



ChangeMan® ZMF 8.1.4

Migration 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.

Audience and scope This manual is intended for system administrators and systems programmers responsible for installing, administering, and maintaining ChangeMan ZMF.

This manual tells you how to upgrade to ChangeMan ZMF 8.1.4 from ZMF 7.1.x and later.

The manual does not present a comprehensive, step-by-step procedure for the migration from an earlier version of the software. One of the strengths of ChangeMan ZMF is its flexibility; any detailed conversion procedure presented here would not fit all ZMF customers.

Instead, the manual provides you with information that will help you devise a migration plan that fits your implementation of ChangeMan ZMF.

Before You Begin See the *ChangeMan ZMF 8.1.4 Readme* for the latest updates and corrections for this manual.

Navigating this book This manual is organized as follows:

Chapter 1 describes issues you must consider. It presents possible strategies you can employ to arrive at a migration plan that fits your circumstances. It describes a model high-level plan and presents a sample conversion-day script.

Chapter 2 discusses the steps you should include in your plan to migrate a ZMF 7.x instance to ZMF 8.1.4.

Chapter 3 discusses the steps you should include in your plan to migrate a ZMF 8.x instance to ZMF 8.1.4.

Appendix A provides simplified instructions for configuring and using the ZMF Merge and Reconcile (M+R) Option to apply existing customization to the new release.

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
<i>Administrator's Guide</i>	Describes ChangeMan ZMF features and functions with instructions for choosing options and configuring global and application administration parameters.
<i>Customization Guide</i>	Provides information about ChangeMan ZMF skeletons, exits, and utility programs that will help you to customize the base product to fit your needs.
<i>DB2 Option Getting Started Guide</i>	Describes how to install and use the DB2 Option of ChangeMan ZMF to manage changes to DB2 components.
<i>ERO Concepts</i>	Discusses the concepts of the Enterprise Release Option (ERO) of ChangeMan ZMF for managing releases containing change packages.
<i>ERO Getting Started Guide</i>	Explains how to install and use ChangeMan ZMF ERO to manage releases containing change packages.
<i>ERO Messages</i>	Describes system messages and codes produced by ChangeMan ZMF ERO.
<i>ERO XML Services User's Guide</i>	Documents ERO functions and services available for general customer use. These services are also known as the "green" services and provide mostly search and query functions.
<i>High-Level Language Exits Getting Started Guide</i>	Explains how to configure and call the high-level language exits.
<i>IMS Option Getting Started Guide</i>	Provides instructions for implementing and using the IMS™ Option of ChangeMan ZMF to manage changes to IMS components.
<i>INFO Option Getting Started Guide</i>	Describes two methods by which ChangeMan ZMF can communicate with other applications: <ul style="list-style-type: none"> ■ Through a VSAM interface file. ■ Through the Tivoli® Information Management for z/OS product from IBM®.
<i>Installation Guide</i>	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.
<i>Java / zFS Getting Started Guide</i>	Provides information about using ZMF to manage application components stored in USS file systems, especially Java® application components.
<i>Load Balancing Option Getting Started Guide</i>	Explains how to install and use the Load Balancing Option of ChangeMan ZMF to connect to a ZMF instance from another CPU or MVS™ image.

Manual	Description
<i>Merge and Reconcile (M+R) Option Getting Started Guide</i>	Explains how to install and use the M+R Option of ChangeMan ZMF to consolidate multiple versions of source code and other text components.
<i>Merge and Reconcile (M+R) Quick Reference</i>	Provides a summary of M+R Option commands in a handy pamphlet format.
<i>Messages</i>	Explains messages issued by ChangeMan ZMF, Sernet, and System Software Manager (SSM) used for the Staging Versions feature of ZMF.
<i>ChangeMan ZMF 8.1.4 Migration Guide</i>	Gives guidance for upgrading ChangeMan ZMF from versions 7.x and 8.x to version 8.1.4.
<i>Online Forms Manager (OFM) Option Getting Started Guide</i>	Explains how to install and use the OFM option of ChangeMan ZMF.
<i>SER10TY User's Guide</i>	Gives instructions for applying licenses to enable ChangeMan ZMF and its selectable options.
<i>User's Guide</i>	Describes how to use ChangeMan ZMF features and functions to manage changes to application components.
<i>XML Services User's Guide</i>	Documents the most commonly used features of the XML Services application programming interface to ChangeMan ZMF.
<i>ZMF Quick Reference</i>	Provides a summary of the commands you use to perform the major functions in the ChangeMan ZMF package life cycle.
<i>ZMF Web Services User's Guide</i>	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 Serena delivers 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 Downloads tab on the Micro Focus Customer Care Web site.
- 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.

Choosing the Right Installation/Upgrade Manual

Choose the manual that fits your situation when installing or upgrading ChangeMan ZMF.

Your task	Manual to use
Installing ChangeMan ZMF for the first time	<i>ChangeMan ZMF Installation Guide</i>
Building a new ChangeMan ZMF 8.1.4 instance from scratch	<i>ChangeMan ZMF Installation Guide</i>
Upgrading from ChangeMan ZMF 7.x or 8.x to version 8.1.4	<i>ChangeMan ZMF 8.1.4 Migration Guide</i>



IMPORTANT! Always see the most current *Readme* for your ChangeMan ZMF release in case it contains documentation updates for the installation/upgrade manual you use.

ChangeMan ZMF Release Notes

High-level descriptions of the enhancements that are delivered in the ChangeMan ZMF 8.1 major version release and in all subsequent ZMF 8.1.x maintenance and patch releases are included in the "Features and Fixes" section of the latest *ChangeMan ZMF 8.1.4 Readme*.

Online Help

Online help is the primary source of information about ChangeMan ZMF. Online help is available as a tutorial, through help panels, 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 panel fields.

