field blank to access all dates and press Enter. The Application Selection List (CMNQRYL3) panel is displayed if you left the PACKAGE ID field blank. **2** Select an application by entering S in the line command field. **3** Press Enter. The Limbo Package List (CMNQRYL2) panel is displayed. **4** Select one or several packages by entering S in the line command field.
All packages created in a given date range	**1** In year, month, day format (YYYYMMDD), specify the FROM CREATION DATE and the TO INSTALL DATE to list all packages that were created during that date range and press Enter. Or, leave the field blank to access all dates and press Enter. The Application Selection List (CMNQRYL3) panel is displayed if you left the PACKAGE ID field blank. **2** Select an application by entering S in the line command field. **3** Press Enter. The Limbo Package List (CMNQRYL2) panel is displayed. **4** Select one or several packages by entering S in the line command field.

Packages in Limbo

To see a list of applications for limbo testing, press enter on The Monitor Packages in Limbo panel (CMNQRYL1), you'll be presented with a list of applications:

```
CMNQRYL3 ----------------- APPLICATION SELECTION LIST -------- Row 1 to 2 of 2
COMMAND ===>                                                  SCROLL ===> PAGE

  APPL  DESCRIPTION                                HIGHEST #
S ACTP  ACCOUNTS PAYABLE                            000009
_ GENL  GENERAL LEDGER                              000003
****************************** Bottom of data ********************************
```

Place an S next to the APPL to be limbo queried and press enter (if you only have one application, the selection list is bypassed):

```
CMNQRYL2                      Limbo Package List              Row 1 to 1 of 1
Command ===> ____________________________________________________ Scroll ===> CSR

    Package    Status Install   Creation  Level   Type           Request
    Description
__  ACTP000001  DEV   20170528  20170205  SIMPLE  PLANNED PERM
    Install date has passed for this package.
****************************** Bottom of data ********************************
```

Acting on Limbo Packages

The Description row on the Limbo Package List panel (CMNQRYL2) displays the reason for flagging a package as limbo.

1 To act on a package in limbo, place the cursor in a desired row and do any of the following:

- Type DE and press Enter to physically delete the package. The package is marked for deletion, which occurs as soon as you leave this panel.
- Type MD and press Enter to memo delete the package. ChangeMan ZMF marks the package for a memo delete.

  Validate that participating packages are not associated with any super or complex package and that super or complex packages have no associated participating packages.
- Type CD and press Enter to change the installation date of the package. Type the new change package installation date in the INSTALL field.
- Type CS and press Enter to change the package status. Type the new status in the STATUS field.
- Type S and press Enter to manually submit a job to install the package. The Submit Job From panel is displayed. "Manually Submitting a Package in Limbo for Installation" on page 194 describes this panel.

2 Press END. This processes the commands. You can type CANCEL at the command line to exit without processing.

Manually Submitting a Package in Limbo for Installation

1 The Monitor Packages In Limbo function reads the entire ChangeMan master file and searches for any out-of-the-ordinary situations within the packages. Such situations can include any of the following:

* Distribution without distribution acknowledgement
* Installation date has passed
* Package is in APR status in an ALL environment
* Package is in INS status in an ALL, DP or D environment (baseline ripple failed or has not yet completed)
* A temporary package's status has not been updated to TCC even though the temporary change duration has passed.

From the Limbo Package List panel, mark a package for installation by typing an S in the first column of the row (the line command field).

```
CMNQRYL2                      Limbo Package List              Row 1 to 8 of 8
Command ===> ____________________________________________________ Scroll ===> CSR

    Package    Status Install   Creation  Level   Type           Request
    Description
__  ACTP003803  OPN   ________  20170307  COMPLEX PLANNED PERM
    Super/Complex package has an OPEN status.
...
__  ACTP003824  DEV   20170416  20170406  SIMPLE  UNPLANNED PERM
    Install date has passed for this package.
__  ACTP003825  DEV   20170411  20170411  SIMPLE  PLANNED PERM
    Install date has passed for this package.
S_  ACTP003826  DIS   20170411  20170411  SIMPLE  PLANNED PERM
    Install date has passed for this package.
****************************** Bottom of data ******************************
```

2 Press Enter. A panel similar to the following panel is displayed.

```
CMNRMTSL --------------- ACTP - SITE SELECTION LIST ---------- Row 1 to 1 of 1
COMMAND ===> ____________________________________________________ SCROLL ===> CSR

  SITE NAME
S C001
****************************** Bottom of data ******************************
```

3 Press END. ChangeMan ZMF presents you with a list of jobs from the X.node dataset for selection. This panel displays the contents of the '.X' staging library. Each member is a job in the package installation process. Any member that did not run to completion can be resubmitted by entering 'S' in the line command field. Use caution when submitting a job that has partially completed. All steps will run again. For example, if this is a baseline ripple job, some library types may have rippled, and resubmission will cause those libraries to be rippled again. We recommend that you first edit the X dataset and delete the jobsteps that have run successfully, or perform

a step restart. Then resubmit the job from the '.X' dataset or, if submission by ChangeMan is required, use this panel:

```
CMNQRYL4                    Submit Job From X.node          Row 1 to 18 of 18
Command ===> ____________________________________________ Scroll ===> CSR

  Source dataset name:
   CMNTP.ACTP.STG@.#003826.X.C001

  Name     Status   vv.mm Created    Changed            Size   Init User
_ ACTP1026          01.01 2017/04/11 2017/04/11 09:22     59     59 USER014
_ ACTP1126          01.01 2017/04/11 2017/04/11 09:22     63     63 USER014
_ ACTP1526          01.01 2017/04/11 2017/04/11 09:22     50     50 USER014
...
_ ACTP6426          01.01 2017/04/11 2017/04/11 09:22     67     67 USER014
S ACTP6526          01.01 2017/04/11 2017/04/11 09:22     51     51 USER014
****************************** Bottom of data ******************************
```

4 Place an S next to the job for submission and press enter:

```
CMNQRYL4                    Submit Job From X.node          Row 1 to 18 of 18
Command ===> ____________________________________________ Scroll ===> CSR

  Source dataset name:
   CMNTP.ACTP.STG@.#003826.X.C001

  Name     Status   vv.mm Created    Changed            Size   Init User
_ ACTP1026          01.01 2017/04/11 2017/04/11 09:22     59     59 USER014
_ ACTP1126          01.01 2017/04/11 2017/04/11 09:22     63     63 USER014
_ ACTP1526          01.01 2017/04/11 2017/04/11 09:22     50     50 USER014
...
_ ACTP6426          01.01 2017/04/11 2017/04/11 09:22     67     67 USER014
_ ACTP6526 *Select  01.01 2017/04/11 2017/04/11 09:22     51     51 USER014
```

5 Your job is submitted.

Installation Jobs

The ChangeMan ZMF install process is accomplished by a sequence of batch jobs.

The first job in the sequence is initiated by the Scheduler defined in the package Installation Instructions. The rest of the jobs in the sequence are automatically submitted to the internal reader by the preceding job or by ChangeMan ZMF when successful completion of a preceding job is recorded in the package master.

When you attempt to restart an install process for a package in limbo, you must choose which job to restart and you must know whether or not to submit that job in the development environment or on a ChangeMan ZMF production environment that runs at a remote site.

The following table describes ChangeMan ZMF installation jobs. The table indicates where each job runs. If you do not have remote production environments, a subset of these jobs is used to install your packages.

DEVELOPMENT CENTER		REMOTE SITE	
Job	**Action**	**Job**	**Action**
10	■ Package is audited and/or frozen. ■ Jobs are created in X.&node. ■ Package is approved. ■ Job 10 is submitted to initiate the distribution.		
	■ CMNBATCH transaction 10 says distribution initiated and status is changed to DIS. ■ Vehicle is asked to submit job 11 at remote site.		
11	Staging libraries are sent to remote site.	10	■ Staging libraries are received including QSAM package master. ■ Job 11 is submitted.
		11	■ CMNBATCH transaction 11 overlays package records (on the package master) with QSAM package master. ■ Proper node record is time stamped; status is DIS. ■ Job 14 is submitted. (Only if IEBCOPY is not used.)
		14	Job 14 requests vehicle to submit 15 at DEV site.
		17	Job 17 is submitted if external (not internal) scheduler is used.
		18	Job 18 requests vehicle to submit 19 at DEV site.
15	Job 15 is submitted. (Only if IEBCOPY is used.)		
15	CMNBATCH transaction 15 stamps acknowledgment of distribution.		
19	Notification to package creator that distribution failed.		
		21	Perform DB2 bind for production installation. (INSTALL IN PROD = YES).

DEVELOPMENT CENTER		REMOTE SITE	
Job	**Action**	**Job**	**Action**
		20	Job 20 is submitted to check if package was previously installed. If not, package begins installation.
		20	CMNBATCH transaction 20 changes package status to INS.
		20	Job 24 is submitted. (Only if IEBCOPY is not used.)
		20t	If Temporary, Job 20t runs to install members into temporary libraries.
		24	Requests vehicle to submit 25 at DEV site.
		28	Requests vehicle to submit 29 at DEV site.
25	CMNBATCH transaction 25 changes package status to INS.		
29	Notification to package creator that installation failed.		
25	If Permanent, Job 30 is submitted.		
		30	Job 30 is submitted if system environment is ALL.
30	CMNBATCH transaction 30 changes package status to BAS and ripples the baseline.		
30	Delete members from promotion libraries based on promotion level and library type.		
		31	If temporary, Job 31 runs to delete members from temporary libraries.
		31t	CMNBATCH transaction 31 changes package status to TCC (Temporary Change Cycled) and date/time stamps. Submit job 35.
		32	Performs DB2 bind for production installation (INSTALL IN PROD = NO).
		34t	Requests vehicle to submit 35t at DEV site.
35t	Package status updated to TCC and date/time stamped when all remote sites have been cycled.		
		38t	Requests vehicle to submit 39t at DEV site.

DEVELOPMENT CENTER		REMOTE SITE	
Job	**Action**	**Job**	**Action**
39t	Notification to package creator that the package cycle failed.		CASE: A permanent change must be backed out. ■ Operator makes human decision to back out (full) particular package. ■ Operator enters backout reasons on panel. ■ ChangeMan ZMF instance copies package to same flat file that was sent from development center. ■ Job 50 is submitted.
		49	Job 21 runs the DB2 bind for production backout (INSTALL IN PROD = YES).
		50	■ Backs out the change by copying back from BKUP libraries. ■ Changes package status to BAK. ■ Job 54 is submitted if IEBCOPY is used; else job 51 is submitted.
		50	If system environment is ALL, job 55 is submitted.
		51	Job 51 transmits a QSAM package master to the development center and requests a vehicle to submit job 54.
54	■ Reads flat package and transmits reasons. ■ Updates backout reasons into correct package.		
55	Job 55 is submitted to reverse ripple the baseline if all remote sites are backed out.		
55	■ Status is changed to BAK. ■ * node record is date and time stamped.		
		56	Job 32 runs the DB2 bind for production backout (INSTALL IN PROD = NO).
		58	Job 58 requests vehicle to submit 59 at DEV site.

DEVELOPMENT CENTER		REMOTE SITE	
Job	**Action**	**Job**	**Action**
59	Notification to package creator that package backout failed.		
		64	Job 64 requests vehicle to submit 65 at DEV site.
	■ Package is audited and/or frozen. ■ Jobs are created in X.&node. ■ Package is approved. ■ Job 10 is submitted to initiate the distribution.		

Monitoring the ChangeMan ZMF Installation Scheduler

Once a package has been marked for internal scheduling and distributed, it is under the control of the Installation Scheduler. This tool lets the administrator display a list of scheduled jobs (by entering selection criteria, or blanks for the entire list), and to selectively change, hold, or release jobs. Use this panel to enter criteria for displaying the jobs currently under the control of the Internal Scheduler.

1 From the Monitor Option panel, select Option 2 - Install. The Monitor INSTALLATION Scheduler Part 1 of 2 (CMNMISCH) is displayed.

```
CMNMISCH          Monitor INSTALLATION Scheduler - Part 1 of 2
Command ===> ____________________________________________________

Specify selection criteria:
Package . . . . . . . . . . ___________  (Full name, pattern, blank or *)
Install date: from  . . . . . _________    (yyyymmdd)
              to  . . . . . . _________    (yyyymmdd)
```

2 To monitor the Internal Scheduler for a package, type the name of the package you want to monitor in the PACKAGE ID field, or select a package based on the following filter criteria:

To select from a list of:	Do this:
Applications	**1** Leave the PACKAGE ID field blank, and press Enter. The Application Selection List (CMNRYL3) panel is displayed. **2** Select an application by entering S in the line command field. **3** Press Enter. The Monitor Installation Scheduler - Part 2 of 2 (CMNMISC2) panel is displayed. **4** Select one or several packages by entering S in the line command field.
All packages at your site	Enter an * in the PACKAGE ID field and press Enter.
All packages of a certain pattern	Use * pattern masking in the PACKAGE ID field and press Enter. For example, ACT* lists all packages whose names begin with the characters ACT.
All packages to be installed in a given date range	**1** In year, month, day format (YYYYMMDD), specify the FROM INSTALL DATE and the TO INSTALL DATE to list all packages that are scheduled to be installed in that date range and press Enter. Or, leave the field blank to access all dates and press Enter. The Application Selection List (CMNQRYL3) panel is displayed if you left the PACKAGE ID field blank. **2** Select an application by entering S in the line command field. **3** Press Enter. Monitor Installation Scheduler - Part 2 of 2 (CMNMISC2) panel is displayed. **4** Select one or several packages by entering S in the line command field.

Reviewing the Internally Scheduled Packages List

When the Monitor Installation Scheduler - Part 2 of 2 (CMNMISC2) panel is displayed, you see the jobs that were internally scheduled.

```
CMNMISC2         Monitor INSTALLATION Scheduler - Part 2 of 2
Command ===>                                              Scroll ===> CSR

  Package     Date        Time    Type          Request  Status
_ ACTP003826  20170411    1900    Planned Perm           *HOLD
```

Acting on the Packages

1 To act on one of the packages, place the cursor in the appropriate row and perform one of the following actions:

- Type C and press Enter to change the job's install/promotion date or time. Type in the new date or time in the appropriate column. The Status field is flagged with the *CHANGE message.
- Type D and press Enter to delete an individual package from the scheduler. The Status field is flagged with the *DELETE message.
- Type H and press Enter to place a hold on the job. The installation for the package cannot be executed until the hold is removed. The Status field is flagged with the *HOLD message. Causes the submission of a package's install job to be suspended. It will remain so until a subsequent R command is issued. When the internal scheduler reviews the list, this package will be bypassed.
- Type R and press Enter to release a job that has been held. The job is submitted at the regularly scheduled date and time, or immediately if these have expired. The Status field is flagged with the *RELEASE message.
- Type S and press Enter. May only be issued against temporary packages. It submits the deinstall job prior to the temporary change duration being met. The Status field is flagged with the *SUBMIT message.

2 Press END. If you entered line commands to change, delete, hold, release, or submit jobs, this action saves the changes and returns you to the Monitor Installation Scheduler Part 1 of 2 panel (CMNMISCH).

Monitoring the ChangeMan ZMF Promotion Scheduler

The Promotion Scheduler function allows the user to display a list of packages to be promoted under the control of the ChangeMan ZMF internal scheduler. This function can be used to suspend, push back, or push up a package's promotion date.

Select option 3 to monitor the ChangeMan ZMF Promotion Scheduler:

```
CMNMONIT                        Monitor Options
Option ===>  ____________________________________________________

1  Limbo          Packages in limbo
2  Install        CMN installation scheduler
3  Promotion      CMN promotion scheduler
4  All            All packages
```

Enter the package in question, in this case all CISQ packages:

```
CMNMISCH           Monitor PROMOTION Scheduler - Part 1 of 2
Command ===> ____________________________________________________

Specify selection criteria:
Package . . . . . . . . . . CISQ*_____  (Full name, pattern, blank or *)
Install date: from  . . . . ________    (yyyymmdd)
              to  . . . . . ________    (yyyymmdd)
```

There is one CISQ package, CISQ000029.

```
CMNMISC2 --------- Monitor PROMOTION Scheduler - PART 2 OF 2 - Row 1 to 1 of 1
Command ===> ____________________________________________ Scroll ===> CSR

  Package     Date        Time    Type          Request  Status
_ CISQ000029  20081230    1200
****************************** Bottom of data ******************************
```

Similar to the Installation scheduler, the following Line commands can be entered:

- H Causes the submission of a package's install job to be suspended. It will remain so until a subsequent R command is issued. When the internal scheduler reviews the list, this package will be bypassed.
- R Releases an install job that had been previously held in the CMN scheduler.
- C Allows the user to change the package's install/promotion date.
- D Allows the user to delete an individual package from the scheduler. The status field is flagged with the *DELETE message.
- S May only be issued against temporary packages. It submits the deinstall job prior to the temporary change duration being met. This feature is available in the installation scheduler only.

Attaching and Detaching TCP/IP Connections

If TCP/IP comes down while ChangeMan ZMF is up, any users connected via TCP/IP cannot sign back on. The following operator commands allow for recovery from a TCP/IP outage. They also provides the means for:

- Gracefully shutting down all TCP/IP connected users while not interrupting cross-memory connected users.

- Forcefully shutting down all TCP/IP connected users without impacting cross-memory connected users. This function is able to execute even in case of a complete TCP/IP failure.
- Re-initializing the API (and subsequent re-logon of TCP/IP users), optionally providing the name of an alternate TCP/IP (stack).

There are three operator commands for TCP/IP are **STOP**, **START**, and **RESTART**:

TCPIP,STOP,[mins]

This command will display the current users that are connected by ports.

If no interval ([mins]) is specified, 0 minutes are assumed.

As soon as the command has been entered, no further TCP/IP connections are accepted.

A warning will be issued to all TCP/IP connected users every minute up to [mins] minutes, after which the TCP/IP users are terminated.

Refer to the SYSLOG and SERPRINT to see the results of these commands. Messages and message formats change, The following screen scrapes were current when this document was written, and are provided as a reference.

```
NC0000000 C001     2008188 11:28:50.97 USER25   00000280  F SERT3TMP,TCPIP,STOP
N FFDF000 C001     2008188 11:28:51.28 S0466400 00000080  SER0916I TCPIP Stop Requested
N FFDF000 C001     2008188 11:28:51.28 S0466400 00000080  SER0920I Current Users:0 Maximum Users:32767
N FFDF000 C001    2008188 11:28:51.28 S0466400 00000080  SER2010I XCH  ###<User_ID><T_Elapsed><T_LastAct><Partner Identifier>
S                                                         Users=0
N FFDF000 C001     2008188 11:28:51.28 S0466400 00000080  SER2012I XCH  No active users found
N FFDF000 C001    2008188 11:28:51.30 S0466400 00000080  SER2010I CMN  ###<User_ID><T_Elapsed><T_LastAct><Partner Identifier>
S                                                         Users=0
N FFDF000 C001     2008188 11:28:51.30 S0466400 00000080  SER2012I CMN  No active users found


ISFPCU41 UT DISPLAY SERT3TMP S0466400  DSID     2 LINE 50      COLUMNS 02- 161
 COMMAND INPUT ===>                                          SCROLL ===> PAGE
11.28.51 S0466400  SER0916I TCPIP Stop Requested
11.28.51 S0466400  SER0920I Current Users:0 Maximum Users:32767
11.28.51 S0466400  SER2010I XCH  ###<User_ID><T_Elapsed><T_LastAct><Partner Identifier> Users=0
11.28.51 S0466400  SER2012I XCH  No active users found
11.28.51 S0466400  SER2010I CMN  ###<User_ID><T_Elapsed><T_LastAct><Partner Identifier> Users=0
11.28.51 S0466400  SER2012I CMN  No active users found
```

TCPIP,START,[name]

This command will start TCP/IP communications (INITAPI) provided that the TCP/IP API has not already been initialized.

If the second parameter ([name]) IS specified, this TCP/IP STC stack name is used when initializing the TCP/IP environment.

When [name] has not been specified connection is made to the default TCP/IP stack, or leaves the selection up to the TCP/IP code which parses the SYSTCPD DD statement.

```
N FFDF000 C001     2008188 11:30:52.71 S0466400 00000080  SER0915I TCPIP Start Requested
N FFDF000 C001     2008188 11:30:52.78 S0466400 00000080  SER1000I CMNSTART TCP/IP environment active at 10.35.11.100..6031
N FFDF000 C001     2008188 11:30:52.78 S0466400 00000080  SER1001I CMNSTART TCP/IP local host name: C001

11.30.52 S0466400  SER0915I TCPIP Start Requested
11.30.52 S0466400  SER1000I CMNSTART TCP/IP environment active at 10.35.11.100..6031
11.30.52 S0466400  SER1001I CMNSTART TCP/IP local host name: C001
```

TCPIP,RESTART,[mins],[name]

The RESTART command will display the active TCP/IP users and stop accepting TCP/IP connection requests. It is combination of the STOP and START command and will behave exactly as if the STOP and START commands had been issued one after the other.

The (optional) parameter [mins] defines how long to allow for a voluntary logoff of the TCP/IP connected users. A warning will be issued to all TCP/IP connected users every minute up to [mins] minutes, after which the TCP/IP users are terminated.

An optional TCP/IP STC name [name] may be specified, overriding the TCP/IP default.

The individual usage of STOP and START commands allows the customer to recycle his TCP/IP STC. Before doing so, the existing TCP/IP users can be gracefully disconnected by using the TCPIP STOP command.

The second RESTART format, that is, with [name] specified, is most useful when the customer wishes to switch TCP/IP stacks by specifying the optional name parameter.

```
NC0000000 C001     2008188 11:42:22.36 USER25   00000280  F SERT3TMP,TCPIP,RESTART
N FFDF000 C001     2008188 11:42:22.55 S0468486 00000080  SER0917I TCPIP Restart Requested
N FFDF000 C001     2008188 11:42:22.55 S0468486 00000080  SER0920I Current Users:0 Maximum Users:32767
N FFDF000 C001    2008188 11:42:22.55 S0468486 00000080  SER2010I XCH  ###<User_ID><T_Elapsed><T_LastAct><Partner Identifier>
S                                                         Users=0
N FFDF000 C001     2008188 11:42:22.55 S0468486 00000080  SER2012I XCH  No active users found
N FFDF000 C001    2008188 11:42:22.57 S0468486 00000080  SER2010I CMN  ###<User_ID><T_Elapsed><T_LastAct><Partner Identifier>
S                                                         Users=0
N FFDF000 C001     2008188 11:42:22.57 S0468486 00000080  SER2012I CMN  No active users found
N FFDF000 C001     2008188 11:42:22.65 S0468486 00000080  SER1000I XCH      TCP/IP environment active at 10.35.11.100..6032
N FFDF000 C001     2008188 11:42:22.65 S0468486 00000080  SER1001I XCH      TCP/IP local host name: C001

ISFPCU41 UT DISPLAY SERT3TMP S0468486  DSID     2 LINE 38      COLUMNS 02- 161
 COMMAND INPUT ===>                                          SCROLL ===> PAGE
11.42.22 S0468486  SER0917I TCPIP Restart Requested
11.42.22 S0468486  SER0920I Current Users:0 Maximum Users:32767
11.42.22 S0468486  SER2010I XCH  ###<User_ID><T_Elapsed><T_LastAct><Partner Identifier> Users=0
11.42.22 S0468486  SER2012I XCH  No active users found
11.42.22 S0468486  SER2010I CMN  ###<User_ID><T_Elapsed><T_LastAct><Partner Identifier> Users=0
11.42.22 S0468486  SER2012I CMN  No active users found
11.42.22 S0468486  SER1000I XCH      TCP/IP environment active at 10.35.11.100..6032
11.42.22 S0468486  SER1001I XCH      TCP/IP local host name: C001
```

Chapter 8

Defining and Running ChangeMan ZMF Reports

ChangeMan ZMF reports display information about global and application administration, change packages, and components managed by ChangeMan ZMF.

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Introduction

ChangeMan ZMF reports display information about global and application administration, change packages, and components managed by ChangeMan ZMF. Information for reports comes from the package master and from component history file.

Batch report jobs are initiated online, or jobs can be submitted manually. Batch reporting jobs communicate with a running ZMF instance to access package and component data, but report jobs can also use copies of the online data.

ChangeMan ZMF reports are generated by REXX programs that call XML Services. You can run the reports that are supplied with ChangeMan ZMF, or you can customize them to suit the reporting requirements at your site. Refer to the *ChangeMan ZMF Customization Guide* for information about customizing the REXX reports that are shipped with ChangeMan ZMF and for guidance about writing your own reporting programs.

Global administrators, application administrators, and users who have read access to an application can run ChangeMan ZMF reports online or manually from batch JCL:

- The global administrator determines the reports that the application administrator can run.
- The application administrator determines the reports that application users can run.
- See the *ChangeMan ZMF User's Guide* for instructions on running the reports that are available to application users.

Reports Available to Administrators and Users

The following table lists all of the reports that are shipped with ChangeMan ZMF. It identifies the input fields and date range that you can specify on the Report Selection List panel (CMNREPT6) when you select the report to be run.

Rpt #	Report Title	Filters Fields and Variables	Date Range
010	Summary of Planned and Unplanned Packages	Appl Mnemonic	N/A
050	Installed Package History Report	Appl Mnemonic Package Number	Package Install Date
060	Installed Simple Package History Report	Appl Mnemonic Package Number	Package Install Date
070	Package Staging Versions[1]	Appl Mnemonic Package Number	Package Create Date
080	Package Component Content	Appl Mnemonic Package Number	Package Create Date
090	Super/Complex Packages Report	Appl Mnemonic Package Number	Package Create Date
100	Application Configuration Report	Appl Mnemonic	N/A

Rpt #	Report Title	Filters Fields and Variables	Date Range
110	Work Request Number Report	Appl Mnemonic Package Number Work Chg Req Nbr[2]	Package Create Date
120	Unplanned Packages Pending Post Approval	Appl Mnemonic Package Number	Package Install Date
130	Report of Backed Out Packages	Appl Mnemonic Package Number	Package Backout Date
140	Report of Rejected Packages	Appl Mnemonic Package Number	Approver Reject Date
160	Trend Analysis of Planned Packages	Appl Mnemonic Package Number	Package Install Date
180	Component History Report	Appl Mnemonic Package Number Component Name[2]	Changed Date
185	Component History Report	Appl Mnemonic Package Number Component Name[2]	Changed Date
190	Trend Analysis of Unplanned Packages	Appl Mnemonic Package Number	Package Install Date
200	Copies, Source and Load Component Report	Appl Mnemonic Package Number	Changed Date
210	Utility (Scratch/Rename) Report	Appl Mnemonic Package Number	Package Create Date
240	Activity Summary by Application	Appl Mnemonic	N/A
260	Implementation Schedule	Appl Mnemonic Package Number	Package Install Date
400	Package Promotion Component Report	Appl Mnemonic Package Number	Package Create Date
500	Package Information Report	Appl Mnemonic Package Number	Package Create Date
900	Designated Procedures Report	Component Name[2]	N/A
910	Packages Using the CMN Scheduler	Appl Mnemonic Package Number	Package Install Date
920	Staging Library Aging Report	Appl Mnemonic	[3]
930	Package Aging Report	Appl Mnemonic	[4]
940	Component Aging Report	Appl Mnemonic	[5]
950	Report of Delinquent Packages	Appl Mnemonic Package Number	Package Install Date

Rpt #	Report Title	Filters Fields and Variables	Date Range
960	Component Level Security Report	Appl Mnemonic Component Name[2]	N/A
970	Packages Pending Approval by Application	Appl Mnemonic Package Number	Package Install Date
980	Implementation Calendar Report	Site Name[2]	N/A
985	Implementation Calendar Summary Report	none	N/A
990	Global Administration Configuration Report	none	N/A
992	Global Environment Report	none	N/A

1. The Package Staging Versions Report (CMN070) dynamically allocates the staging libraries. The report may take a long time to run if staging libraries have been migrated.
2. Specify this value in the Report Variable field.
3. Date parameters are set by the AGING - STAGING DATASETS field on the *appl* Parameters Part 3 of 3 panel (CMNGLP03) in application administration.
4. Date parameters are set by the AGING - INSTALLED PACKAGES field on the *appl* Parameters Part 3 of 3 panel (CMNGLP03) in application administration.
5. Date parameters are set by the AGING - COMPONENT HISTORY field on the *appl* Parameters Part 3 of 3 panel (CMNGLP03) in application administration.

Accessing Reports in ZMF Administration

This section tells you how to access ZMF report functions in global and application administration.

Accessing Reports in Global Administration

Follow these steps to access ChangeMan ZMF reports in global administration:

1 On the Primary Option Menu, select option A, Admin, and then select option G, Global, from the Administration Options panel (CMNADMOM). The Global Administration Options panel (CMNGAMN1) is displayed.

2 Select option R, Reports, from the Global Administration Options panel (CMNGAMN1). The Define/Generate Batch Reports panel (CMNREPT0) is displayed.

```
CMNREPT0                Define/Generate Batch Reports
Option ===> ____________________________________________

1  Define         Define ChangeMan ZMF batch reports
2  Reports        Generate ChangeMan ZMF batch reports
3  Analyzer       Submit baseline analyzer Report
4  Link Date      Submit link date report
5  DB2            Submit DB2 object dependency Report
```

- Option 1, Define ChangeMan ZMF Batch Reports, is described in "Defining General Batch Reports" on page 210.
- Option 2, Generate ChangeMan ZMF Batch Reports, is described in "Submitting Batch Report Jobs Online" on page 214.
- Option 3, Submit Baseline Analyzer Report, is described in "Running the Baseline Analyzer Report" on page 218.
- Option 4, Submit Link Date Report, is described in "Running the Link Date Report" on page 220.
- Option 5, Submit DB2 Object Dependency Report, is only functional if you license the ChangeMan ZMF DB2 Option. See the C*hangeMan ZMF DB2 Getting Started Guide* for instructions.

Accessing Reports in Application Administration

Follow these steps to access ChangeMan ZMF reports in application administration:

1 On the Primary Option Menu, select option A, Admin, and then select option A, Application, from the Administration Options panel (CMNADMOM). The Update Application Administration Options panel (CMNLAMN1) is displayed.

```
CMNLAMN1          Update Application Administration Options
Option ===> ____________________________________________

   Application ===> ____     (Blank for list)

1  Parms          Global parameters
2  Library        Library types
3  Language       Language names
4  Procedures     Compiling procedures
5  Pln Approvals  Planned approval list
6  Upl Approvals  Unplanned approval list
7  Promotion      Promotion libraries
8  Sites          Site information
B  Baseline       Baseline libraries
C  Component      Component information, procedures, security
D  Delete         Delete application
N  Notify         Global notification file
O  Options        Selectable options
P  Production     Production libraries
R  Reports        ChangeMan ZMF batch reports
U  Update         Parameters across applications
Z  Copy           Application Copy Tool
```

- You can type the letter R in the Option field on the Application Administration Options panel (CMNLAMEN), type the 1-to-4-character mnemonic for the target application in the Application field, and press Enter.
- Or, you can leave the Option and Application fields blank and press Enter to display the Application List panel (CMNPLIST). You can then select the target application from the list of applications that are displayed by typing the letter R in the selection field to the left of the target application and pressing Enter.

```
CMNPLIST                        Application List              Row 1 to 5 of 5
Command ===> ____________________________________________ Scroll ===> CSR

  Appl  Description                                  Highest #  Status
_ C001  C001 empty application                        000000
_ C009  C009 empty application                        000000
_ DEM   DEM application                               000000
  DEMO  DEMO application                              000001
R DEMX  DEMX application                              000000
****************************** Bottom of data ********************************
```

2 The Define/Generate Batch Reports panel (CMNRPT0) is displayed.

```
CMNREPT0                 Define/Generate Batch Reports
Option ===> ____________________________________________

1  Define         Define ChangeMan ZMF batch reports
2  Reports        Generate ChangeMan ZMF batch reports
3  Analyzer       Submit baseline analyzer Report
4  Link Date      Submit link date report
5  DB2            Submit DB2 object dependency Report
```

- Option 1, Define ChangeMan ZMF Batch Reports, is described in "Defining General Batch Reports" on page 210.
- Option 2, Generate ChangeMan ZMF Batch Reports, is described in "Submitting Batch Report Jobs Online" on page 214.
- Option 3, Submit Baseline Analyzer Report, is described in "Running the Baseline Analyzer Report" on page 218.
- Option 4, Submit Link Date Report, is described in "Running the Link Date Report" on page 220.
- Option 5, Submit DB2 Object Dependency Report, is only functional if you license the ChangeMan ZMF DB2 Option. See the *ChangeMan ZMF DB2 Getting Started Guide* for instructions.

Defining General Batch Reports

The steps for defining the reports that the global administrator, application administration, and user can access are the same for both global and application administration. The only difference is that application administrators do not see the reports that only global administrators are authorized to access.

As a global or application administrator you can:

- Remove standard reports from the ChangeMan ZMF report facility.

- Add reports that you have customized.
- Restrict who can run reports.

Follow these steps to perform these functions:

1 On the Define/Generate Batch Reports panel (CMNRPT0), select option 1 Define. The Define Application *application* Reports panel (CMNREPT2) is displayed.

```
CMNREPT2              Define Application DEMX Reports        Row 1 to 24 of 24
Command ===> _____________________________________________ Scroll ===> CSR

      ID  Type  Report description
____  010  A    Summary of Planned and Unplanned Packages
____  050  A    Installed Package History Report
____  060  A    Installed Simple Package History Report
____  070  A    Package Staging Versions Report
____  080  U    Package Component Content
____  090  A    Super/Complex Packages Report
____  100  A    Application Configuration Report
____  110  A    Work Request Report
____  120  A    Unplanned Packages Pending Post Approval
____  130  A    Report of Backed Out Packages
____  140  A    Report of Rejected Packages
____  160  A    Trend Analysis of Planned Packages
____  180  A    Component History Report
____  185  A    Component Build Report
____  190  A    Trend Analysis of Unplanned Packages
____  200  A    Copies, Source and Load Component Report
____  210  A    Utility (Scratch/Rename) Report
____  240  A    Activity Summary by Application
____  260  A    Implementation Schedule
____  400  U    Package Promotion Component
____  500  U    Package Information Report
____  910  A    Packages Using the CMN Scheduler
____  950  A    Report of Delinquent Packages
____  970  A    Packages Pending Approval by Application
****************************** Bottom of data ********************************
```

NOTE If you are defining reports in global administration, the Define Global Reports panel (CMNREPT1) is displayed instead. The reports you define in global administration apply to all applications; the reports you define in application administration apply only to the target application.

The following table describes the fields on the Application *application* Reports panel (CMNREPT2).

Field	Description
Line Command	Type a line command to insert, repeat, or delete a report row. Valid values are: I Insert a new report row below the selection. R Repeat an existing report row. D Delete an existing report. * Display the Default Defined Reports Selection List panel (CMNREPT8) to add a standard report from that list.
ID	If you are inserting a new row, type the 3-character report ID. Report IDs must be unique.
Type	If you are inserting a new row, enter a report type to determine who can run the report online. Valid values are: G Only global administrators can run this report. The report appears only on the list of batch reports that the global administrator can access. A Global and application administrators can run this report. U Users can run this report. (The application administrator can customize the list of reports that users can run for each application.)
Report Description	If you are inserting a new row, type a report description.