To view the tutorial table of contents, select option T from the 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 Panels

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

Online Error Messages

If you make an invalid entry on a ChangeMan ZMF panel, or if you make an invalid request for a function, a short error message is displayed in the upper right corner of the panel. 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 you use 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
<i>italics</i>	Introduces new terms that you may not be familiar with and occasionally indicates emphasis.
bold	Emphasizes important information and field names.
UPPERCASE	Indicates keys or key combinations that you can use. For example, press the ENTER key.
monospace	Indicates syntax examples, values that you specify, or results that you receive.
<i>monospaced italics</i>	Indicates names that are placeholders for values you specify; for example, <i>filename</i> .
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

IBM® Sterling Connect:Direct® is a 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

Migration Strategy, Plans, and Issues

This chapter describes strategies for migrating a ChangeMan ZMF instance to version 8.1.4. It presents a model migration plan that you can use as a template for your migration plan, and it presents sample scripts you can use as templates for your own conversion-day script.

The relevant chapter for your migration has a table of contents for your migration which can also be used as a high level checklist (The entries are listed as steps).

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Migration Strategy	12
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Sample Conversion-Day Script	17

Assumptions

The following assumptions are implicit in this *migration guide*:

- You have read "[Choosing the Right Installation/Upgrade Manual](#)" on page 10 to verify that this *migration guide* is the correct manual for your instance of ChangeMan ZMF.
- Before you begin planning your migration, you have read the entire *ChangeMan ZMF Installation Guide* and this current *migration guide*.
- You can build multiple ChangeMan ZMF test environments that model key features of your current production ZMF architecture and customization.
- You manage ChangeMan ZMF custom components with a ChangeMan ZMF instance. Custom components include skeletons, panels, exit programs, started procedures, housekeeping JCL, and so on. The release level of the ZMF instance you use to manage custom components is not important.

Migration Strategy

This section:

- Lists factors that limit how you can migrate to ChangeMan ZMF 8.1.4.
- Outlines measures you can take to reduce risk in your migration to the new version.
- Discusses the advantages of release libraries.
- Outlines a strategy you can use to convert P (production) instances before you migrate your ChangeMan ZMF D (development) or DP (development-production) instance.

Constraints

All package and component functions begun under pre-8.1.4 ChangeMan ZMF releases can be continued under version 8.1.4, including promotion/demotion and install/backout.

However, there are constraints on the migration to ChangeMan ZMF 8.1.4:

- There is no process to deconvert from ChangeMan ZMF 8.1.4 back to a pre-8.1.4 instance.
 - Because of the changes to the structure of ChangeMan ZMF files, there is no process to deconvert data stores that are processed through conversion programs that prepare them for version 8.1.4.
 - Installation jobs that are file tailored under ChangeMan ZMF 8.1.4 will not run successfully under pre-8.1.4 versions.
- Only one type of phased migration to version 8.1.4 is supported: Convert P instances to version 8.1.4 before you convert D and DP instances.

You cannot convert DP instances before P instances because installation jobs that are file tailored under ChangeMan ZMF 8.1.4 will not run successfully under pre-8.1.4 versions.

- If you back out a conversion to ChangeMan ZMF 8.1.4, you must restore all converted ZMF master files to their pre-conversion state. If you back out the conversion after developers have performed work under ZMF 8.1.4, you will have these problems:
 - There will be no record of the changes that developers made to components between the conversion and the conversion backout. Such changes remain in staging libraries, but these changes are unknown to ChangeMan ZMF, so they will cause audit errors.
 - Staging versions recorded between conversion and conversion backout are lost.
 - Packages and staging libraries that were created between conversion and conversion backout are unknown to ChangeMan ZMF. However, staging libraries created during that time will remain on DASD and in the catalog, and they will interfere with the allocation of staging libraries as developers try to recreate packages that they created under 8.1.4.
 - Installation jobs that are file tailored between conversion and conversion backout will not run.

Installation JCL Issues

Installation jobs that are file tailored on a pre-8.1.4 instance can run on a version 8.1.4 instance. When ChangeMan ZMF 8.1.4 installation programs process an installation Package data set created under a pre-8.1.4 version, the Package records are converted to version 8.1.4 before they are inserted into the ZMF 8.1.4 Package Master.

The challenge is that the installation JCL created on a pre-8.1.4 ChangeMan ZMF instance must execute with version 8.1.4 libraries to install on a version 8.1.4 instance.

Customers may have devised a solution to this issue when they upgraded ChangeMan ZMF to their current release. Here are two solutions, one solution for customers with a simple ZMF environment, and one solution for customers with a more complex environment:

- If all of your ChangeMan ZMF instances use the same production load library, you can convert all ZMF instances at the same time, replacing pre-8.1.4 components in the LOAD library with version 8.1.4 components.
- If you have a complex environment and use release libraries (libraries with a unique DSN for each ChangeMan ZMF release), you can use INCLUDE groups for JOBLIB and STEPLIB statements in installation skeletons. By changing the libraries in the INCLUDE group stored in a PROCLIB, you effectively change the JOBLIB libraries in the installation jobs at run time.

Strategies to Reduce Risk

Use these strategies to reduce risk in the process of migrating a pre-8.1.4 ChangeMan ZMF instance to version 8.1.4.

- Segregate delivered *vendor* versions of components from *custom* components; store them in separate libraries. Preserve the vendor version of all ChangeMan ZMF 8.1.4 components so you can revert to the original versions if your modifications do not work as expected.
- Create new physical libraries for ChangeMan ZMF 8.1.4 custom and vendor components. Do not update libraries containing pre-8.1.4 components with version

8.1.4 components. Not all pre-8.1.4 components are brought forward into version 8.1.4.

- Analyze the ChangeMan ZMF 8.1.4 components that you can customize, and customize these components as appropriate for your installation and your ChangeMan ZMF version 8.1.4 instance.
- Use the ChangeMan ZMF M+R Option to locate and analyze modifications you made to pre-8.1.4 components. If you do this, keep in mind that customizations you made to components for an earlier ZMF release may no longer apply to components in the new ZMF release distribution libraries. The M+R Option is included in ChangeMan ZMF distribution libraries. Any version of the M+R Option is suitable for this task. If you do not already license the M+R Option, contact your Serena account representative.
- Preserve ISPF statistics on vendor versions of ChangeMan ZMF components. Micro Focus Customer Care may need the USER and the CHANGED date from the delivered version of a component to help you diagnose problems.
- Create two sets of change packages for your customized ChangeMan ZMF 8.1.4 components:
 - Packages with components that are installed into ChangeMan ZMF 8.1.4 libraries in production, such as exit programs, ISPF messages, panels, and skeletons.
 - Packages with components that are installed into system libraries in production, such as JCL, cataloged procedures, and CLISTS.

ChangeMan ZMF 8.1.4 libraries can be populated before the actual conversion. Unless you make the name of your started procedures and log-on CLISTS version specific, you cannot update system libraries until the day a pre-8.1.4 instance is converted to version 8.1.4.

- Test all data conversions in the migration process with copies of your pre-8.1.4 production data to determine how much DASD is required for intermediate and final files and to determine how long each process will run on conversion day.
- Create a conversion plan, write a test plan, and build a detailed script for the day of conversion. Build a script for reversing the upgrade in case there are serious problems after conversion that cannot be fixed.
- Execute a dry-run conversion before you execute the actual conversion. If you have problems, correct the problems and execute the dry-run conversion again until it runs smoothly.
- Ensure that your conversion scripts contain file backups that create a pre-conversion snapshot that you can reload if you must back out the upgrade of a ChangeMan ZMF instance. Also verify that your backups can be restored. Ensure that your conversion scripts contain post-conversion backups that create a snapshot that is included in your standard disaster recovery backups.
- Keep all job logs in their entirety from your final conversion activities.

Libraries By Release

There are significant benefits to creating a new set of uniquely named vendor and custom production libraries for each release of ChangeMan ZMF. Unique production libraries allow:

- Phased migration where there are multiple ChangeMan ZMF instances. Two ZMF releases can coexist in the production environment.

- A simpler conversion-day process, because most components in the new release can be installed into production before conversion without interfering with the old release.

When you manage custom ChangeMan ZMF components with a ChangeMan ZMF instance, implement unique production libraries for a release by creating a new application for each new ZMF release.

Strategies for Sites With Multiple ChangeMan ZMF Instances

If you have many ChangeMan ZMF instances, you may not be able to upgrade all of those instances to version 8.1.4 at the same time. If you have uniquely named vendor and custom production libraries for each release of ZMF, you may be able to convert instances individually or in groups:

- You can convert A (ALL) instances one at a time or in groups.
- You can convert P instances before you convert the D or DP instances that communicate with them.
- You can convert a D or DP instance and all of the P instances it communicates with.

You cannot convert a D or DP instance before you convert the P instances that they communicate with. Convert P instances first.

Model Migration Plan

A migration plan lists the tasks that you will perform over a period of weeks or months to prepare to migrate a ChangeMan ZMF instance to version 8.1.4. This section outlines a model migration plan.

The hour-by-hour tasks that you execute on the day you convert a ChangeMan ZMF instance to version 8.1.4 are listed in a conversion-day script. The section titled "[Sample Conversion-Day Script](#)" on page 17 shows two sample conversion-day scripts.



NOTE The model plan in this section and the model conversion-day scripts in the next section assume a relatively complex ChangeMan ZMF environment where INCLUDE groups are used to manage installation JCL issues. Your environment will probably be different, so your plan and scripts will be different in their details. However, these models can help you think about issues so you can devise solutions, plans, and scripts that fit your particular situation.

Review this model migration plan and write a plan that fits your implementation of ChangeMan ZMF:

- 1 Write a test plan for standard ChangeMan ZMF 8.1.4 functions, and write a test plan for functions that you have customized.
- 2 Install changes to pre-8.1.4 skeletons to use INCLUDE groups to set JOBLIB and STEPLIB library names in installation jobs. Install the corresponding INCLUDE groups into production PROCLIB libraries.
- 3 Create change packages for custom ChangeMan ZMF 8.1.4 components:

- Components that will be installed in ChangeMan ZMF 8.1.4 custom libraries.
 - Components that will be installed in system libraries, such as PROCLIB, CLIST, and JCLLIB.
- 4** Follow the instructions in the *ChangeMan ZMF Installation Guide* to build a test ChangeMan ZMF 8.1.4 instance. Perform the minimum customization described in that manual to get your test instance running.
 - 5** If you use P instances for production installations, built a test P instance of ChangeMan ZMF 8.1.4.
 - 6** Test standard (not customized) ChangeMan ZMF 8.1.4 functions to verify that they work as they are supposed to and to gain an understanding of new and changed features in the base product.
 - 7** Forward fit your customizations into ChangeMan ZMF 8.1.4 components, if and as appropriate. If possible, use the ChangeMan ZMF M+R Option for this task. Any version of the M+R Option is suitable.
 - 8** Test your customizations on the ChangeMan ZMF 8.1.4 test instances.
 - 9** Use the guidelines given in this manual to convert an existing pre-8.1.4 ZMF test instance to version 8.1.4.
 - 10** Write conversion-day scripts based on your experience converting pre-8.1.4 test instances to ChangeMan ZMF 8.1.4.
 - 11** Refine conversion JCL so that it is production-ready. Run volume tests to validate space allocations and obtain run-time estimates.
 - 12** Modify existing housekeeping jobs to fit ChangeMan ZMF 8.1.4.
 - 13** Test housekeeping jobs with production volume input to validate space allocations and obtain run-time estimates.
 - 14** Execute dry-run tests of your conversion-day scripts. Repeat until they run smoothly.
 - 15** Install the change package that contains the customized components that are stored in ChangeMan ZMF 8.1.4 production libraries.
 - 16** Revise customer-written user documentation, administrator procedures, and training materials. Alert ChangeMan ZMF users to processing changes delivered in version 8.1.4.
 - 17** Follow your company procedures to schedule the conversion, provide notice to users, and schedule support.
 - 18** Take appropriate actions to rebuild package installation JCL that does not set JOBLIB and STEPLIB libraries with INCLUDE group statements (for example, Freeze Option 5 or Approve Option 5 to rebuild the installation JCL).
 - 19** For customers who license the ChangeMan ZMF DB2 Option and/or ERO Option:
ChangeMan ZMF 8.1.1 contained significant changes if you license the DB2 Option and/or the ERO Option. Therefore if you are migrating from an earlier version than 8.1.1, you must also refer to one of the following sections, as appropriate, for details:
 - If you are migrating a ZMF 7.1.x release to 8.1.4, see ["Step 9: Implement Changes for the DB2 Option"](#) on page 57 and ["Step 10: Upgrade ERO"](#) on page 60.