2 If you type * in the line command field, the Global Defined Reports Selection List panel (CMNREPT7) is displayed.

```
CMNREPT7              Global Defined Reports Selection List  Row 1 to 31 of 31
Command ===> _____________________________________________ Scroll ===> CSR

   Id  Type  Report description
_  010  A    Summary of Planned and Unplanned Packages
_  050  A    Installed Package History Report
_  060  A    Installed Simple Package History Report
_  070  A    Package Staging Versions Report
_  080  U    Package Component Content
_  090  A    Super/Complex Packages Report
_  100  A    Application Configuration Report
_  110  A    Work Request Report
_  120  A    Unplanned Packages Pending Post Approval
_  130  A    Report of Backed Out Packages
_  140  A    Report of Rejected Packages
_  160  A    Trend Analysis of Planned Packages
_  180  A    Component History Report
_  185  A    Component Build Report
_  190  A    Trend Analysis of Unplanned Packages
_  200  A    Copies, Source and Load Component Report
_  210  A    Utility (Scratch/Rename) Report
_  240  A    Activity Summary by Application
_  260  A    Implementation Schedule
_  400  U    Package Promotion Component
_  500  U    Package Information Report
_  900  G    Designated Compile Procedures
_  910  A    Packages Using the CMN Scheduler
_  920  G    Staging Library Aging Report
_  930  G    Package Aging Report
_  940  G    Component Aging Report
_  950  A    Report of Delinquent Packages
_  960  G    Component Level Security
_  970  A    Packages Pending Approval by Application
_  980  G    Implementation Calendar Report
_  985  G    Implementation Calendar Summary Report
_  990  G    Global Administration Configuration Report
_  992  U    Global Environment Report
****************************** Bottom of data ********************************
```

Type the letter S in the line command field of the report or reports that you want to select and press Enter. You return to the Define Application *application* Reports panel (CMNREPT2). The selected reports will have been inserted on this panel.

3 To save your updates, press PF3 or type END on the Command line and press Enter.

Generating ChangeMan ZMF Batch Reports

This section provides instructions for requesting ChangeMan ZMF general batch reports online and manually submitting batch reporting jobs.

Submitting Batch Report Jobs Online

Follow these steps to run batch reports from global administration. (The same steps apply to application administration.)

1 On the Define/Generate Batch Reports panel (CMNREPT0), select option 2 Reports. The Generate Batch Reports panel (CMNREPT3) is displayed.

```
CMNREPT3                    Generate Batch Reports
Command ===> ____________________________________________________

Job Statement Information:
   //REPORTS1 JOB (SM-1IKF-SM),'CHANGEMAN',_____________________________
   //         CLASS=A,_________________________________________________
   //         NOTIFY=USER015,__________________________________________
   //         MSGCLASS=X_______________________________________________
```

NOTE In local administration, the Generate Application *application* Batch Reports panel (CMNREPT4) is displayed for jobcard details, then after pressing Enter you will see the Report Selection List panel (CMNREPT6).

2 Supply appropriate JOB statements to be used when the selected report is submitted for execution and press Enter. The Report Selection List panel (CMNREPT6) is displayed. All reports that you have defined in the global administration report definition process described in "Defining General Batch Reports" on page 210 will appear on this panel. (If you are accessing this panel in application administration, only the reports defined for the target application appear on the list.)

```
CMNREPT6                    Report Selection List          Row 1 to 24 of 24
Command ===> ____________________________________________ Scroll ===> CSR

Application mnemonic . . . . *____
Package Number . . . . . . . _______
Report Variable  . . . . . . ____________________________________________  +
Date range: from . . . . . . _________  (yyyymmdd)
            to . . . . . . . _________  (yyyymmdd)

Enter "/" to select option
  _ Extended Report
  _ Mixed Case

  Id   Report Description
_ 010  Summary of Planned and Unplanned Packages
_ 050  Installed Package History Report
_ 060  Installed Simple Package History Report
_ 070  Package Staging Versions Report
_ 080  Package Component Content
...
_ 240  Activity Summary by Application
_ 260  Implementation Schedule
_ 400  Package Promotion Component
_ 500  Package Information Report
_ 910  Packages Using the CMN Scheduler
_ 950  Report of Delinquent Packages
_ 970  Packages Pending Approval by Application
****************************** Bottom of data ********************************
```

The following table describes the fields on the Report Selection List panel (CMNREPT6).

Field	Description
Report selection field	Enter S to select one or more reports. Enter D to "de-select" a report that you have selected in error.
Application Mnemonic (optional)	Four byte application name, can be masked with '*'. Blank assumes '*'. The following reports cannot be filtered by application - CMN900, CMN980, CMN990, CMN992.
Package Number (optional)	■ Six byte package number, can be masked with '*'. Blank assumes '*'. ■ If application is masked this field is ignored. ■ The following reports cannot be filtered by package - CMN010, CMN100, CMN240, CMN920, CMN930, CMN940, and CMN960.
Report Variable (optional)	It is only used currently for the following reports, and is ignored for all others. Maximum length is 50 bytes. ■ CMN110 - Work request (up to 12 bytes) ■ CMN180 - component name (up to 8 bytes for ZMF, or 50 bytes for HFS) ■ CMN185 - component name (up to 8 bytes for ZMF, or 50 bytes for HFS) ■ CMN900 - component name (up to 8 bytes for ZMF, or 50 bytes for HFS) ■ CMN960 - component name (up to 8 bytes for ZMF, or 50 bytes for HFS) ■ CMN980 - site name (up to 8 bytes) Can be masked with '*', blank assumes '*'.
Report Date Range From and To (optional)	Enter a range of inclusive dates for the report(s). If these fields are left blank, defaults are 19600101 for From date, and today for To date. The following reports cannot be filtered by date. CMN010, CMN100, CMN240, CMN900, CMN920, CMN930, CMN940, CMN960, CMN980, CMN990, and CMN992.
Extended Report (optional)	This will append an 'E' to the selected report if one exists. It expands component names to 256 bytes, and dataset names to 1024 bytes. This option should be used when managing HFS components.
Mixed Case	By default, all fields are folded to upper case. However, if 'Mixed Case' option is selected then the report variable field is left as is. Whichever case you enter will then be processed.
Report ID	The report identification number is displayed for each report.
Report Description	A concise descriptive name is displayed for each report.

3 To run the selected report or reports, press PF3 or type End on the Command line and press Enter.

Manually Submitting a Batch Report Job

Instead of submitting ChangeMan ZMF report jobs online through the ISPF interface, you can submit your own batch job outside of ChangeMan ZMF to generate a report.

1 Customize the REPORTS member of the CNTL library according to the JCL comments:

- Provide a valid JOB statement.
- Specify the appropriate filter fields and variable for the specified report.
- Specify the appropriate library names in job DD statements.

2 Submit the JCL.

NOTE The ChangeMan ZMF ISPF client does not have to be running, but the started task does. The batch job connects directly to the SERNET started task.

Viewing Report Output

Report output is written to DDname SYSTSPRT, which is defined with attributes RECFM=FBA and LRECL=133. The first character of each report record is a print control character.

If you request multiple reports in the same job, each report is executed in a separate job step that is named REP*nnn*, where *nnn* is the report number.

Use a facility such as the Spool Display and Search Facility (SDSF) to view report output online.

Running Reports Against Backup Data

Sample job REPORTS can be run with package master and component master backup data if four DD statements are added:

- CMNPMAST - VSAM file in the same format as the package master attached to the started task.
- CMNCMPNT - VSAM in the same format as the component master attached to the started task.
- CMNCMPNL - VSAM in the same format as the long name component master attached to the started task.
- MAPDATA - Sequential file created by sample job XMLLOAD when the XMLSPACE file is created.

NOTE Not all reports may be run when the instance is down, SERXMLRC does not support all services in "offline" mode and therefore does not fully support all XML reports in "offline" mode. These include the 100, 180, 185, 900, 920, 930, 960 and 990 reports.

Sample JCL for running ChangeMan ZMF reports when the ZMF instance is down:

```
//USER015A JOB (X170,374),'S4.V813',
//         CLASS=A,MSGCLASS=Y,NOTIFY=USER015
//*
//JOBLIB    DD DISP=SHR,                                    * Custom Load
//             DSN=CMNTP.S8.V813.CMNZMF.CUSTOM.LOAD
//          DD DISP=SHR,                                    * Custom Load
//             DSN=CMNTP.S8.V813.SERCOMC.CUSTOM.LOAD
//          DD DISP=SHR,                                    * Vendor Load
//             DSN=CMNTP.S8.V813.CMNZMF.LOAD
//          DD DISP=SHR,                                    * Vendor Load
//             DSN=CMNTP.S8.V813.SERCOMC.LOAD
//*
//REP050 EXEC PGM=IRXJCL,REGION=0M,
// PARM='CMN050 * 4 USER015 . .'
//SYSEXEC  DD DISP=SHR,                                     * Custom Prod
//             DSN=CMNTP.S8.V813.CMNZMF.CUSTOM.REX
//          DD DISP=SHR,                                    * Vendor Prod
//             DSN=CMNTP.S8.V813.CMNZMF.REX
//          DD DISP=SHR,                                    * Vendor Prod
//             DSN=CMNTP.S8.V813.SERCOMC.CEXEC
//SER#PARM  DD DISP=SHR,DSN=CMNTP.S8.V813.SERCOMC.TCPIPORT
//SYSPRINT DD SYSOUT=*
//SYSTSPRT DD SYSOUT=*,DCB=(RECFM=FBA,LRECL=133)
//SERPRINT DD SYSOUT=*
//SYSABEND DD SYSOUT=*
//CMNPMAST  DD DISP=SHR,                                  * Package Master
//             DSN=CMNTP.S8.V813.CMNZMF.CMNPMAST,
//             AMP=('STRNO=255,BUFND=255,BUFNI=66')
//CMNCMPNT  DD DISP=SHR,                                  * Short name
//             DSN=CMNTP.S8.V813.CMNZMF.CMNCMPNT,
//             AMP=('STRNO=255,BUFND=255,BUFNI=66')       * component master
//CMNCMPNL  DD DISP=SHR,                                  * Long name
//             DSN=CMNTP.S8.V813.CMNZMF.CMNCMPNL,
//             AMP=('STRNO=255,BUFND=255,BUFNI=66')       * component master
//MAPDATA   DD DISP=SHR,                                  * MAPDATA
//             DSN=CMNTP.S8.V813.SERCOMC.MAPDATA
```

The XML MAPDATA dataset is the same as that used by XMLSERV.

Notes on Batch Report Job JCL

Note the following regarding JCL that is file tailored from ZMF skeleton CMN$$RPT when you initiate a ZMF report online or when you manually submit a batch reporting job modeled on CMNZMF CNTL member REPORTS:

- REXX report programs are located in the library concatenation at the SYSEXEC DD statement. The source for ZMF REXX report programs is shipped. If you use the REXX compiler at your installation, you can compile the delivered source into a CEXEC library and add that library to the SYSEXEC DD concatenation.
- You always need a SER#PARM DD statement to locate the ZMF instance to which you want to connect.
- TCP/IP is used for communication across address spaces when a report is run. TCP/IP messages are written to SYSPRINT.
- Diagnostic messages are written to SERPRINT.
- Report output is written to SYSTSPRT.
- If an abend should occur when you are running a report, information about the abend is written to SYSABEND.

Running the Baseline Analyzer Report

Baseline Analyzer is a utility that examines the integrity of your source and load relationships. It identifies components that have not yet been properly migrated by ChangeMan ZMF as well as discrepancies between source components and executable components.

As a global or application administrator, use the Baseline Analyzer to:

- Analyze baseline libraries after you install a package into production
- Periodically inspect applications for potential issues
- Analyze the entire ChangeMan ZMF subsystem on a periodic basis

Follow these steps to run the Baseline Analyzer Report from global or application administration.

1 On the Define/Generate Batch Reports panel (CMNREPT0), select option 3 Analyzer.

```
CMNREPT0                 Define/Generate Batch Reports
Option ===>

1  Define         Define ChangeMan ZMF batch reports
2  Reports        Generate ChangeMan ZMF batch reports
3  Analyzer       Submit baseline analyzer Report
4  Link Date      Submit link date report
5  DB2            Submit DB2 object dependency Report
```

2 The Generate Baseline Analyzer Report panel (CMNBLA03) is displayed.

```
CMNBLA03               Generate Baseline Analyzer Report
Command ===> ____________________________________________________

Application . . . ____ (Full name or pattern)

Job statement information:
   //REPORT02 JOB (SM-1IKF-SM),'CHANGEMAN',
   //         CLASS=A,
   //         NOTIFY=USER012,
   //         MSGCLASS=X
```

In application administration, the Generate Baseline Analyzer Report for Application *application* panel (CMNBLA04) is displayed.

The following table describes the fields on the panel.

Field	Description
Application	Type the application mnemonic or a pattern ending in an * (asterisk). For example, G* selects all applications whose mnemonics begin with the letter G. Type * in this field to select all applications. This is a required field. This field does not appear on panel CMNBLA04 in application administration.
JOB Statement Information	Type a valid JOB statement to be used when the batch report job is submitted.

3 Press Enter to submit the job.

Baseline Analyzer Report Format

The body of the Baseline Analyzer Report is written to DDname BASLNRPT. Use an output display facility such as SDSF to view report output.

The components are listed by application and like-load library type. The application, library type, and the name of the corresponding baseline library is displayed in a section header.

```
ChangeMan(R) ZMF      CMNBASLN - 8.1.3 Baseline Analyzer  WEDNESDAY MAY 31, 2017 @ 01:01:13                          Page 1


Application = SNAG    Library Type = LOD
Baseline Library Name = CMNSUP.INTL.SER1.SNAG.BASE.LOD

Load       Source    Library Package    Directory Package  Baseline          Package
Component  Component Type    Name       SETSSI    SETSSI   Hash              Hash
ADEL       n/a        n/a    n/a        6059724C  n/a      n/a               n/a
  Last baseline rippled package information not in the component history record
ALRAJNOG   n/a        n/a    n/a        6719C8C7  n/a      n/a               n/a
  Orphan/new component - component has not been baseline rippled by ChangeMan ZMF
BNP001     BNP001     SRC    SNAG000025 6B1680C2  6B1674E1 EA3D5C9400000181  EA3D5C9400000181
  Load baseline SETSSI does not match the package master SETSSI

Application = SNAG    Library Type = LOA
Baseline Library Name = CMNSUP.INTL.SER1.SNAG.BASE.LOA

Load       Source    Library Package    Directory Package  Baseline          Package
Component  Component Type    Name       SETSSI    SETSSI   Hash              Hash
     This is an empty baseline library, there are no members to process.

Application = SNAG    Library Type = NC1
Baseline Library Name = CMNSUP.INTL.SER1.BASE.NC1

Load       Source    Library Package    Directory Package  Baseline          Package
Component  Component Type    Name       SETSSI    SETSSI   Hash              Hash
STAINROD   n/a        n/a    n/a        5590E1BC  n/a      n/a               n/a
  Orphan/new component - component has not been baseline rippled by ChangeMan ZMF

CMN5400I - Time of day at end of job: 01:01:13 - Condition Code on exit: 00
```

When the Baseline Analyzer Report detects a potential problem, a status condition message is printed below the component detail line. This table provides a description of the status condition messages.

Condition Message	Description
Blank status line	The load component is in-synch with the source component.
Baseline/Package SETSSI not matching	The SETSSI number within the baseline directory does not match the SETSSI in the package master load record. A third-party vendor product could have changed the baseline component SETSSI entry or the load module in baseline has been copied over.
Baseline/Package HASH not matching	The hash token for the baseline component does not match the hash token in the package master source and load records. Someone could have changed the source component outside of ChangeMan ZMF, using ISPF edit, or the package master's source and load records could have been corrupted.

Condition Message	Description
Last baseline rippled package information not in the component history record	This load component is currently part of an active ChangeMan ZMF package. The package has not been through the life cycle, or baseline rippled.
Source baselines not defined	The library type of this source component no longer exists with the application
Source Records not in package master	The originating source and load component records are not in the package master or that package record within the package master could be corrupted.
Components not found in source baseline	The originating source component for this load module is not in the SOURCE baseline library. The component was deleted or renamed in the baseline library.
Stand alone load modules	The load component was not created by compiling a source component within a ChangeMan ZMF package. It is probably a vendor load module
Orphan/new components	This component has not been baseline rippled by ChangeMan ZMF. This load component has never been part of a ChangeMan ZMF package. There is no history record or information for this component.
Components with non-standard directory	The component has a null SSI. So its directory entry is non-standard.
Components in synch	The zmf package meta data hash token, matches the directory entry hash token. So ZMF's meta data and the physical directory are in synch.

The summary section of the Baseline Analyzer Report is written to DDname SUMRYRPT.

```
ChangeMan(R) ZMF      CMNBASLN - 8.1.3 Baseline Analyzer  WEDNESDAY MAY 31, 2017 @ 01:01:13                    Page 1

Summary of Baseline Analyzer Activity:

Number of Components Processed                    =           98
Number of Baseline/Package SETSSI does not match  =            2
Number of Baseline/Package HASH does not match    =            0
Number of Last baseline rippled Package not found =           11
Number of Source Baseline not defined             =            0
Number of Source Record not in Package Master     =            0
Number of Component not found in Source Baseline  =            0
Number of Stand alone load module                 =            0
Number of Orphan/New Components                   =           85
Number of Components with non-standard directory  =            0
Number of Components in Synch                     =            0

CMN5400I - Time of day at end of job: 01:01:13 - Condition Code on exit: 00
```

Running the Link Date Report

The Link Date report lists the contents of every library concatenated in the STEPLIB DD statement of the SERNET started task that runs a ChangeMan ZMF instance. The purpose of the report is to help diagnose problems you may report to Customer Support.