- If you are migrating an 8.1.0 or 8.1.0.01 release to 8.1.4, see ["Step 8: Implement Changes for the DB2 Option" on page 74](#) and ["Step 9: Upgrade ERO" on page 77](#).



NOTE ChangeMan ZMF DB2 programs are precompiled with VERSION(AUTO) so you can have multiple versions of a package in the DB2 catalog.

- 20** Execute conversion-day scripts to migrate your production ChangeMan ZMF environment to version 8.1.4.
- 21** As time permits after conversion, log on to each migrated ChangeMan ZMF 8.1.4 instance and make post conversion administration changes.

Sample Conversion-Day Script

A conversion-day script lists all of the tasks that you must complete on the day that you convert a ChangeMan ZMF instance to version 8.1.4.

The conversion-day script is one of the last steps in your migration plan. See ["Model Migration Plan" on page 15](#) for an example of a migration plan.



NOTE The model conversion-day scripts shown in this section are meant to be embedded within the model plan in the previous section. There are important conversion steps that are in the plan rather than the script because those steps can be executed before the actual day of conversion.

Conduct dry-run tests of your script with copies of production data to validate space allocations and to establish expected run times for each step.

The following list of tasks is an example of the kind of tasks that you should include in your conversion-day script for upgrading a ChangeMan ZMF instance to version 8.1.4. Detailed instructions for these tasks are provided in one of the following chapters, as appropriate to the release that you are upgrading:

- [Chapter 2, "Converting ChangeMan ZMF 7.1.x Instances to Version 8.1.4" on page 21](#).
- [Chapter 3, "Converting ChangeMan ZMF 8.1.x Instances to Version 8.1.4" on page 41](#).

Review this sample conversion-day script and write scripts that fit your implementation of ChangeMan ZMF:

- 1** Verify that vendor libraries for ChangeMan ZMF 8.1.4 are installed in production.
- 2** Verify that the change package containing the following version 8.1.4 custom components is installed in ChangeMan ZMF 8.1.4 production libraries:
 - Load modules for customized exit programs.
 - Customized messages.
 - Customized panels.
 - Customized REXX programs.
 - Customized skeletons.
 - Customized and generated tables (including CMNKEYS).

- Recompile HLL exits that are written in an LE language, ensuring the recompile uses the new versions of copybooks.
- 3** Stop the started task for the ChangeMan ZMF version that you are migrating.
 - 4** Use existing pre-conversion housekeeping jobs or other JCL to back up the following VSAM files in your production environment:
 - a** Package Master
 - b** Component Master
 - c** Impact Analysis File
 - d** Delay File
 - e** Staging Versions VSAM files
 - 5** Use existing pre-conversion housekeeping jobs or other JCL to back up and clear the following log and recovery files in your production environment:
 - a** Activity Log File
 - b** Recovery File
 - c** Impact Analysis Recovery Log
 - d** Component Master Recovery Log if applicable (7.1.2.01 or before)
 - 6** For customers who license the ChangeMan ZMF ERO Option, unload or image copy the release management DB2 tables.
 - 7** Execute the procedure to convert your Package Master, Component Master, (and Saved Staging Version) data sets.
 - 8** Execute the procedure to create and load your ChangeMan ZMF XMLSPACE LDS.
 - 9** For customers who license the ChangeMan ZMF ERO Option, perform the following actions as required:
 - a** Execute the procedure to expand ERO release audit and release management DB2 tables.
 - b** Unload or image copy the release management tables, and bind ERO DBRMs in your production environment.
 - 10** Install the change package containing the following components into system libraries:
 - a** Sernet started procedure.
 - b** JCL for started procedure CMNxADSP and/or the procedures you created for:
 - Installation (X.node) JCL build.
 - HLLX started task procedure if used.
 - Batch component build.
 - Promotion JCL build.
 - Other jobs that are file tailored.
 - c** Log-on CLIST.
 - d** INCLUDE group updated with ChangeMan ZMF 8.1.4 libraries for installation jobs that were file tailored under the ZMF release that you are migrating.

- e** Housekeeping JCL and cataloged procedures.
- 11** Use version 8.1.4 housekeeping jobs to back up the following converted VSAM files in your production environment:
 - a** Package Master.
 - b** Short Name Component Master.
 - c** Long Name Component Master.
 - 12** Bring up the new Sernet started task that you defined for ChangeMan ZMF 8.1.4.
 - 13** If you change library type definitions or baseline library names in application administration, execute the procedure to synchronize the impact analysis data.
 - 14** Run post-conversion test scripts to validate version 8.1.4 functions, custom modifications, and administration entries prior to releasing the system to developers for use.

Chapter 2

Converting ChangeMan ZMF 7.1.x Instances to Version 8.1.4

This chapter provides detailed information about the tasks that you need to perform to convert any ChangeMan ZMF 7.1.x instance to version 8.1.4.

Read the assumptions, constraints, and strategies in [Chapter 1, "Migration Strategy, Plans, and Issues"](#) on page 13 before you start work on the tasks in this chapter. Have a comprehensive migration plan in place before you execute conversion tasks.

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Conversion Task Dependencies

The steps that you execute in this chapter and the specific actions within each step may depend on the level of the last ChangeMan ZMF maintenance release, patch release, or hotfix that you applied to your system.