The report is the same whether it is run from global or application administration.

Follow these steps to run the Link Date report from global administration.

1 Select option 4, Link Date, from the Define/Generate Batch Reports panel (CMNREPT0).

```
CMNREPT0                 Define/Generate Batch Reports
Option ===> 4

1  Define         Define ChangeMan ZMF batch reports
2  Reports        Generate ChangeMan ZMF batch reports
3  Analyzer       Submit baseline analyzer Report
4  Link Date      Submit link date report
5  DB2            Submit DB2 object dependency Report
```

2 The Generate Link Date Report panel (CMNLNKD1) is displayed.

```
CMNLNKD1                   Generate Link Date Report
Command ===>

Job statement information:
   //USER015R JOB (SM-1IKF-SM),'CHANGEMAN',
   //         CLASS=A,
   //         NOTIFY=USER015,
   //         MSGCLASS=X
```

3 Review the job card statement information, make any necessary changes, and press Enter. A message is displayed that indicates that the job was submitted.

Here is a sample of a Link Date Report. The first four lines are from the SYSPRINT DD, the rest is from the LNKDTRPT DD. The ChangeMan ZMF version is printed in the first line of the LNKDTRPT DD of the report. The rest of the information displayed on the report is the

details of module names, link date and time, Directory SETSSI and IDR data as shown below.

```
CMN5400I - Time of day at end of job: 22:30:33 - Condition Code on exit: 00
CMNLNKDT has a compile date/time of 20160729   02.34

ChangeMan(R) ZMF      CMNLNKDT - 8.1.2 Link Date Report  SUNDAY JUNE 4, 2017 @ 22:30:33                          Page 1


Data set being processed ===> CMNTP.CMN813.C8.LOAD

 Member                  Link          Directory      Module
  Name               Date    Time       SETSSI       IDR data
CMNEXINS


Data set being processed ===> CMNTP.CMN813T5.LOAD

 Member                  Link          Directory      Module
  Name               Date    Time       SETSSI       IDR data
CDF$ISPF           20170209 134801     6B6C6A91     CDF$ISPF/6B6C6A91/CZMF000092
CDFBATCH           20161122 120837     6B042CC5     CDFBATCH/6B042CC5/CZMF000092
CDFPANEL           20160129 125126     697B57CE     CDFPANEL/697B57CE/CZMF000074
CMN$AAPR           20161130 151526     6B0EE48E     CMN$AAPR/6B0EE48E/CZMF000092
CMN$ACGD           20161130 151525     6B0EE48D     CMN$ACGD/6B0EE48D/CZMF000092
CMN$ACPM           20141010 100627     6707A723     CMN$ACPM/6707A723/CZMF000054
CMN$ACSC           20161130 151526     6B0EE48E     CMN$ACSC/6B0EE48E/CZMF000092
CMN$ADBA           20161130 151526     6B0EE48E     CMN$ADBA/6B0EE48E/CZMF000092
CMN$ADBL           20161130 151524     6B0EE48C     CMN$ADBL/6B0EE48C/CZMF000092
CMN$ADCP           20161130 151524     6B0EE48C     CMN$ADCP/6B0EE48C/CZMF000092
CMN$ADSP           20160729 004229     6A6A9DF5     CMN$ADSP/6A6A9DF5/CZMF000080
CMN$AICR           20161130 151526     6B0EE48E     CMN$AICR/6B0EE48E/CZMF000092
CMN$AIDO           20161130 151524     6B0EE48C     CMN$AIDO/6B0EE48C/CZMF000092
CMN$AIPO           20161130 151525     6B0EE48D     CMN$AIPO/6B0EE48D/CZMF000092
CMN$ALDT           20161130 151526     6B0EE48E     CMN$ALDT/6B0EE48E/CZMF000092
CMN$ALNG           20161130 151526     6B0EE48E     CMN$ALNG/6B0EE48E/CZMF000092
CMN$ALOG           20170208 121542     6B6B036E     CMN$ALOG/6B6B036E/CZMF000092
CMN$ALTP           20161130 151526     6B0EE48E     CMN$ALTP/6B0EE48E/CZMF000092
CMN$APRC           20161130 151526     6B0EE48E     CMN$APRC/6B0EE48E/CZMF000092
CMN$APRM           20161130 151526     6B0EE48E     CMN$APRM/6B0EE48E/CZMF000092
CMN$ARPT           20161130 151525     6B0EE48D     CMN$ARPT/6B0EE48D/CZMF000092
CMN$ASIT           20161130 151603     6B0EE4B3     CMN$ASIT/6B0EE4B3/CZMF000092
CMN$BASL           20161130 151601     6B0EE4B1     CMN$BASL/6B0EE4B1/CZMF000092
CMN$CAPP           20161130 151603     6B0EE4B3     CMN$CAPP/6B0EE4B3/CZMF000092

...

Data set being processed ===> CMNTP.SER813.LOAD

 Member                  Link          Directory      Module
  Name               Date    Time       SETSSI       IDR data
SERALLOC           20160729 010301     6A6AA2C5     SERALLOC/6A6AA2C5/SNET000071
SERASCLI           20130710 120354     64AD452A     SERASCLI/64AD452A/SNET000055
SERASTSK           20160729 004639     6A6A9EEF     SERASTSK/6A6A9EEF/SNET000071
...
SERXMVS            20160928 024338     6ABB25DA     SERXMVS/6ABB25DA/SNET000082
SERXPTIK           20160428 111718     69F1E8BE     SERXPTIK/69F1E8BE/SNET000071
SERXRECV           20160729 005049     6A6A9FE9     SERXRECV/6A6A9FE9/SNET000071
SERXSEND           20160729 005101     6A6A9FF5     SERXSEND/6A6A9FF5/SNET000071
SERZHLLX           20161108 021315     6AF12C3B     SERZHLLX/6AF12C3B/SNET000082
CMN5400I - Time of day at end of job: 22:30:33 - Condition Code on exit: 00
```

Running the DB2 Object Dependency Report

The DB2 Object Dependency report is a batch report that analyzes DB2 stored procedures and user defined functions for dependencies that will interfere with the automatic DROP that is issued before a CREATE SQL is executed at package promote, demote, install, or backout.

NOTE The DB2 Object Dependency report is available only if you have licensed the DB2 Option. Refer to the *ChangeMan ZMF DB2 Option Getting Started Guide* for more information about this report.

Chapter 9

Batch Housekeeping Tasks

You must perform periodic maintenance on files used by ChangeMan ZMF, particularly the VSAM files used to store package information, component information, and user activity information.

This chapter describes the steps required to create and install batch housekeeping jobs, and it lists critical housekeeping tasks.

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Build and Install Housekeeping Jobs

Build housekeeping jobs, install them in production, and add them to your production schedule before you begin using ChangeMan ZMF to manage production applications and before you allow developers to start changing application components in ChangeMan ZMF.

Sample JCL for batch housekeeping jobs is delivered in the CMNZMF CNTL library. Perform these steps to transform the sample JCL into production jobs:

1 Repackage the functions in the sample JCL provided. Group housekeeping functions together that have the same requirements:

- Execute with ChangeMan ZMF running
- Execute when ChangeMan ZMF is down
- Run on the same schedule or frequency

2 Add steps to automatically stop or start the SERNET started task, if your environment allows you to automate this function.

3 Transform the revised JCL into cataloged procedures, job execution JCL, and control library members that comply with your standards for production jobs. Ensure that the jobs you create are structured so that they can be restarted or rerun.

4 Add the housekeeping jobs to your production schedule. SERNET and ChangeMan ZMF must be down to run some housekeeping jobs. Developers cannot make changes to components and packages cannot be installed when ChangeMan ZMF is down. Schedule down time when package installs are unlikely and when it is unlikely that developers will need ChangeMan ZMF to perform emergency fixes for production problems.

5 Create job documentation, request production schedule changes, request report distribution, create GDG indexes, and install the new job components into production libraries.

Summaries of critical housekeeping functions are given below.

Back Up/Restore And Unload/Load

For several data stores, you have a choice between running a VSAM IDCAMS backup or a proprietary ChangeMan ZMF program that unloads the data to formatted sequential records. Consider these facts when you decide which kind of job to schedule.

IDCAMS Backup (Restore)	ZMF Program Unload (Load)
■ Runs faster than proprietary program. ■ For VSAM KSDS, backup and restore reorganizes the data, recovers space, and improves efficiency. ■ For LDS, creates a physical copy of the byte addressable space.	■ Unloaded records are required for a forward recovery process. ■ For VSAM KSDS, backup and restore reorganizes the data, recovers space, and improves efficiency. ■ For LDS, unload and load reorganizes the data and recovers space with physical deletes. ■ For LDS, unload and load is the only way to change the physical file allocation.

Package Master Housekeeping

This section describes housekeeping tasks that maintain the package master VSAM file.

Unload/Back Up Package and Component Masters

When you "back up" the VSAM package master, component master, and long name component master to create a restore point for the data, use utility program CMNBKRST, which creates QSAM files that can be used to forward recover a damaged master file. You cannot use an IDCAMS backup to forward recover a damaged file.

Sample JCL Member	BACKUP
Utilities	CMNBKRST with the BACKUP parameter
Suggested Frequency	Daily
SERNET Status	The ChangeMan ZMF instance where the VSAM files are used must be down.
Process Steps	■ Unload package master VSAM, component master VSAM, and long name component master VSAM files to QSAM files.
Comments	You can create separate jobs to unload/back up the package master, the component master, and the long name package master. In program CMNBKRST, code DUMMY in the input and output DD statements for the files that you want exclude from processing. Utility program CMNBKRST is described in the Utilities chapter of the *ChangeMan ZMF Customization Guide.*

Load/Restore Package and Component Masters

Load the QSAM unload files created by utility program CMNBKRST to initialized VSAM KSDS package master, component master, and long name component master.

Sample JCL Member	RESTORE
Utilities	IDCAMS CMNVINIT CMNBKRST with RESTORE parameter
Suggested Frequency	On request
SERNET Status	The ChangeMan ZMF instance where the VSAM files are used must be down.

Process Steps	■ Generate a dummy record for the long name component VSAM file. ■ DELETE/DEFINE VSAM KSDS files for the package master, component master, and long name component master; repro a dummy record into each. ■ Initialize the three VSAM files with program CMNVINIT. ■ Using utility program CMNBKRST, load the three QSAM unload files created by the same program into the initialized VSAM files.
Comments	You can create separate jobs to load/restore the package master, the component master, and the long name package master. In program CMNBKRST, code DUMMY in the input and output DD statements for the files that you want exclude from processing. Utility program CMNBKRST is described in the Utilities chapter of the *ChangeMan ZMF Customization Guide.*

Recover Package and Component Masters

If a package master, component master, or long name component master VSAM file is damaged, use a prior version of a QSAM unload file and a current forward recovery CMNRECV file to load the old data and update it with more recent records in the forward recover file.

Sample JCL Member	RESTORE
Utilities	IDCAMS CMNVINIT CMNBKRST with RESTORE parameter
Suggested Frequency	On request
SERNET Status	The ChangeMan ZMF instance where the VSAM files are used must be down.
Process Steps	■ Generate a dummy record for the long name component VSAM file. ■ Copy the VSAM forward recovery file to QSAM for input to CMNBKRST. ■ DELETE/DEFINE VSAM KSDS files for the package master, component master, and long name component master; repro a dummy record into each. ■ Initialize the three VSAM files with program CMNVINIT. ■ Use utility program CMNBKRST to load the three QSAM unload files created by the same program into the initialized VSAM files, updating the data with more recent records from the QSAM copy of the recovery file.
Comments	The forward recovery VSAM file CMNRECV contains recovery records for all three VSAM masters. You can omit a master file from forward recovery by coding DUMMY in the input and output DD statements for the file. Utility program CMNBKRST is described in the Utilities chapter of the *ChangeMan ZMF Customization Guide.*

Reorganize Package and Component Masters

Use utility program CMNBKRST, combining sample jobs BACKUP and RESTORE to create a job to reorganize the VSAM files.

Sample JCL Member	BACKUP RESTORE
Utilities	CMNBKRST with the BACKUP parameter IDCAMS CMNVINIT CMNBKRST with RESTORE parameter
Suggested Frequency	Weekly
SERNET Status	The ChangeMan ZMF instance where the VSAM files are used must be down.
Process Steps	■ Unload package master VSAM, component master VSAM, and long name component master VSAM files to QSAM files. ■ Generate a dummy record for the long name component VSAM file. ■ DELETE/DEFINE VSAM KSDS files for the package master, component master, and long name component master; repro a dummy record into each. ■ Initialize the three VSAM files with program CMNVINIT. ■ Using utility program CMNBKRST, load the three QSAM unload files created by the same program into the initialized VSAM files.
Comments	You can create separate jobs to reorganize the package master, the component master, and the long name package master. In program CMNBKRST, code DUMMY in the input and output DD statements for the files that you want exclude from processing. Utility program CMNBKRST is described in the Utilities chapter of the *ChangeMan ZMF Customization Guide.*

Delete Aged Packages, Staging Libraries, And Component History

Use the aging days in application administration to delete package master records for aged installed packages, scratch aged staging libraries, and delete aged component history records. Delete all elements of memo deleted packages.

CAUTION! If you license the ChangeMan ZMF ERO Option, a release is deleted when the last change package attached to the release is aged and deleted. There is no indication in the housekeeping job SYSOUT that releases have been deleted.

JCL for this job is file tailored from skeleton CMN$$HKP by the Delete housekeeping task in Global Administration.

Create JCL for a batch housekeeping job by executing these steps on a ChangeMan ZMF 8.1 instance:

1 From the **Primary Option Menu**, select **A Admin**, then **G Global**, **H Housekeeping**, and then **1 Delete**. (=A.G.H ;; 1) The **Generate Housekeeping Job** panel (CMNHOUS1) is displayed.

2 Follow the instructions on the panel to prepare the housekeeping job. (Use ***** in the **Application** field to run the job for all applications.)

3 Press **Enter** to submit and run the job. To generate JCL for the job without running the job, add TYPRUN=SCAN to the job statement, then press **Enter**.

4 Find the job output in SDSF. Enter line command **SJ** (show JCL) by the job name and press **ENTER**. The generated job JCL is shown in an ISPF edit session.

5 Copy the JCL to your CUSTOM CNTL library and edit it to suit your needs.

Sample JCL Member	File tailored from skeleton CMN$$HKP
Utilities	CMNBKRST with the BACKUP parameter CMNBAT10, Report CMN920 CMNBATCH
Suggested Frequency	Weekly
SERNET Status	ChangeMan ZMF can be running. If it is not running, the CMNBATCH transactions are written to the Delay file and CMNBATCH gives RC=06. When ChangeMan ZMF is started, the transactions in the Delay file are processed, and package master records are removed and staging libraries are scratched.
Process Steps	■ Unload the VSAM package master, component master, and long name component master to QSAM. ■ Execute report CMN920 in CMNBAT10 to age packages, staging libraries, component history, flag all elements of memo deleted packages for delete, and generate transactions for CMNBATCH. ■ Process the CMNBAT10 transactions through CMNBATCH to physically delete package master records, package staging libraries, and component history records.
Comments	If you want to archive aged package and component records, run the job described in "Archive Aged Package And Component Records" on page 231 before you run this job. The aging thresholds for installed packages, staging libraries, and component history are defined in application administration. There is no aging for memo deleted packages (status DEL). All elements of memo deleted packages are physically deleted when you run the online housekeeping delete function. When program CMNBATCH processes transactions generated by CMNBAT10 to delete aged component history, the last history record for a baselined component in a library type in an application is not deleted so that information is available for build processing and audit auto resolve. You can run a CMNBAT10 (report CMN920) to see what packages and staging libraries are aged and eligible for delete. Package records and staging libraries are not physically deleted until CMNBATCH processes a transaction file created by CMNBAT10.

Archive Aged Package And Component Records

The job described in "Delete Aged Packages, Staging Libraries, And Component History" on page 229 does not retain deleted package master or component master records for archive.

Sample job ARCHIVE1 uses aging criteria in application administration to split out package master, component master, and long name component master records for aged packages and component history that can be merged with cumulative archive files.

IMPORTANT! You must run the ARCHIVE1 job described here before you run the CMN$$HKP job described in "Delete Aged Packages, Staging Libraries, And Component History" on page 229 so that the records you want to archive are still on the master files. However, you must discard the retained package and component master records written to DD names PMASTOUT, CMASTOUT, and CMASLOUT and NOT load them to the VSAM masters. You need the aged package master records for the CMN$$HKP job to scratch aged staging libraries.

Sample JCL Member	Combine BACKUP and ARCHIVE1
Utilities	CMNBKRST with the BACKUP parameter CMNBAT40 SORT
Suggested Frequency	Weekly
SERNET Status	ChangeMan ZMF must be down.
Process Steps	■ Unload the VSAM package master, component master, and long name component master to QSAM. ■ Run CMNBAT40 to separate out package master and component master records for aged packages and aged component history ■ Merge the records for aged packages and component history into cumulative archives for package master, component master, and long name component records.
Comments	The aging threshold for installed packages and component records is defined in application administration. **Note:** This job does not remove memo deleted packages, and it does not scratch aged staging libraries. See "Delete Aged Packages, Staging Libraries, And Component History" on page 229 to perform those functions.

Synchronize Installation Calendar

Synchronize the installation calendar with the actual count of jobs scheduled for install on each date.

JCL for this job is file tailored from skeleton CMN$$HKP by the Synchronize housekeeping task in Global Administration.

Create JCL for a batch housekeeping job by executing these steps on a ChangeMan ZMF 8.1 instance:

1 From the **Primary Option Menu**, select **A Admin**, then **G Global**, **H Housekeeping**, and then **2 Synchronize**. (=A.G.H / 2) The **Generate Housekeeping Job** panel (CMNHOUS1) is displayed.

2 Follow the instructions on the panel to prepare the housekeeping job. (Use ***** in the **Application** field to run the job for all applications.)

3 Press **Enter** to submit and run the job. To generate JCL for the job without running the job, add TYPRUN=SCAN to the job statement, then press **Enter**.

4 Find the job output in SDSF. Enter line command **SJ** (show JCL) by the job name and press **ENTER**. The generated job JCL is shown in an ISPF edit session.

5 Copy the JCL to your CUSTOM CNTL library and edit it to suit your needs.

Sample JCL Member	File tailored from skeleton CMN$$HKP
Utilities	CMNBKRST with the BACKUP parameter CMNBATCH, Report CMN930 CMNBATCH
Suggested Frequency	Weekly
SERNET Status	ChangeMan ZMF can be running. If it is not running, the CMNBATCH transactions are written to the Delay file and CMNBATCH gives RC=06. When ChangeMan ZMF is started, the transactions in the Delay file are processed, and the installation calendar is updated.
Process Steps	■ Unload the VSAM package master to QSAM. ■ Execute report CMN930 in CMNBAT10 to tally packages scheduled for install by date and generate transactions for CMNBATCH. ■ Process the CMNBAT10 transactions through CMNBATCH to update the installation calendar.

Component Master Housekeeping

This section describes housekeeping jobs that maintain the component master VSAM KSDS file.

Unload/Back Up Component Master

The component master VSAM KSDS file is unloaded/backed up by the job described in "Unload/Back Up Package and Component Masters" on page 227. The Comments in that job description tell you how to create a separate job to unload/back up just the component master.

Load/Restore Component Master

The component master VSAM KSDS file is loaded/restored by the job described in "Load/Restore Package and Component Masters" on page 227. The Comments in that job description tell you how to create a separate job to load/restore just the component master.

Recover Component Masters

A damaged component master VSAM KSDS can be recovered using the job described in "Recover Package and Component Masters" on page 228. The Comments in that job description tell you how to recover just the component master.

Reorganize Component Master

The component master VSAM KSDS file is loaded/restored by the job described in "Reorganize Package and Component Masters" on page 229. The Comments in that job description tell you how to create a separate job to reorganize just the component master.

Delete Aged Component Records

Aged component master records are deleted by the job described in "Delete Aged Packages, Staging Libraries, And Component History" on page 229.

Archive Aged Component Records

Aged component master records are archived by the job described in "Archive Aged Package And Component Records" on page 231.

Long Name Component Master Housekeeping

This section describes housekeeping jobs that maintain the long name component master VSAM KSDS file.

Unload/Back Up Long Name Component Master

The long name component master VSAM KSDS file is unloaded/backed up by the job described in "Unload/Back Up Package and Component Masters" on page 227. The Comments in that job description tell you how to create a separate job to unload/back up just the long name component master.

Load/Restore Long Name Component Master

The long name component master VSAM KSDS file is loaded/restored by the job described in "Load/Restore Package and Component Masters" on page 227. The Comments in that job description tell you how to create a separate job to load/restore just the long name component master.

Recover Long Name Component Masters

A damaged long name component master VSAM KSDS can be recovered using the job described in "Recover Package and Component Masters" on page 228. The Comments in that job description tell you how to recover just the long name component master.

Reorganize Long Name Component Master

The long name component master VSAM KSDS file is loaded/restored by the job described in "Reorganize Package and Component Masters" on page 229. The Comments in that job description tell you how to create a separate job to reorganize just the long name component master.

Delete Aged Long Name Component Records

Aged long name component records are deleted by the job described in "Delete Aged Packages, Staging Libraries, And Component History" on page 229.

Archive Aged Long Name Component Records

Aged long name component records are archived by the job described in "Archive Aged Package And Component Records" on page 231.

Impact Analysis Housekeeping

This section describes housekeeping jobs that maintain the impact analysis VSAM LDS.

Unload Impact Analysis LDS

Unload the Impact Analysis LDS to sequential files BUNSPACE, CMPSPACE, and RELSPACE.

Sample JCL Member	LDSUNLD
Utilities	IDCAMS CMNIALU0
Suggested Frequency	Daily
SERNET Status	The SERNET instance where the LDS is used may be up and the IADS subtask attached. However, the best data integrity is obtained when the SERNET instance is down or the IADS subtask is detached. For details about the ATTACH and DETACH modify commands, see the Modify Commands appendix in the *ChangeMan ZMF Installation Guide*.

Process Steps	■ Delete old flat files (BUNSPACE, CMPSPACE, RELSPACE) with IDCAMS. ■ Run unload utility CMNIALU0 to create new flat files.
Comments	You can also back up the Impact Analysis LDS with IDCAMS sample job LDSBKUP, and then build your own job to restore the IDCAMS backups.

Load Impact Analysis LDS

Restore the Impact Analysis LDS by processing a set of sequential BUNSPACE, CMPSPACE, and RELSPACE files, mapping the impact analysis data space, and then deleting, defining, and loading a new VSAM LDS.

Sample JCL Member	LDSLOAD
Utilities	CMNIALC0 ICEMAN IDCAMS, CMNIAIN0 CMNIALB0 CMNIALR0 CMNIALX0 IDCAMS
Suggested Frequency	Daily
SERNET Status	The SERNET instance where the LDS is used must be down or the IADS subtask must be detached. For details about the ATTACH and DETACH modify commands, see the Modify Commands appendix in the *ChangeMan ZMF Installation Guide*.
Process Steps	■ Backup impact analysis VSAM LDS using IDCAMS. ■ Analyse incoming component and relationship flatfiles using CMNIALC0 and create two temporary files for later use. ■ Delete/Define new impact analysis dataspace LDS using IDCAMS. ■ Sort twice with ICEMAN dropping duplicates. ■ Initialise and structure the new impact analysis dataspace LDS using CMNIAIN0. ■ Four further sorts using ICEMAN to create temp files for later use. ■ Load using the 4 sort outputs just created, using CMNIALB0. ■ Sort the relation file created earlier by CMNIALC0 into sequence and drop duplicates, using ICEMAN. ■ Load component name table and relationship table using CMNIALR0. ■ Sort relation file using ICEMAN. ■ Build the dataspace indexes using CMNIALX0. ■ Verify index structures using CMNIAIXC.
Comments	If you back up the Impact Analysis LDS with sample IDCAMS job LDSBKUP, you can build an IDCAMS restore job using the VSAM LDS DEFINE statements in the LDSLOAD sample JCL.

NOTE Also use this job to load the Impact Analysis LDS with the BUNSPACE, CMPSPACE, and RELSPACE files created by the job initiated by the online Impact Analysis Maintenance function and file tailored from skeleton CMN$$IAX.

Back Up Impact Analysis LDS

Create sequential copy of the contents of the impact analysis LDS for records retention and disaster recovery.

Sample JCL Member	LDSBKUP
Utilities	IDCAMS
Suggested Frequency	Daily
SERNET Status	The SERNET instance where the LDS is used must be down or the IADS subtask must be detached. For details and cautions about the ATTACH and DETACH commands, see the *ChangeMan ZMF 8.1 Installation Guide*.
Process Steps	■ Uses IDCAMS to REPRO a copy of the impact analysis LDS.
Comments	Restoring an IDCAMS backup of the impact analysis LDS creates an exact physical copy of the original file.

Restore Impact Analysis LDS

Define impact analysis LDS and populate it from an IDCAMS backup.

Sample JCL Member	LDSRESTR
Utilities	IDCAMS
Suggested Frequency	On request
SERNET Status	The SERNET instance where the LDS is used must be down or the IADS subtask must be detached. For details and cautions about the ATTACH and DETACH commands, see the *ChangeMan ZMF 8.1 Installation Guide*.
Process Steps	■ Uses IDCAMS to delete and define a new empty impact analysis LDS. ■ Uses IDCAMS to REPRO a backup into the newly defined file.
Comments	Restoring an IDCAMS backup of the impact analysis LDS creates an exact physical copy of the original file.

Reorganize Impact Analysis LDS

Unload the impact analysis LDS into sequential files BUNSPACE, CMPSPACE, and RELSPACE. Perform multiple steps to delete and define the LDS, map a data space and initialize the LDS, load the LDS, and build indexes.

Sample JCL Member	LDSREORG
Utilities	IDCAMS CMNIALU0 CMNIALC0 ICEMAN (SORT) CMNIAIN0 CMNIALB0 CMNIALR0 CMNIALX0
Suggested Frequency	The impact analysis LDS should be rebuilt weekly. Run either this job or the housekeeping job that executes program CMNIA000 on a weekly basis.
SERNET Status	The SERNET instance where the LDS is used must be down or the IADS subtask must be detached. For details and cautions about the ATTACH and DETACH commands, see the *ChangeMan ZMF 8.1 Installation Guide*.
Process Steps	■ First two steps use IDCAMS to delete and then CMNIALU0 to create new flat files BUNSPACE, CMPSPACE and RELSPACE, as per the LDSUNLD job. ■ Rest of job same as second step and onwards of the LDSLOAD job under heading Load Impact Analysis LDS above.
Comments	Back Up and clear the IALOG file when you reorganize the IADSP file.

Forward Recover Impact Analysis LDS from Backup

Forward recover an impact analysis LDS from a previous backup by applying IALOG records with more recent timestamps.

Sample JCL Member	LDSFWDR
Utilities	CMNIALF0
Suggested Frequency	On request
SERNET Status	The SERNET instance where the LDS is used must be up and the IADS subtask attached.
Process Steps	■ Uses CMNIALF0 to do the forward recovery.
Comments	By default, program CMNIALF0 applies all transactions in the IALOG dataset with timestamps later than the last save time recorded in the IADSP LDS. This behavior can be overridden by supplying FROM= or TO= values in the PARM= field.

Back Up And Clear Impact Analysis Log File

When you execute the procedure in "Unload Impact Analysis LDS" on page 234 to establish a restore point for the impact analysis LDS, you should clear the impact analysis log file that is used for forward recovery.

Sample JCL Member	LDSLOGR
Utilities	IDCAMS CMNIALP0
Suggested Frequency	Schedule at the same time as the impact analysis LDS unload.
SERNET Status	The SERNET instance where the LDS is used must be down or the IADS subtask must be detached. For details and cautions about the ATTACH and DETACH commands, see the *ChangeMan ZMF 8.1 Installation Guide*.
Process Steps	■ Copy the current QSAM impact analysis log file to a backup using IDCAMS. ■ Allocate and initialize a new QSAM log file using CMNIALP0.
Comments	Run this job when you run housekeeping jobs to back up or reorganize the impact analysis LDS.

Load DB2 Tables With Data From Impact Analysis LDS

Unload the impact analysis LDS into sequential files BUNSPACE, CMPSPACE, and RELSPACE. Perform multiple steps to load the impact analysis data to DB2 tables CMNBASE and CMNBUN and build indexes.

This housekeeping job is intended for customers who created their own processes that use DB2 tables CMNBASE and CMNBUN. These DB2 tables are not used in ChangeMan ZMF 8.1.

Sample JCL Member	LDSUNLD LDS2DB2
Utilities	IDCAMS CMNIALD0 DSNUPROC
Suggested Frequency	As needed.
SERNET Status	The SERNET instance where the LDS is used may be up and the IADS subtask attached. However, the best data integrity is obtained when the SERNET instance is down or the IADS subtask is detached. For details and cautions about the ATTACH and DETACH commands, see the *ChangeMan ZMF 8.1 Installation Guide*.

Process Steps	■ Delete the IATABLE, BUNDB2 and RELDB2 datasets using IDCAMS. ■ Define and initialize BUNDB2 and RELDB2 datasets using CMNIALD0. ■ Allocate a new IATABLE and load the reformatted files into DB2 tables using DSNUPROC.
Comments	Do not use the BUNSPACE, CMPSPACE, and RELSPACE files output from program CMNIA000 as input to the DB2 table load process. Instead, use files unloaded from the impact analysis LDS as described here.

Synchronize Impact Analysis Data

Extract impact analysis data from the ChangeMan ZMF package master and component master files to create sequential files BUNSPACE, CMPSPACE, and RELSPACE. Perform multiple steps to delete and define the LDS, map a data space and initialize the LDS, load the LDS, and build indexes

Sample JCL Member	IMPACT LDSLOAD
Utilities	CMNIA000 CMNIALC0 ICEMAN CMNIAIN0 CMNIALB0 CMNIALR0 CMNIALX0
Suggested Frequency	On request whenever one of these occurs: Library types or baseline libraries are changed in application administration. The Impact Analysis Dataspace Index Integrity Report in the baseline ripple CMN30 job indicates a problem with the LDS indexes.
SERNET Status	The SERNET instance where the LDS is used must be down or the IADS subtask must be detached. For details and cautions about the ATTACH and DETACH commands, see the *ChangeMan ZMF 8.1 Installation Guide*.
Process Steps	Impact job: ■ Delete BUNSPACE, CMPSPACE and RELSPACE using IEFBR14. ■ Build BUNSPACE, CMPSPACE and RELSPACE using CMNIA000. LDSLOAD job - refer to heading Load Impact Analysis LDS above.
Comments	Program CMNIA000 parses a component for relationships only if the component has never been baselined in a change package.

Check Impact Analysis LDS Indexes

Validate the indexes in the impact analysis LDS.

Sample JCL Member	LDSIXCHK
Utilities	CMNIAIXC
Suggested Frequency	On request

SERNET Status	The SERNET instance where the LDS is used may be up and the IADS subtask attached. However, the best data integrity is obtained when the SERNET instance is down or the IADS subtask is detached. For details and cautions about the ATTACH and DETACH commands, see the *ChangeMan ZMF 8.1 Installation Guide*.
Process Steps	■ Check integrity of the indexes using CMNIAIXC.
Comments	Support may ask you to run this job to help diagnose issues with impact analysis. The Impact Analysis Dataspace Index Integrity Report is written to DD statement CMNIADSX.

Recovery File Housekeeping

This section describes housekeeping jobs that maintain the forward recovery file for the package and component master files.

Back Up And Clear the Recovery File

Copy VSAM recovery file to QSAM, then create and initialize an empty recovery file.

Sample JCL Member	CLEARRCV
Utilities	IDCAMS CMNVINIT
Suggested Frequency	Schedule at the same time as the package master unload.
SERNET Status	The SERNET instance where the VSAM file is used must be down.
Process Steps	■ Allocate a backup QSAM and REPRO current recovery file into it, then delete current file and define, using IDCAMS. ■ Initialize the new recovery file using CMNVINIT.
Comments	Do not clear the CMNRECV file unless you have also unloaded the package master, component master, and long name component master VSAM files. You use a recovery file and the RESTORE function of utility CMNBKRST to recreate Package and component master files from previous backups.

Activity Log Housekeeping

This section describes housekeeping jobs that maintain the Activity Log file.

Back Up And Clear the Log File

Create a control statement, copy CMNLOG records to be retained, back up the entire CMNLOG VSAM file, create and initialize an empty CMNLOG file, populate the file with retained activity log records.

Sample JCL Member	CLEARLOG
Programs and Utilities	IRXJCL (REXX) with days retention parameter IDCAMS CMNVINIT
Suggested Frequency	Weekly or as often as needed to: ■ Maintain the efficiency of the online activity log ■ Provide the desired amount of rolling activity data online ■ Satisfy requirements of solutions that use activity log data such as the Dashboard
SERNET Status	The SERNET instance where the VSAM file is used must be down.
Process Steps	■ Builds a card deck into a temporary file CARDS via REXX using IRXJCL. ■ Uses the CARDS file as SYSIN for an IDCAMS execution to backup required (aging) records to a temporary log file. ■ Backs up existing log file via a REPRO to a QSAM file, then deletes and defines the permanent log file, and REPROs in a DUMMY RECORD using IDCAMS. ■ Initializes the new log file using CMNVINIT. ■ Finally restores the selected (aging) log records created by the IDCAMS step using the temporary log file created earlier, using IDCAMS.
Comments	Specify the number of days that activity log data is retained for online display by setting the execution parameter for program IRXJCL in step AGECMD. See the sample JCL for details. **Notes:** ■ Setting the IRXJCL execution parameter to 0 days turns off the aging function, and all activity log records are retained online. ■ The backup file created in job step IDCAMS contains all records in the CMNLOG file at the time that the job was initiated. You must *merge* this backup with previous CMNLOG backups to create an activity log archive.

Staging Versions Housekeeping

This section describes housekeeping jobs that maintain the three staging versions VSAM master files.

Back Up Staging Versions VSAM Files

Copy four staging versions VSAM files to QSAM.

Sample JCL Member	SVBKUP
Utilities	IDCAMS

Suggested Frequency	Daily
SERNET Status	The SERNET instance where the VSAM files are used should be down or the SSV subtask must be detached. For details about the ATTACH and DETACH modify commands, see the Modify Commands appendix in the *ChangeMan ZMF Installation Guide*.
Process Steps	■ REPROs all four staging VSAM files (CMNSVSM, CMNSVOM, CMNSVDM and CMNSVAM) using IDCAMS.

Restore Staging Versions Master

Delete, define, and load four staging versions masters from QSAM backup files.

Sample JCL Member	SVRSTOR
Utilities	IDCAMS
Suggested Frequency	On request.
SERNET Status	The SERNET instance where the VSAM files are used must be down or the SSV subtask must be detached. For details about the ATTACH and DETACH modify commands, see the Modify Commands appendix in the *ChangeMan ZMF Installation Guide*.
Process Steps	■ Deletes all four staging VSAM files (CMNSVSM, CMNSVOM, CMNSVDM and CMNSVAM) and redefines all, then REPROs all back from QSAM using IDCAMS.

Reorganize Staging Versions VSAM Files

Copy three staging versions VSAM files to QSAM, create new VSAM files, then restore the VSAM files from QSAM.