- Read the instructions in each step carefully to determine if a specific action applies to you.
- In some steps, such as bringing customization forward and upgrading housekeeping jobs, assess the scope of the action you must take by comparing the vendor libraries at your current release level to the vendor libraries for ChangeMan ZMF 8.1.4.

If you have questions about whether a step or action applies to you, contact Micro Focus Customer Care.

Step 1: Apply ChangeMan ZMF License

If you are upgrading from a ZMF 7.1.x release, you need to obtain a new ChangeMan ZMF license.

If you also license the ZMF Client Pack, your license file should contain a member called LIC00213. If the license file does not have this member, you need to request a new license key.

The *SER10TY User's Guide* provides instructions for applying those licenses.

Step 2: Build JCL INCLUDEs for JOBLIBs and STEPLIBs

You may have a number of jobs already generated (for example, for frozen packages awaiting install) that need to run successfully once you have completed your conversion from version 7.1.x to version 8.1.4. If these jobs reference skeletons (such as CMN\$\$JBL) that have hardcoded JOBLIB/STEPLIB concatenations pointing back to version 7.1.x software, they will fail when they run against the upgraded version 8.1.4 instance.

One way to avoid this failure is to keep the same execution library names and replace the contents with the version 8.1.4 software.

However, it is safer (and recommended) to keep different versions of ZMF software in different named libraries.

This can also be implemented by the use of aliases for the datasets involved.

A method for addressing this situation by the use of INCLUDE JCL members follows:

- 1 Ensure you have separate execution libraries for the two different releases of ZMF.
- 2 Set up two JCL members to be INCLUDED into CMN\$\$JBL for each ZMF instance: one for JOBLIB and one for STEPLIB. Prior to any conversion these members will contain version 7.1.x execution libraries.

- 3 Modify skeleton CMN\$\$JBL to reference these INCLUDE members based on the subsystem ID of the ZMF for which the job is being generated.
- 4 Make the modified CMN\$\$JBL skeleton live in your ZMF instance(s).



NOTE You have to take these steps well in advance of any conversion so that all frozen package jobs will be using the modified CMN\$\$JBL at the time of the conversion to version 8.1.4.

- 5 As part of the upgrade process for each ZMF instance, update the relevant INCLUDE member so that the JOBLIB and STEPLIBs point to version 8.1.4 execution libraries.

Step 3: Update Started Procedures and Log-on CLIST

This section tells you how to modify the started procedures and CLIST for the version that you are migrating for use with version 8.1.4. You can compare the following members between the libraries of the version that you are migrating from, and ZMF 8.1.4 libraries to see what is changed.

- **SERVER** in the SERCOMC.CNTL library
- **STARTJCL** in the CMNZMF.CNTL library
- **CMNADSP** in the CMNZMF.CNTL library
- **CMN** in the CMNZMF.CLIST library



IMPORTANT! When you create a new DD statement or add a file or library, change the placeholder *somnode* for the high-level qualifier in the examples shown here to make the library or data set name fit the naming conventions that you use for ChangeMan ZMF.

Started Procedure for ALL, DP, and D Instances

Follow these steps to create a started task procedure for ChangeMan ZMF 8.1.4:

- 1 In the custom CNTL library that you create for version 8.1.4, append the JCL in member STARTJCL of the CMNZMF CNTL distribution library to the JCL in member SERVER of the SERCOMC CNTL distribution library. You must do this to enable ChangeMan ZMF to run under the Serena Network (Sernet).
- 2 Follow the comments in the JCL to customize the started task JCL for version 8.1.4 as appropriate for your installation standards. You can use the customizations that your made to the started task JCL for the 7.1.x version that you are upgrading as a guide. However, some of the customizations that you made for version 7.1.x may no longer be appropriate for version 8.1.4.
- 3 Serena recommends that you make the SYSMDUMP data set a GDG as in the supplied SERVER example to prevent diagnostic information from being overwritten when the Sernet instance is restarted after an abend.
- 4 If not already present, create a GDG base for the dump capture data set name in the SYSMDUMP DD statement.

- 5 Copy the customized procedure to the appropriate system PROCLIB library for testing.

Started Procedure for P-Site Instances

Follow similar steps to create the Sernet/ChangeMan ZMF started procedure for the 7.1.x P-site instances that you are upgrading to run version 8.1.4.

ChangeMan ZMF 7.1.3 and later P-site instances do not require Component Master and Impact Analysis files.

File Tailoring Procedures - CMNADSP

The started procedures defined on panel Global Parameters - Part 2 of 8 (CMNGGP02) are based on JCL sample CMNADSP in the CMNZMF.CNTL library.

Follow similar steps to create your 8.1.4 file tailoring started procedures.

Log-On CLIST

Follow these steps to create the log-on CLIST for ChangeMan ZMF 8.1.4 instance:

- 1 Copy the log-on CLIST CMN from the vendor CMNZMF.CLIST library to your custom version 8.1.4 CMNZMF.CLIST library.
- 2 In the ALTLIB statement, ensure the *somnode* values are pointing to your new 8.1.4 libraries, retain the custom libraries in the order they are in.
- 3 In the LIBDEF statements, ensure the *somnode* values are pointing to your new 8.1.4 libraries, retain the custom libraries in the order they are in.

You will allocate and populate the TABLES (ISPTLIB) libraries later in this chapter.

- 4 Copy the updated CLIST to the CLIST library that is allocated to //SYSPROC in your ZMF users' TSO log-on procedure for testing.

Step 4: Define Keylists for ISPF Expand

In ChangeMan ZMF 7.1 and later releases, component names and file names are expanded to accept long zFS component names and path names. The logical unit name for sites is expanded to accept longer transmission vehicle node names. The DB2 Option in ZMF 7.1 and later releases processes the long DB2 object names that are available in DB2 V8 and later.

In the ISPF interface for ChangeMan ZMF 7.1 and later releases, fields for input and display of this longer data are extended to the limit of the 80 character panel width. If the data is longer than the available space, you can use the PF11 and PF10 keys to scroll right and left respectively in the panel fields.

The panels also respond to the ISPF Expand function to open a pop-up for input or display of the entire long name field. To execute the Expand function from the keyboard, the panels in ChangeMan ZMF 7.1 and later releases call a new keylist that assigns PF4 to the Expand function.

The job in member CMNDTL of the CMNZMF.CNTL distribution library builds keylist CMNKEYS in the TABLES library you added to the ChangeMan ZMF started procedures and to the connect CLIST.

Follow these steps to build ISPF keylist CMNKEYS in a new ISPF TABLES library.

- 1 Allocate a TABLES library and a CUSTOM TABLES library using the data set names you used in "Log-On CLIST" on page 24. Use:

```
SPACE=(BLK,(2,1,10))
DCB=(RECFM=FB,LRECL=80,BLKSIZE=0)
```

- 2 Copy member CMNDTL from the version 8.1.4 CMNZMF.CNTL distribution library to your custom ZMF 8.1.4 CMNZMF.CNTL library. Edit CMNDTL in your custom CMNZMF.CNTL library.
- 3 Code your JOB statement at the top.
- 4 Change DD statement DTLGML to point to the CMNZMF SAMPLES distribution library.
- 5 Change DD statement DTLTAB to point to the TABLES library you allocated in Step #1 above.
- 6 Change all remaining occurrences of placeholder *somnode* to the high level qualifier you use for ISPF system libraries.
- 7 Submit job CMNDTL.
- 8 Examine job output for error messages.
 - a Example of ISPLOG from job step DTL:

```
Time          *** ISPF transaction log ***                               Userid: USER015   Date: 17/01/22   Page: 1
15:43 Start of ISPF Log - - - Session # 1 -----
15:43   TSO   - Command - - ISPD TLC CMNELSK (PROFDN=* CUASUPP REPLACE)
15:43                                     - ISPC028AI: Total of 2 message(s) have been suppressed.
15:43                                     - ISPC029AI: Total of 2 warning(s) and 0 error(s) found.
15:43 End of ISPF Log - - - Session # 1 -----
Time          *** ISPF transaction log ***                               Userid: USER015   Date: 17/01/22   Page: 1
15:43 Start of ISPF Log - - - Session # 2 -----
15:43   TSO   - Command - - ISPD TLC CMNEROK (PROFDN=* CUASUPP REPLACE)
15:43                                     - ISPC028AI: Total of 2 message(s) have been suppressed.
15:43                                     - ISPC029AI: Total of 2 warning(s) and 0 error(s) found.
15:43 End of ISPF Log - - - Session # 2 -----
Time          *** ISPF transaction log ***                               Userid: USER015   Date: 17/01/22   Page: 1
15:43 Start of ISPF Log - - - Session # 3 -----
15:43   TSO   - Command - - ISPD TLC CMNMREK (PROFDN=* CUASUPP REPLACE)
15:43                                     - ISPC028AI: Total of 2 message(s) have been suppressed.
15:43                                     - ISPC029AI: Total of 2 warning(s) and 0 error(s) found.
15:43 End of ISPF Log - - - Session # 3 -----
```

b Example of SYSTSPRT from job step DTL:

```

READY
ISPSTART CMD(ISPDTLC CMNELSK (PROFDDN=* CUASUPP REPLACE))
ISPC021I: ISPDTLC ISPF 7.1 Dialog Tag Language Conversion Utility
ISPC020AI: ISPF Dialog Tag Language Conversion Utility for ISPF 7.1. Current
  APAR level: PID. Current PTF number: 11 Dec 2012.
ISPC022I: Converting source file "CMNTP.CMN813.SAMPLES(CMNELSK)"...
ISPC028I: 2 message(s) have been suppressed.
ISPC029I: 2 warning(s) and 0 error(s) found.
ISPD117
The initially invoked CLIST ended with a return code = 1
  USER015.USER0154.J0481688.D0000103.? was preallocated (no free was done).
READY
ISPSTART CMD(ISPDTLC CMNEROK (PROFDDN=* CUASUPP REPLACE))
ISPC021I: ISPDTLC ISPF 7.1 Dialog Tag Language Conversion Utility
ISPC020AI: ISPF Dialog Tag Language Conversion Utility for ISPF 7.1. Current
  APAR level: PID. Current PTF number: 11 Dec 2012.
ISPC022I: Converting source file "CMNTP.CMN813.SAMPLES(CMNEROK)"...
ISPC028I: 2 message(s) have been suppressed.
ISPC029I: 2 warning(s) and 0 error(s) found.
ISPD117
The initially invoked CLIST ended with a return code = 1
  USER015.USER0154.J0481688.D0000103.? was preallocated (no free was done).
READY
ISPSTART CMD(ISPDTLC CMNMREK (PROFDDN=* CUASUPP REPLACE))
ISPC021I: ISPDTLC ISPF 7.1 Dialog Tag Language Conversion Utility
ISPC020AI: ISPF Dialog Tag Language Conversion Utility for ISPF 7.1. Current
  APAR level: PID. Current PTF number: 11 Dec 2012.
ISPC022I: Converting source file "CMNTP.CMN813.SAMPLES(CMNMREK)"...
ISPC028I: 2 message(s) have been suppressed.
ISPC029I: 2 warning(s) and 0 error(s) found.
ISPD117
The initially invoked CLIST ended with a return code = 1
  USER015.USER0154.J0481688.D0000103.? was preallocated (no free was done).
READY
END
    
```

Step 5: Back Up Version 7.1.x Files

Use your existing pre-conversion housekeeping jobs or other JCL you have to back up ChangeMan ZMF files and clear log files for the release that you are migrating before you begin converting files to version 8.1.4.

The following table lists the files you should back up. To accomplish this task use the sample JCL members in the vendor CMNZMF.CNTL library for the instance that you are migrating.