Sample JCL Member	Combine SVBKUP and SVRSTOR
Utilities	IDCAMS
Suggested Frequency	Weekly
SERNET Status	The SERNET instance where the VSAM files are used must be down.
Process Steps	See the SVBKUP and SVRSTOR jobs above.

Delete Staging Versions Members

Delete Staging Version members that are no longer needed from the Delta Master.

The Delta Master is a VSAM data set that stores ChangeMan ZMF staging versions. When a developer saves a staging version, a delta member of the changes is added to the Delta Master.

When ChangeMan ZMF ages and deletes staging libraries as specified in application administration, it automatically deletes staging versions associated with those staging libraries. The purpose of this job is to:

- Delete staging versions that belong to change packages that are never installed.
- Reduce the number of staging versions saved from packages that have an extended lifecycle.
- Reduce the number of staging versions for package components that have many saved staging versions.

Sample JCL Member	SVMAINT
Utilities	HPSMAINT IDCAMS
Suggested Frequency	Weekly
SERNET Status	The SERNET instance where the Staging Versions VSAM files are used must be down.
Process Steps	■ Define new GDG levels for (CMNSVSM, CMNSVOM and CMNSVDM) and REPRO current files (CMNSVSM, CMNSVOM, CMNSVDM) into those using IDCAMS. ■ Delete (or archive) staging versions from the Delta Master using HPSMAINT.

Synchronize Staging Versions Masters

Analyze three staging versions VSAM files for discrepancies and report problems. Make corrections to synchronize the three files.

Sample JCL Member	SVINTEG
Utilities	HPSINTEG
Suggested Frequency	Weekly
SERNET Status	The SERNET instance where the VSAM file is used must be down or the SSV subtask must be detached. For details about the ATTACH and DETACH commands, see the *ChangeMan ZMF 8.1 Installation Guide*.
Process Steps	■ Job runs with a COND of (4,NE) - the first step normally runs in SIMULATE mode, and produces a RC NE 4 in that mode, so following steps don't run. If the SIMULATE parm is removed then if any discrepancies are found and corrected then the next step run and if it finds no further errors, that will result in a RC of zero which will stop execution, and the third pass could be executed if not.
Comments	Program HPSINTEG is executed three times in this sample: With execution parameter SIMULATE to report conditions that should be repaired. Without execution parameter SIMULATE to repair inconsistencies. Without execution parameter SIMULATE to repair inconsistencies because some repairs may create new inconsistencies.

Run the ChangeMan ZMF Reports

A job to run REXX-based reports against ChangeMan ZMF data can be initiated online or by running a batch job.

Sample JCL Member	REPORTS
Suggested Frequency	As required.
SERNET Status	ChangeMan ZMF must be running.
Process Steps	Run REXX reporting programs in a single job step to produce reports
Comments	Report selection is by control statement, so daily, weekly, monthly reporting should be run in separate jobs.

Chapter 8, "Defining and Running ChangeMan ZMF Reports" on page 205 describes the reports.

Clean Up Production Backup Libraries

Backup libraries are associated with ChangeMan ZMF production libraries. When a package is installed, the current version of a component is copied from the production library to the backup library so it can be restored if package is backed out.

There are three ways to handle cleanup of backup libraries, and thereby manage the growth of components that accumulate in these data sets. By specifying the appropriate option as a PARM parameter on the JCL EXEC statement when running program CMNBATCH, you can do one of the following:

- Bypass cleanup of backup libraries (the default).
- Perform package processing.
- Perform commit processing.

Bypass Cleanup of Backup Libraries

To bypass cleanup of backup libraries, specify the parameter 'BACKUPLIB=N' for program CMNBATCH. This is the default, so specifying the BACKUPLIB parameter is optional. When CMNBATCH runs, the CMN920 transactions delete the staging libraries, but no attempt is made to delete components from the backup libraries:

```
//CMNBATCH  EXEC PGM=CMNBATCH,
//          PARM='SUBSYS=?,BACKUPLIB=N'
```

Perform Package Processing for Backup Library Cleanup

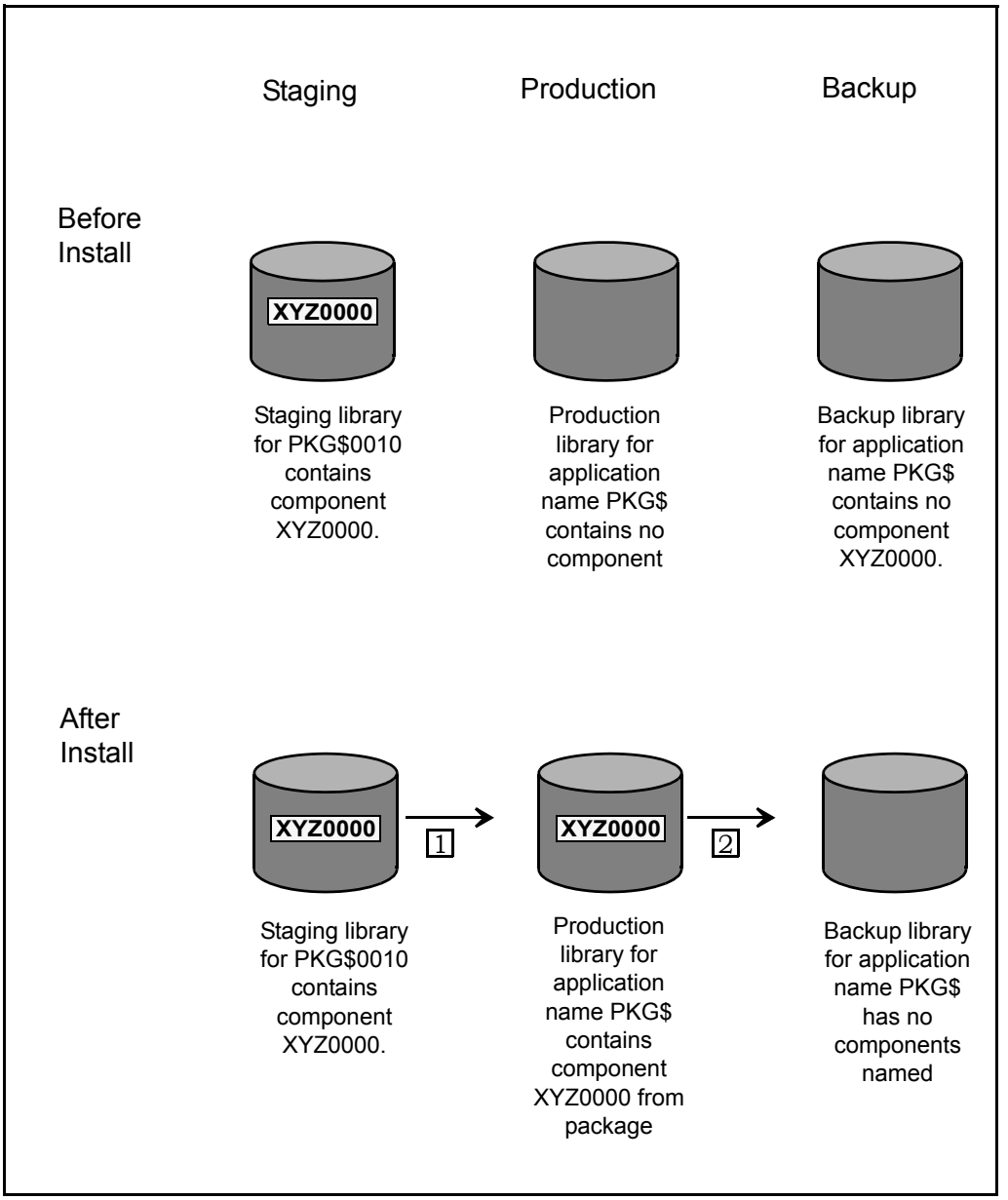
If cleanup processing is required for your site and you plan to process backup libraries by package association, use package processing for cleanup of backup libraries. You can do this by specifying 'BACKUPLIB=P' in program CMNBATCH when executing this program for housekeeping purposes, as in the following JCL:

```
//CMNBATCH  EXEC PGM=CMNBATCH,
//          PARM='SUBSYS=?,BACKUPLIB=P'
```

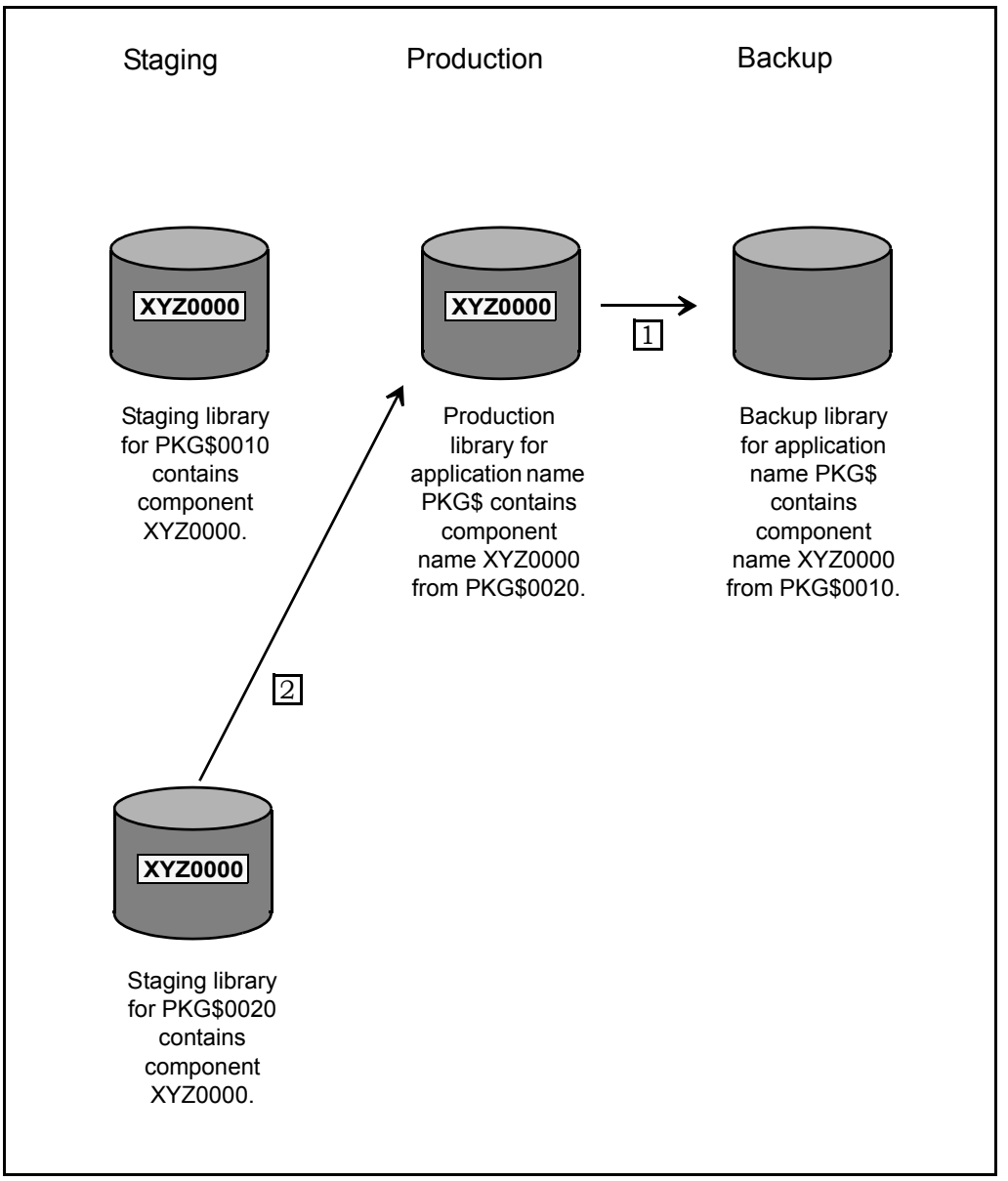
During package processing, CMNBATCH calls the program CMNCLNUP. The component being deleted in the backup library is first compared to its corresponding component in the staging library. If the directory entries for both components match, CMNCLNUP deletes the component from the backup library. Because this only happens to packages that have been 'memo deleted' or have 'aged', you ensured that a component deleted from the backup library came only from a specific staging library in a specific package.

The following discussion describes this type of clean up operation:

1 Assume that you created a package named PKG$000010 that contains the unique-named component 'XYZ0000'. When package PKG$000010 is installed, ChangeMan ZMF attempts to copy component 'XYZ0000' from the production library associated with this package to the backup library in the CMN20 job. Because this component is unique and never resided in the production library, the IEBCOPY step that copies the component from the production library to the backup library ends with an RC=0004. At this time, the backup library has no component named 'XYZ0000'. When CMN20 runs, the component 'XYZ0000' is copied from the staging library to the production library. When CMN20 completes successfully and CMN30 executes, the baseline ripple happens.



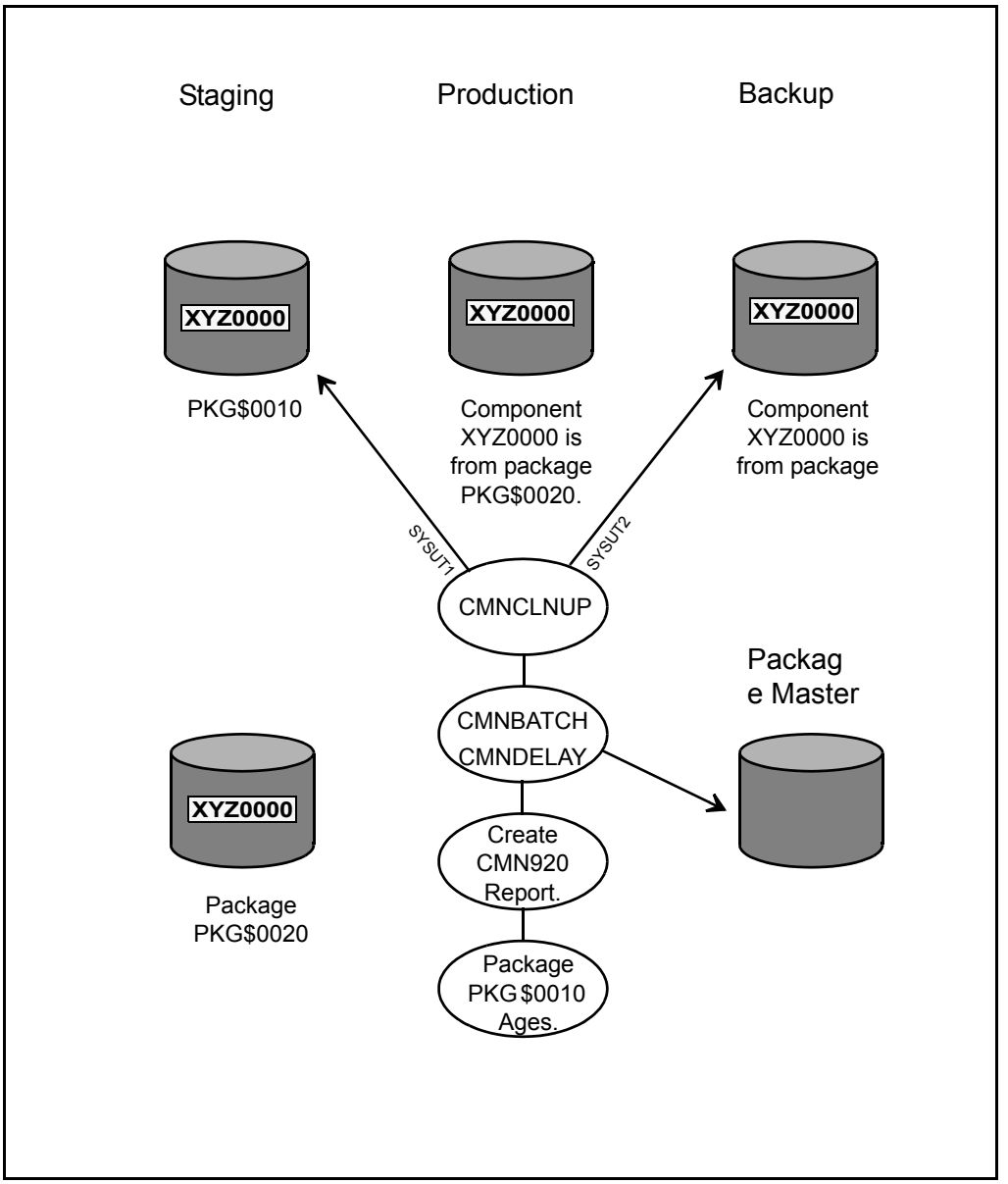
2 Assume that you created a package named PKG$000020 that contains component 'XYZ0000' in the staging library. You make changes to the component, and schedule the package for installation. When the package is installed, the CMN20 job attempts to copy the component 'XYZ0000' from the production library associated with this package to its corresponding backup library. Because a same-named component was previously-placed in the same production library by package PKG$000010, the IEBCOPY step backs up the component by performing a copy from the production library to the backup library. When IEBCOPY ends with an RC=0000, the backup library contains a component named 'XYZ0000' from package PKG$000010. In the install step of CMN20, the next component 'XYZ0000' from package PKG$000020 is copied from its staging library to the production library. As a result, the component 'XYZ0000' from package PKG$000020 overlays the same-named component that was there previously from package PKG$000010. When CMN20 completes successfully and CMN30 executes, baseline ripple happens.



3 Assume that package PKG$000010 in BAS status aged, so that the package is included in the CMN920 report, thereby creating the delete Staging Libraries transaction record for this package. This record becomes part of the SYSIN input for program CMNBATCH. PKG$000020 remains because it was installed at a later time and has not yet aged.