Last DSN Node	Description	Type	Vendor CMNZMF.CNTL Job from the Instance You Are Upgrading	Notes
CMNPMAS CMNCMPNL CMNCMPNT	Package Master	VSAM	BACKUP	Note 1
CMNELCTX CMNCRS <i>Snn</i>	Component Control Component Record Store	LDS	ELSUNLD	Note 2
CMNRECV	Package Master Forward Recovery	VSAM	CLEARRCV	Note 3
CMNELLOG	Component Forward Recovery Log	QSAM	ELSBKUP	Note 4

Last DSN Node	Description	Type	Vendor CMNZMF.CNTL Job from the Instance You Are Upgrading	Notes
CMNLOG	Activity Log	VSAM	CLEARLOG	
CMNDELAY	Delay	VSAM		Note 5
IADSP	Impact Analysis	LDS	LDSBKUP	
IALOG	Impact Analysis Forward Recovery Log	QSAM	LDSLOGR	
CMNSVSM	Staging Versions Site Master	VSAM	SVBKUP	
CMNSVOM	Staging Versions Object Master	VSAM	SVBKUP	
CMNSVDM	Staging Versions Delta Master	VSAM	SVBKUP	

Note 1: The BACKUP member of the ZMF 7.1.3 CMNZMF.CNTL library will back up the CMNPMAS, CMNCMPNL, and CMNCMPNT data sets. The BACKUP member of the ZMF 7.1.x CMNZMF.CNTL library prior to ZMF 7.1.3 will back up the CMNCMPNT data set.

Note 2: The CMNELCTX and CMNCRS nn data sets are obsolete in ZMF 7.1.3 and later releases. They are only used in releases where the Component Master is implemented as a VSAM LDS (in releases 7.1.0 through 7.1.2.01).

Note 3: The format of records in the CMNRECV recovery file are changed in ZMF 7.1.3 and later releases. Job CLEARRCV accomplishes the file conversion, but a new CMNRECV file is explicitly defined and initialized in ["Step 6: Convert Package Master, Component Master, and SSV Data Sets" on page 27](#).

Note 4: The CMNELLOG component recovery log file is obsolete in ZMF 7.1.3 and later releases. Use sample job ELSBKUP (DD statements INDDL/OUTDD) to backup CMNELLOG.

Note 5: There is no sample job for backing up the CMNDELAY file. Use IDCAMS with output QSAM file attributes RECFM=VB, LRECL=5000, BLKSIZE=32700.

Step 6: Convert Package Master, Component Master, and SSV Data Sets

In ChangeMan ZMF 7.1.3 and later releases, long name tokens are removed from the Package Master, and long names are stored in VARCHAR fields. Component data is split into two VSAM KSDS files, one for components with names of 8 or fewer characters, including zFS components with short names, and the other for components with names longer than 8 characters. A new format is required for forward recovery records to match the converted Package and Component Masters.

If you use Saved Staging Version (SSV) data sets, these data sets need to be converted to a format that ChangeMan ZMF 8.1.4 can use.

Execute the following jobs, as appropriate, to convert your Package Master, Component Master, and SSV data sets to a format that is suitable for ChangeMan ZMF 8.1.4 and create a new recovery file for ZMF 8.1.4:

Job Name	Description
CMVCONV7	Converts ZMF 7.1, 7.1.1, and 7.1.2 Package, Component, and SSV master files; and creates a new recovery file for ZMF 8.1.4 for ALL-, DP-, and D-sites.
CMVCONP7	Converts ZMF 7.1, 7.1.1, and 7.1.2 Package Master files and creates a new recovery file for ZMF 8.1.4 for P-sites.
CMVCONV8	Converts ZMF 7.1.3, 7.1.3.01, and 7.1.3.02 Package Master and Saved Staging Versions (SSV) master files; and creates a new recovery file for ZMF 8.1.4 for ALL-, DP-, and D-sites.
CMVCONP8	Converts ZMF 7.1.3, 7.1.3.01, 7.1.3.02, and 7.1.3.03 Package Master files to ZMF 8.1.4 for P-sites.
CMVCONV9	Converts the ZMF 7.1.3.03 Package Master data set and creates a new recovery file for ZMF 8.1.4 for ALL-, DP-, and D-sites.

Step 7: Reload XMLSPACE VSAM LDS

The contents of sequential file MAPDATA and VSAM LDS XMLSPACE have changed in ChangeMan ZMF 8.1.4.

Follow this procedure to define and populate the MAPDATA sequential file and the XMLSPACE VSAM LDS:

- 1 Copy member XMLLOAD from the SERCOMC CNTL distribution library to your ZMF 8.1.4 custom SERCOMC CNTL library. Edit XMLLOAD in your ZMF 8.1.4 custom SERCOMC.CNTL library.
- 2 Alter the somnode entries to ensure that libraries point to the new ZMF 8.1.4 library names.
- 3 Submit job XMLLOAD.
- 4 Examine the job output for problems:
 - a Examine the output of job step RECEIVE in SYSTSPRT.
 - b Examine the job's JESMSGLG to verify that job step LOAD completed with RC=00.
 - c Browse member XMLDATA in your SERCOMC CNTL library. Note the date and time in this line of text near the top of the data set:


```
SERNET XML Dsect Cross Reference. Created: dd mmm yyyy hh:mm:ss
```
 - d Browse the new MAPDATA file and look for the same text at the top of that file. The date and time should be the same as in the XMLDATA member.

Step 8: Update Sernet Keyword Options

Sernet keyword options are input to Sernet through one of these methods:

- In the PARM= parameter for program SERVER in the started procedure (SERVER member of the SERCOMC CNTL library).
- In the library at the DDname specified in keyword parameter DDNAME= in the PARM= parameter for program SERVER in the started procedure.

Sernet keyword options are described in an appendix of the *ChangeMan ZMF Installation Guide*.

Update Sernet keyword options as appropriate.

Step 9: Implement Changes for the DB2 Option

Several changes in ZMF 8.1.4 extend the facilities of the DB2[®] Option. These changes also impact DB2 Option facilities that existed before ZMF 8.1.4: New packages need to be bound; all existing packages need to be rebound. If you license the DB2 Option, see the *ChangeMan ZMF 8.1.4 DB2 Option Getting Started Guide* for details about these changes.