During housekeeping, the CMN920 report generates a delete staging library transaction record for PKG$000010. When CMNBATCH reads the delete Staging Libraries transaction record, it builds a table from the package master listing all the components in package PKG$000010 that reside in a single staging library. Thereafter, the data set names for the staging library, the production library, and the backup library (associated with package PKG$000010 for one library type) are placed in another table. Then, CMNBATCH calls program CMNCLNUP to pass the component list and library list tables. Program CMNCLNUP then opens (1) the staging data set for package PKG$000010 under the DDname of SYSUT1, and (2) the backup library for package PKG$000010 under the DDname of SYSUT2.

Next, program CMNCLNUP obtains the component name 'XYZ0000' from the component list and compare the directory entry for component 'XYZ0000' (from the staging library of package PKG$000010) to the directory entry of component 'XYZ0000' (in the backup library). If they match, you have ensured that component 'XYZ0000' in the backup library could only have arisen from package PKG$000010. Component 'XYZ0000' is deleted from the backup library. Alternatively, if the entries do not match, no deletion occurs. This ensures that any component being deleted from the backup library is directly associated only with the specific package.



Once all components are processed, CMNCLNUP returns to the CMNBATCH program, which builds a component list for the next library type of package PKG$000010, and calls CMNCLNUP again until all library types have been processed. Thereafter, the Staging Libraries are deleted for the package, and the next transaction record is read, and housekeeping resumes.

Because a component is tied directly to the package that is scheduled for deletion, this method of cleaning up the Backup Libraries is termed 'package processing'.

When a site has been running ChangeMan ZMF for an extended period of time and cleanup of Backup Libraries has not been performed, the Backup Libraries might have grown substantially and they are populated with many components from many packages. By running prior housekeeping jobs without 'clean up,' many packages and their corresponding Staging Libraries have probably been deleted, leaving many of their associated components in their respective Backup Libraries. This might result in retaining many orphan components (in the backup library) that are not deleted when you run a cleanup. This is because before cleanup processing became available as a new feature, prior housekeeping jobs may have deleted the package records and staging library for an old component in the backup library.

As future packages are installed with the same named components as those in the backup library, the CMN20 job overlays old components in the backup library with the components being copied from the production library. Over time, the cleanup process matches components in the Backup Libraries from recently aged packages. This could take a long time, and if a component in a backup library never gets replaced it will always remain there.

Perform Commit Processing for Backup Library Cleanup

If your site requires that the cleanup of Backup Libraries to be handled by 'commit' processing, specify the keyword 'BACKUPLIB=C' for program CMNBATCH when executing this program for housekeeping, as follows:

```
//CMNBATCH  EXEC PGM=CMNBATCH,
//          PARM='SUBSYS=?,BACKUPLIB=C'
```

Commit processing differs from Package processing in that the latter is a two-library compare and delete operation whereas former is a three-library operation. Commit processing means that once a component has been installed in the production library and the package for that component has reached its aging criteria, you intend to commit that component to production and to remove any same-named components in the backup library regardless of the originating package. You are essentially committing the component in the production library. Provided the components for all aged packages in production are functionally stable, committing the components enables you to manage growth in the Backup Libraries for your ChangeMan ZMF system.

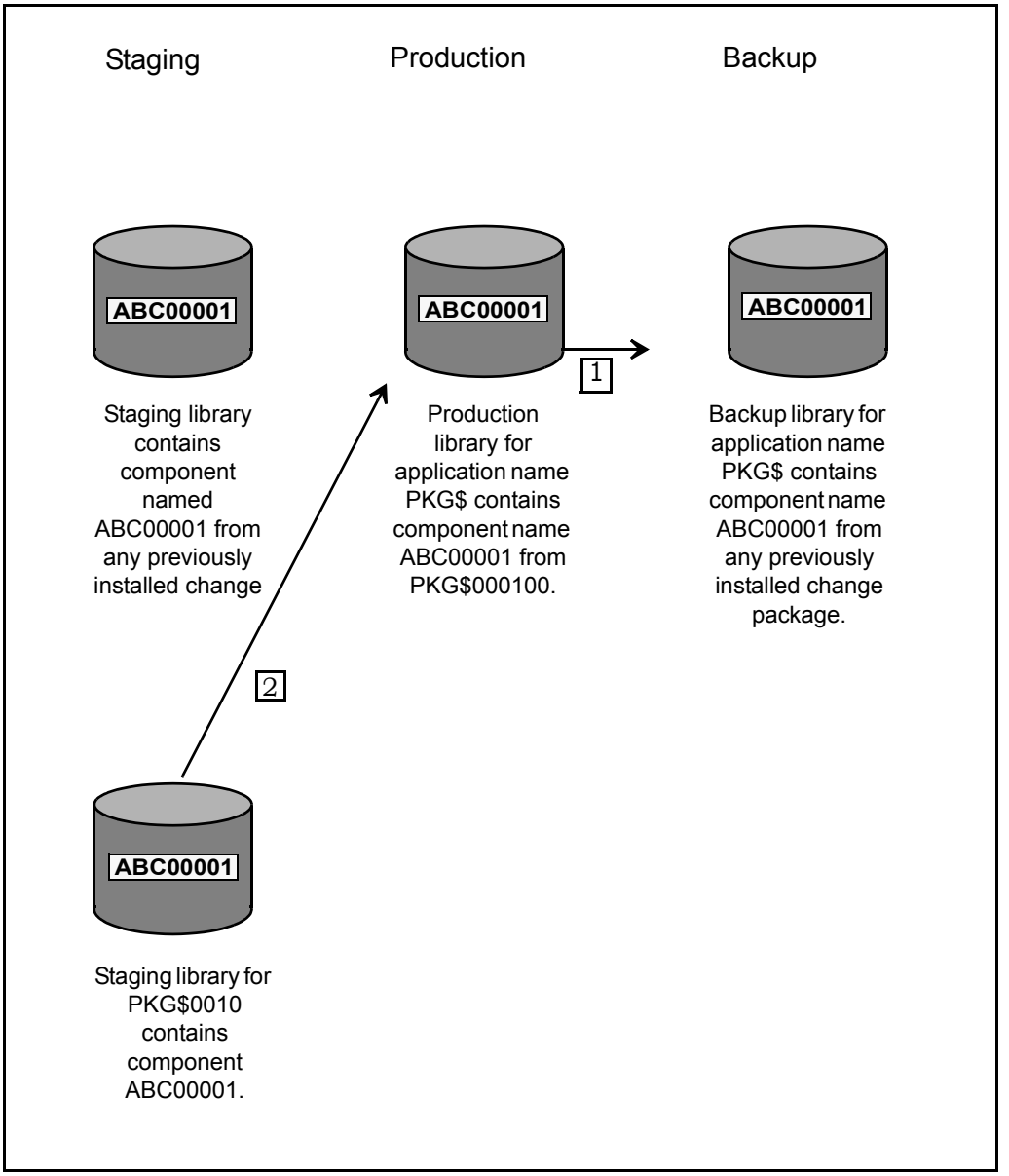
During commit processing, a component in the staging library is compared to the same-named component in the production library. If the directory entries for these components match, then the component is arbitrarily deleted from the backup library. During package cleanup, in contrast, the staging library and the backup library are compared to determine if the component is in the backup library.

The following steps describe commit processing.

1 Assume that you create a package called PKG@000100 that contains component 'ABC00001' in the staging library. Next, you change the component and schedule the package for installation. When the package is installed, the CMN20 job attempts to copy a component named 'ABC00001' from the production library associated with this package to its corresponding backup library.

If a same-named component was previously-placed in the same production library by a previously installed package, the IEBCOPY step backs up the component by copying it from the production library to the backup library. The backup library then has a component named 'ABC00001' from a previous package. When CMN20 runs, the

same-named component 'ABC00001' from package PKG@000100 is copied from its staging library to the production library. As a result, the component 'ABC00001' from package PKG@000100 overlays the same-named component that was there previously. When CMN20 completes successfully, the CMN30 job executes a baseline ripple for package PKG@000100, with the following result:



2 Assume that package PKG@000100 in BAS status has reached its aging criteria so that it is included in the CMN920 report that creates the delete Staging Libraries transaction record for this package. Next, program CMNBATCH is executed with the parm keyword of 'BACKUPLIB=C' in the EXEC statement. Then, the package that will be cleaned up is identified from the delete Staging Libraries transaction record. Next, program CMNBATCH extracts information from the package master to build a table listing all the components for package PKG@000100 that reside in a single staging library. The component name list only contains components that are known to ChangeMan ZMF for that package.

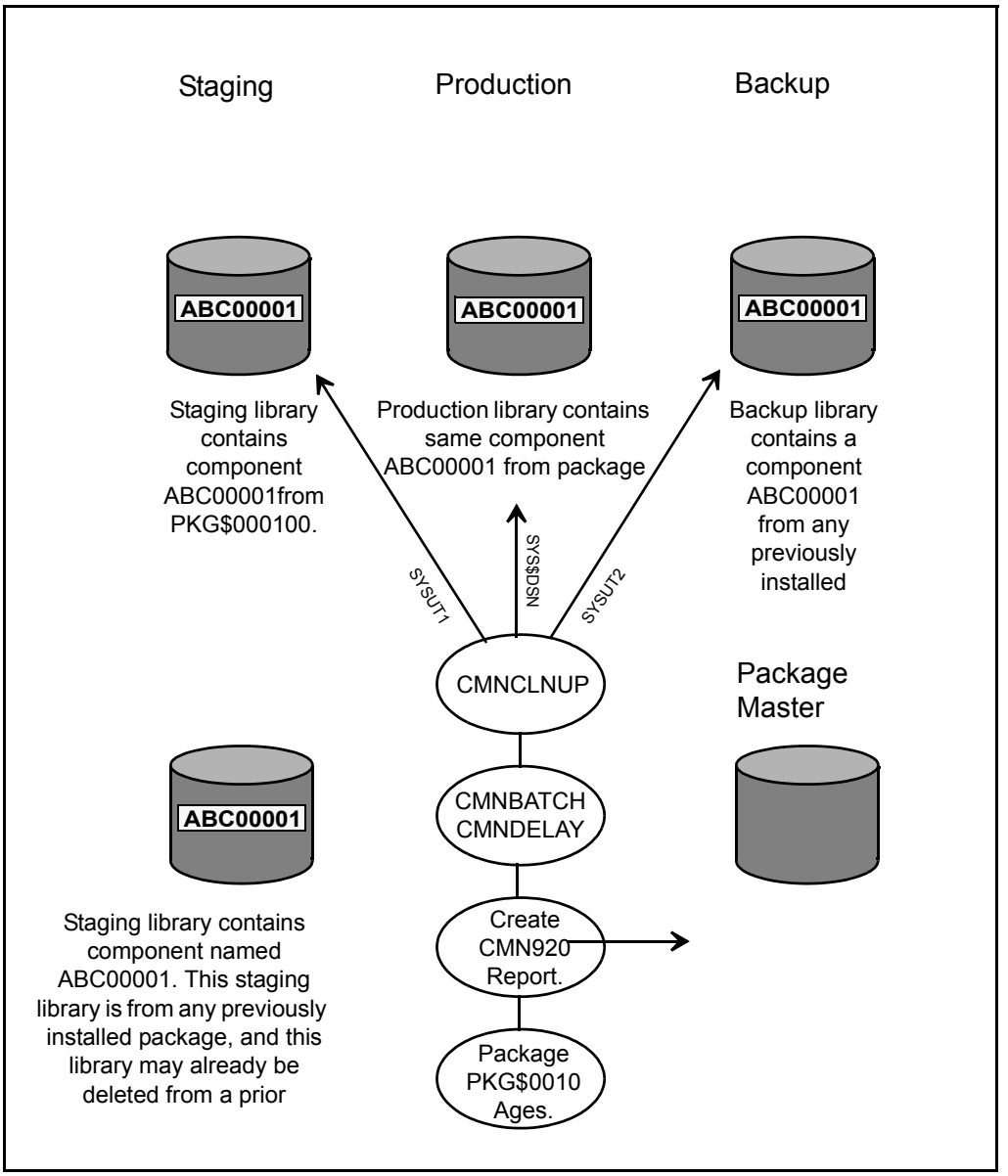
In this example, the component list only contains 'ABC00001' because it was the only component in package PKG@000100. Next, the data set names for the staging library,

the production library, and the backup library associated with package PKG@000100 (for one library type) are placed in another table. Finally, CMNBATCH calls program CMNCLNUP and passes the component list and library names list.

Once CMNCLNUP accesses the data set names table, it opens the following:

- Staging data set for package PKG@000100 under the ddname of SYSUT1.
- Production library for package PKG@000100 under the ddname of SYSC$DSN.
- Backup library data set for package PKG@000100 under the ddname SYSUT2.

Next, CMNCLNUP accesses the component names list table to obtain the component 'ABC00001'. Program CMNCLNUP compares the directory entry for component 'ABC00001' from the SYSUT1 staging library of package PKG@000100 to the directory entry of the same-named component in the SYSC$DSN production library. If the entries match, you have verified that the component 'ABC00001' in the production library must have come from package PKG@000100, and component 'ABC00001' is deleted from the backup library represented by ddname SYSUT2 regardless of the source package.



If the directory entries do not match, then deletion does not occur. This means that any component residing in the backup library with the same name as the component being compared in the Staging and Production Libraries is deleted if the components match.

Considerations for Cleaning up Backup Production Libraries

Cleanup to the Backup Libraries whether by package processing or commit processing results in you being unable to perform a Backout. In deciding whether or not to use package processing or commit processing, consider that the time packages are aged and the length of time that packages remain in development before they are eventually installed in production. Commit processing of the Backup Libraries is the most conservative implementation of a cleanup process because deletion occurs based on aging

of the package currently in production. In setting the aging of the staging library by number of days, the installation can judge when the component in the production library has reached a point of functional stability such that the component in the backup library is no longer required and can be safely removed. This means stability in a component is based on its execution in production over a period of time with no problems after which you can release space occupied by the Staging Libraries and delete the backup component from the backup library. In commit processing whatever number of days you specify to age the Staging Libraries is the number of days that a backup component can be expected to remain in the backup library.

With package processing, deletion occurs based only on aging of the package. Package processing is used less often than commit processing. Low activity packages with long aging criteria and short install intervals with infrequent housekeeping runs can use package processing to manage the Backup Libraries. With package processing there is the possibility that a package could start its 90 day aging on June 1 when it is installed. A second package containing the same component name could be created on June 1 and installed on August 30 resulting in the old component from the first package being copied from the production library to the backup library. Housekeeping could run that night where the first package installed June 1 has now aged resulting in the backup component being deleted within a day of the second package being installed. This would impact your ability to back out from the second package. For high activity applications containing many packages in motion with varying install intervals and short aging criteria where you run housekeeping frequently, use commit processing to ensure that the backup for a component in production remains in the backup library for at least the number of days specified in Application Administration for the aging of the Staging Libraries.

Cleanup performs all comparisons between the directory entry for each member in their respective library. Every field in the directory entry for a member is compared to its corresponding field in the directory entry for the same named member in the other library. Cleanup does not read the entire PDS directory for the staging library and compare for all members found. Cleanup gets its member list from the package master for the package that has aged and searches the staging library for the member name. If you allow the staging library to be used as a repository for members outside of ChangeMan ZMF, the cleanup process does not include them. Since only components known to ChangeMan ZMF are included, the comparison process between members based on only the directory entry is accurate.

Consider when a site has been running ChangeMan ZMF for an extended period of time and the cleanup of the Backup Libraries has not been implemented. The Backup Libraries may have experienced substantial growth over this time period, and the Backup Libraries are populated with many components from many packages. With the running of prior housekeeping jobs without cleanup of the Backup Libraries many packages and their corresponding Staging Libraries have probably been deleted leaving their associated components residing in their respective Backup Libraries. This results in the possibility of leaving orphan components in the backup library which are not deleted when you start running a new cleanup process with your housekeeping task.

This is because there is no package record or staging library available to perform a compare against what resides in the backup library for a package that prior housekeeping has deleted. As packages are installed in the future with the same named components as those that exist in the backup library, the result is old components are overlaid in the backup library with the components being copied from the production library as part of the CMN20 job. Over time the cleanup process catches up with delete processing as it encounters more hits in the Backup Libraries from recently aged packages. This catch up process could take an extended period of time, and if a component in a backup library never gets replaced it will always remain.

The cleanup process follows the parameters specified at Application Administration, Option B, Baseline Configuration, Panel CMNBAS1 where the customer site sets the 'Install in Prod' indicators to 'N', 'Y', or 'C'. During the cleanup process a read is performed to the package master for General Record 4 (library types) to identify all of the library types defined just to the package that has aged or is in memo delete status. Then a read is performed to Local Record 4 (baseline libraries) where the baseline install indicator is checked. If the library type is defined to the package but the 'Install in Prod' indicator is set to 'N', then cleanup excludes the library. The cleanup process picks up only the library types defined in General Record 4 that have a corresponding library type in Local Record 4 with the install indicator set to 'Y' or 'C'. Next Local Record 5 (Production Libraries) is read to obtain the data set names of the production libraries.

When cleaning up the Backup Libraries (for packages) with either package or commit processing, consider the following:

- From the Baseline Configuration Panel (CMNCBAS1) during Application Administration, check the "Install in Prod" indicator setting. If the baseline library type is defined to the package but the indicator is set to N, then cleanup excludes the backup library for that same library type.
- From the Production Libraries Panel (CMNCPRDL) during Application Administration, check whether or not the production libraries are defined. The cleanup process checks for the baseline install indicator and for the presence of production libraries defined in the package master to decide which Backup Libraries are subject to cleanup processing.
- From the Application Parameters Panel (CMNGLP02), during Application Administration, check the aging criteria established for Installed Packages and Staging Data Sets.
- Changing this number might generate two separate transactions on different dates, one to remove package records from the package master and one to delete the Staging Libraries. Cleanup processing reads the package records and requires the Staging Libraries for the comparison.
- The package records and the Staging Libraries must both exist during cleanup processing. So, for proper housekeeping, the Installed Packages value must be greater than or equal to the Staging Data Sets value.
- Because the cleanup process deletes components from the backup library, you have no backout capability. Furthermore, you must maintain unique component names if you choose to perform commit processing and share the same backup library among different applications.

Sample JCL/Housekeeping Task Cross Reference

This table shows where sample JCL in the delivered CMTNL file is used in the recommended housekeeping tasks in this chapter.

Sample JCL	Housekeeping Task
BACKUP	"Unload/Back Up Package and Component Masters" on page 227 "Reorganize Package and Component Masters" on page 229 "Archive Aged Package And Component Records" on page 231
RESTORE	"Load/Restore Package and Component Masters" on page 227 "Reorganize Package and Component Masters" on page 229 "Recover Package and Component Masters" on page 228
CMN$$HKP	"Delete Aged Packages, Staging Libraries, And Component History" on page 229 "Synchronize Installation Calendar" on page 231
ARCHIVE1	"Archive Aged Package And Component Records" on page 231s
LDSUNLD	"Unload Impact Analysis LDS" on page 234 "Load DB2 Tables With Data From Impact Analysis LDS" on page 238
LDSLOAD	"Load Impact Analysis LDS" on page 235 "Synchronize Impact Analysis Data" on page 239
LDSBKUP	"Back Up Impact Analysis LDS" on page 236
LDSRESTR	"Restore Impact Analysis LDS" on page 236
LDSREORG	"Reorganize Impact Analysis LDS" on page 237
LDSFWDR	"Forward Recover Impact Analysis LDS from Backup" on page 237
LDSLOGR	"Back Up And Clear Impact Analysis Log File" on page 238
LDS2DB2	"Load DB2 Tables With Data From Impact Analysis LDS" on page 238
IMPACT	"Synchronize Impact Analysis Data" on page 239
LDSIXCHK	"Check Impact Analysis LDS Indexes" on page 239
CLEARRCV	"Back Up And Clear the Recovery File" on page 240
CLEARLOG	"Back Up And Clear the Log File" on page 241
SVBKUP	"Back Up Staging Versions VSAM Files" on page 241 "Reorganize Staging Versions VSAM Files" on page 242
SVRSTOR	"Restore Staging Versions Master" on page 242 "Reorganize Staging Versions VSAM Files" on page 242
SVMAINT	"Delete Staging Versions Members" on page 242
SVINTEG	"Synchronize Staging Versions Masters" on page 243

Chapter 10

Configuring Remote Sites

This chapter contains information about configuring remote sites for ChangeMan ZMF on a global as well as an application level and outlines how to enable the Network Data Mover.

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Overview of Remote Sites

Remote sites are additional STCs where ChangeMan ZMF installs components. The additional STC can be on:

- A separate computer in another building
- A separate computer in the same building
- A logical CPU on the same machine as part of an LPAR (logical partition) without shared DASD

Any of these remote site configurations enables you to develop components on one CPU and distribute and install production level components onto a different CPU.

All ChangeMan ZMF functions are performed from the defined development site. The remote site acts only as a receiver of production components. In fact, the only time developers interact with remote sites is when they select which remote site to distribute and install production components to.

How does it Work?

When you request remote promotion, ChangeMan ZMF constructs execution JCL based on the administration fields that you specified. (You can have execution JCL libraries similar to the installation JCL libraries.) Next, it invokes your transmission vehicle (IEBCOPY, Connect:Direct, etc.) to transmit the execution JCL library and copies of any needed Staging data sets to the remote system (site). Then, it uses the remote site's internal reader to invoke jobs (in the execution JCL library) to copy members from the Staging to the remote promotion libraries. After these jobs complete, ChangeMan ZMF 'cleans up' the execution JCL and staging libraries at the remote site. When it returns successfully, ChangeMan ZMF copies the staging library members to the shadow library on the originating site (a shadow library as a duplicate or copy of what exists on the remote site). Next, it 'cleans up' the execution JCL that resides on that site. Finally, it notifies the user of the success or failure of the promotion request and updates the package master.

At installation time, ChangeMan ZMF only needs to transmit execution JCL to the remote site. This is because the execution JCLs sole function is to delete members. (This is similar to demotion). So, ChangeMan ZMF cleans up your promotion libraries at the remote site, as well as the shadow libraries that reside on the originating site. This means that if your remote site is only a test site, but you want it to simulate your production site, you must install ChangeMan ZMF on the test site. By doing this, you 'synch up' your production libraries. If you do not want to install ChangeMan ZMF on the test site and you do not want to 'clean up' the test promotion libraries, you must edit the installation skeletons to remove this functionality.

As delivered, the only program that is required at the remote site is CMNDELRN. This program must reside in an APF authorized library. The skeletons can be changed to use CMNxxxx or SERxxxx programs also, but that would also require those programs to be in an APF authorized library.

Setting Up Remote Sites Globally

The Global Administrator is responsible for creating, deleting, and updating remote site information for ChangeMan ZMF. This functionality is accessed from the Update Global Administration Options panel.

1 Set up multiple ChangeMan ZMF subsystems by designating one subsystem for your development site, and one for each remote site.

2 Bring up the Remote Site ChangeMan ZMF instance.

3 Set global parameters.

```
CMNGGP01                Global Parameters - Part 1 of 8
Command ===> ____________________________________________________

Subsystem: 6

ChangeMan ZMF environment . . . . DP         (A/D/DP/P)
Job entry system  . . . . . . . . JES2     (JES2 or JES3)
Site node name  . . . . . . . . . C001
Logical unit/system name  . . . . SYSA
Default unit name . . . . . . . . SYSDA
Default volume serial . . . . . . _______
Default non-vio keyword=name  . . UNIT     = SYSDA
ChangeMan ZMF security resource . $CMNDEV
Default job scheduler . . . . . . MANUAL   (CMN, Manual, Other)
Scheduler interval (CMN)  . . . . 010      (Minutes)

Enter "/" to select option
  /  Allow CMN scheduler
  /  Allow Manual scheduler
  /  Allow Other scheduler
```

The following table describes the fields on the Global Parameters Part 1 of 8 panel (CMNGGP01).

Field	Description
Subsystem	Displays the subsystem ID that you are currently logged on to.
ChangeMan ZMF environment	Type a one- or two-character code to determine the kind of ChangeMan ZMF instance you are configuring. **CAUTION** The environment type is set when you run program INITIAL2 to initialize the package master VSAM file for this ChangeMan ZMF instance. (See the *ChangeMan ZMF Installation Guide*.) Consult with Customer Support before you change the environment on this panel.
A	ALL - A single ChangeMan ZMF instance that manages development, maintains baseline libraries, and maintains production libraries that are on shared DASD and shared catalogs.
D	DEVELOPMENT - A ChangeMan ZMF instance that manages development and maintains baseline libraries, but does not maintain production libraries. A D environment sends package information to a separate P environment for installation into production libraries.

Field	Description
DP	DEVELOPMENT AND PRODUCTION - A ChangeMan ZMF instance that manages development, maintains baseline libraries, manages production libraries on shared DASD and shared catalogs, and can send package information to a separate P environment for installation into production libraries that are not on shared DASD with shared catalogs.
P	PRODUCTION - A stripped-down ChangeMan ZMF instance that receives change package information form a D or DP environment and installs package components into production libraries. No development is performed in a P environment. A P environment is required where production libraries reside on an MVS image that is separated from development and does not share DASD and catalogs with development. A P environment is also required if DB2 binds or IMS gens must be performed for install on an MVS image that is separate from development.
Job entry system	Type the name of the job entry system (JES2 or JES3) used at your site.
Site node name	Define a unique Site Note Name for this Remote Site.
Logical unit/system name	Type the data transmission vehicle you will use in installation and promotion jobs for remote sites. ■ Target name for your transmission vehicle (like SNODE for Connect:Direct®). ■ For IEBCOPY enter the system name (e.g. 'SYSA').
Default unit name	Type the generic unit name for DASD to be used for dynamic allocations for this ChangeMan ZMF instance. This field may be left blank if DEFAULT VOLUME SERIAL is used. The Default Unit Name in Global Administration sets the Default Unit Name used when you create an application, but it can be changed at the application level.
Default volume serial	Type the DASD volume serial number to be used for dynamic allocations for this ChangeMan ZMF instance. This field may be left blank if DEFAULT UNIT NAME is used. The Default Volume Serial in Global Administration sets the Default Volume Serial used when you create an application, but it can be changed at the application level.
Default non-VIO keyword=name	For non-SMS managed devices: Enter 'UNIT' = and the generic unit name for disk packs that dynamic allocations requiring non-VIO DASD will utilize unless otherwise specified (e.g. 'SYSDA'). For SMS managed devices: Enter 'STORCLAS' = and the generic SMS storage class name. Note: UNIT and STORCLAS are mutually exclusive.
ChangeMan ZMF security resources	Type the resource class defined in your security system for ChangeMan ZMF. The literal 'CMN' is strongly recommended. See the *ChangeMan ZMF Installation Guide*.
Default job scheduler	Type the default scheduling system you will define to control submission of the package installation batch jobs within application and release administration.
CMN	The ChangeMan ZMF instance schedules the submission of package installation batch jobs.

Field	Description
MANUAL	The installation process begins as soon as the package is approved. This option allows you to install a package before its scheduled install date.
OTHER	ChangeMan ZMF invokes a batch interface to add the package install job information to the database for an external scheduler.
Scheduler interval (CMN)	Type the number of minutes (mmm) between checks by the internal ChangeMan ZMF scheduler for packages that have CMN scheduler type and are ready to be installed. The valid range is 1 to 255.
Install job scheduler options	Specify the scheduling systems you will define and allow within application and release administration to control submission of the package installation batch jobs. Allow CMN scheduler Allow Manual scheduler Allow Other scheduler

4 Customize distribution and installation skeletons.

Several skeletons are involved in the distribution and installation of packages to defined remote sites. Customize these skeletons in accordance with the data set names and transmission vehicles you are using at your site.

Maintaining Remote Sites

All Remote Sites require the running of normal maintenance utilities.

For information on how to run housekeeping tasks, see "Batch Housekeeping Tasks" on page 225.

NOTE To prevent unwarranted modification of remote site Production libraries, ChangeMan ZMF omits the display of the Build, Promote, Approve, Freeze, and Delete options from the Primary Menu.

Setting up Remote Sites for Applications

This section describes an option accessible from the Global Administration Option panel and the Application Administration Option panel that displays a list of remote sites. This list, which is displayed during application level creation of a change package, allows you to create, delete, and update all the remote sites where ChangeMan ZMF is installed. It includes all the valid sites for change implementation.

NOTE If this is an ALL site, the remote site capability is limited to remote promotion.

Establishing a Remote Site - Global Administrator

To establish a remote site, do the following:

1 On the **ChangeMan ZMF Primary Option Menu** (CMN@PRIM) select Option A. The Administration Options panel is displayed.

2 On the Administration Options panel, select Option G. The Update Global Administration Options panel (CMNGAMN1) is displayed.

3 On the Update Global Administration Options panel, select Option 6. The Global Site List panel (CMNGRST1) is displayed.

```
CMNGRST1                  Global Site List Part 1 of 2         Row 1 to 2 of 2
Command ===> _____________________________________________ Scroll ===> CSR

     Site Name Order
____ C001      0
____ C002      0
****************************** Bottom of data ********************************
```

From the Global Site List panel (CMNGRST1), you can create a new site.

1 With the cursor in the line command column of the library row, to insert a new line, type I and press Enter).

2 In the Site Name column, using the following rules, type the name of the site:

- Specify up to 8 alphanumeric characters
- Make the first character of the remote site name alphabetic
- Site Name must match Site node name on Global Parameters - Part 1 of 8, for the site being defined

3 Press Enter to save your new site entry.

4 Place the cursor in the line command column of the remote site you just added, and type S and press Enter.

- If this is a DP site, the Remote Site Information panel (CMNGRST2) is displayed.

```
CMNGRST2            C001 Site Information - Part 2 of 2
Command ===> ____________________________________________

ChangeMan ZMF subsytem id  . . 8
Logical unit name  . . . . . . SYSA                                          +
JES node name  . . . . . . . . C001
Default unit name  . . . . . . SYSDA    (Generic disk unit)
Default volume serial  . . . . ______
ChangeMan ZMF delay file . . . CMNTP.S8.CMNZMF.CMNDELAY
Ser#parm . . . . . . . . . . . CMNTP.S8.V813.SERCOMC.TCPIPORT
Prd staging model dsname . . . CMNTP.S8.????.STG8P.#######
Prd staging model zFS  . . . . /cmntp/c001/s8/????/stge/#######/p             +
Transmission vehicle . . . . . IEBCOPY  (IEBCOPY or Other)
Time difference  . . . . . . . +0000    (+/- HHMM)
IP address or DNS name . . . . ____________________________________________ +
Port . . . . . . . . . . . . . ______

Site job statement information:
   //CMN8C001 JOB ,'C001 SITE',
   //             CLASS=A,MSGCLASS=X
   //*
   //* SITE C001 JOB STATEMENTS
```

Provide information for each of the required fields. See "Defining Sites" on page 83.

5 After entering information on the panel, press Enter.

Selecting a Remote Site - Application Administrator

To establish a remote site, do the following:

1 On the ChangeMan ZMF Primary Option Menu, select Option A. The Administration Options panel (CMNADMOM) is displayed.

2 On the Administration Options panel (CMNADMOM), select Option A. The Update Application Administration Options panel (CMNLAMN1) is displayed.

3 On Update Application Administration Options panel (CMNLAMN1), select Option 8. The Application Remote Site List panel (CMNCLRST) is displayed.

```
CMNCLRST               DEMX - Site List Part 1 of 2           Row 1 to 2 of 2
Command ===> ____________________________________________ Scroll ===> CSR

     Site name Order
____ C001      15
____ C002      ____
******************************** Bottom of data ********************************
```

From The Application Remote Site List panel (CMNCLRST), you can create a new site or update an existing site.

1 With the cursor in the line command column of the library row, to insert a new line, type I and press Enter.

2 In the SITE NAME column, type the name of the globally defined remote site or type an asterisk in the column to select from the global remote site list using panel CMNGRSTL.

3 Enter a number in the order column to determine the order in which this list is displayed to users by default. Valid values are 0 to 65535. The display order option must be enabled in application parameters for the display order number to take effect.

4 Press Enter to establish and save your new site.

Updating an Existing Site - Application Administrator

To update a remote site, do the following:

1 On the ChangeMan ZMF Primary Option Menu, select Option A. The Administration Options panel (CMNADMOM) is displayed.

2 On the Administration Options panel (CMNADMOM), select Option A. The Update Application Administration Options panel (CMNLAMN1) is displayed.

3 On the Update Application Administration Options panel (CMNLAMN1), select Option 8. The Application Remote Site List panel (CMNCLRST) is displayed.

4 On the Remote Site List Part 1 of 2 panel, place the cursor in the line command column of the library row that you want to update, and type S (Select) and press Enter. The Remote Site Information Part 2 of 2 panel (CMNRSTJB) is displayed.

```
CMNRSTJB            C001 Site Information - Part 2 of 2
Command ===> ____________________________________________________

Site job statement information:
   //CMNSTART JOB ,'AACOUNT INFO',_____________________________________
   //             CLASS=A,MSGCLASS=X_____________________________________
   //*______________________________________________________________________
   //* SITE C001 JOB STATEMENTS_____________________________________________
```

5 On the Remote Site Information panel (CMNRSTJB), type the JOB statement information required for any internal jobs that you might submit at the specified remote site.

6 Press Enter to save your changes, or enter the END command to exit.

Repeat the above steps for each remote site that you want to update.

Enabling the Network Data Mover

If your shop possesses at least one remote site and you want to use Connect:Direct as the transmission vehicle, refer to member #NDM in the CMNZMF CNTL file, and do the following:

1. Copy member #NDM from the vendor CMNZMF CNTL library into your custom CNTL library.
2. Modify the data set name to conform to your standards for the procedure library.
3. Create the procedure library by changing all occurrences of $/ to ./ for IEBUPDTE and submit the job. Next, modify CMN$$NDM.
4. Copy skeleton CMN$$NDM from the delivered skeleton library and put it into your custom skeleton library. If the batch module DMBATCH cannot be found in a linklisted library, a Steplib is necessary.
5. Further down in the skeleton is a sign on for SYSIN that reads:

   ```
   SIGNON USERID=(&RSOWNER) NETMAP=&NDMMAP,ESF=YES
   ```

   By design, &RSOWNER will not resolve. To prevent ordinary users from seeing the USERID while they browse the skeleton, you must hard code an authorized resource owner USERID outside the skeleton, as follows:

   ```
   //SYSIN     DD DISP=SHR,DSN=somnode.NDM.SIGNON <===Secured
   //          DD *
     NETMAP=somnode.NDM.NETMAP,ESF=YES
   ```

6. You must secure the data set somnode.NDM.SIGNON from read and update, by all except Connect:Direct, ChangeMan ZMF, and your Global Administrator. The file contents (possibly a secured PDS member) should read:

   ```
   SIGNON USERID=(superid) -
   ```

   Where superid represents a real userid. The authority level of this userid must be sufficient to do the following:

   - Transmit data sets created by ChangeMan ZMF to remote sites.
   - Allocate and update ChangeMan ZMF target staging data sets at the remote site.
   - Return acknowledgment messages.

NOTE Do not forget to use the continuation dash to get to the next line of the skeleton that describes NETMAP and so on.

As delivered, the parameter to `DMBATCH` reads `PARM=(NNNNNNN)`. Essentially, this parameter implies NO to each of seven Connect:Direct internal questions.

Changing this parameter value impacts diagnostic messages, activity logging, and the chosen DDNAMES.

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