The Database Request Modules (DBRMs) that are delivered in the CMNZMF DBRM distribution library have been generated under DB2 version 10. Contact Micro Focus Customer Care if a DBRM is incompatible with the version of DB2 that you use.

Some of the administrative definitions for the DB2 Option have been moved to DB2 tables of their own. The DB2 subsystem where these tables reside must be specified as the first physical DB2 subsystem, with a blank site, in DB2 Option global administration. ZMF connects to this DB2 subsystem for these tables.

For example, in the following sample ZMF instance, these tables reside in DB2 subsystem D10J:

```

CMNGD250          DB2 Physical Subsystems - Part 1 of 2          Row 1 to 5 of 5
Command ===> _____ Scroll ===> CSR

      DB2
      subsys Site      DB2 System Load Library
-----
      D10J          _____ SYS2.DB21010.SDSNLOAD
      D10J          D001      SYS2.DB21010.SDSNLOAD
      D109          D001      SYS2.DSN710.SDSNLOAD
      D10G          D001      SYS2.DB2910.SDSNLOAD
      D206          D001      SYS2.DB2810.SDSNLOAD
***** Bottom of data *****

```

The steps that are required to enable the ZMF DB2 Option have been gathered together into three new sample members. You need to customize and execute the jobs in the following members of the CMNZMF CNTL distribution library, as appropriate.

CNTL Library Member	Description
DB2OPTN	Run this sample JCL on each local DB2 system that is connected to an ALL, D, or DP ZMF site. It shows all the steps required to define, to the local DB2 subsystem to which the ZMF started task connects, all of the objects required to make use of the ZMF DB2 option. These objects are:
	Step TABLES:
CMNx.CMNADMIN_NAMED CMNx.CMNADMIN_GENERAL CMNZMF.CMNDB2_ATTRIBS	Required. Required. The CMNx.CMNADMIN_NAMED and CMNx.CMNADMIN_GENERAL tables are required to store the DB2 logical subsystem template definitions and other admin values associated with SQL operations (which were stored in the Package Master in pre-8.1.4 releases). Optional. Used to exploit the management of DB2 versioning for native SQL stored procedures.
	Step BINDPKG:
CMNDB2SQ CMNDB2VB CMNDB2AD CMNDB2AT	Required. This package supports all of the DB2 object functions that existed pre-8.1.4 and continue to exist in 8.1.4 and later releases. Optional. Used to stage native SQL stored procedures directly from a DB2 catalog. Required. This package manages Select, Insert, Update, and Delete operations through admin specifications for template definitions and other SQL operations. These specifications were stored in the Package Master in pre-8.1.4 releases. They are stored in the CMNx.CMNADMIN_NAMED and CMNx.CMNADMIN_GENERAL tables in 8.1.4 and later releases. Optional. Used to exploit the management of DB2 versioning for native SQL stored procedures.
	Step BINDPLAN
	Step GRANT
	Required.

CNTL Library Member	Description																		
DB2OPTNC	<p>Run this sample JCL to convert DB2 admin values for SQL-based components (for example, user-defined functions, triggers, and stored procedures) from Package Master records to the DB2 CMNADMIN tables that are used in ZMF 8.1.4 and above.</p> <p>Run this job after you have run job DB2OPTN, which defines the tables. This job applies only to customers upgrading an existing system, not to fresh installs. In addition to other customizations that you need to make to the supplied JCL, you need to modify the JOBLIB statement of member DB2OPTNC as follows to avoid getting an S806 abend on the CONVERT job step:</p> <pre>//JOBLIB DD DISP=SHR,DSN=somnode.CMNZMF.LOAD // DD DISP=SHR,DSN=somnode.SERCOMC.LOAD // DD DISP=SHR,DSN=DSNvrn.SDSNEXIT // DD DISP=SHR,DSN=DSNvrn.SDSNLOAD</pre>																		
DB2OPTNR	<p>Run this sample JCL for each DB2 subsystem that is targeted for remote promote or P-site install. (P-sites have a ZMF started task associated with them; remote promote sites do not.)</p> <table border="1" data-bbox="560 804 1463 1346"> <thead> <tr> <th colspan="2" data-bbox="560 804 1463 846">Step TABLE:</th> </tr> </thead> <tbody> <tr> <td data-bbox="560 846 1018 951">CMNZMF.CMNDB2_ATTRIBS</td> <td data-bbox="1018 846 1463 951">Optional. Used to exploit management of DB2 versioning for native SQL stored procedures.</td> </tr> <tr> <th colspan="2" data-bbox="560 951 1463 993">Step BINDPKG:</th> </tr> <tr> <td data-bbox="560 993 1018 1119">CMNDB2SQ</td> <td data-bbox="1018 993 1463 1119">Required. Used to manage automatic binds against this remote DB2. This package supports all of the DB2 object functions.</td> </tr> <tr> <td data-bbox="560 1119 1018 1224">CMNDB2AT</td> <td data-bbox="1018 1119 1463 1224">Optional. Used to exploit management of DB2 versioning for native SQL stored procedures.</td> </tr> <tr> <th colspan="2" data-bbox="560 1224 1463 1308">Step BINDPLAN</th> </tr> <tr> <td data-bbox="560 1308 1018 1346"></td> <td data-bbox="1018 1308 1463 1346">Include only those packages that you have actually bound in the PKLIST.</td> </tr> <tr> <th colspan="2" data-bbox="560 1308 1463 1346">Step GRANT</th> </tr> <tr> <td data-bbox="560 1346 1018 1346"></td> <td data-bbox="1018 1346 1463 1346">Required.</td> </tr> </tbody> </table>	Step TABLE:		CMNZMF.CMNDB2_ATTRIBS	Optional. Used to exploit management of DB2 versioning for native SQL stored procedures.	Step BINDPKG:		CMNDB2SQ	Required. Used to manage automatic binds against this remote DB2. This package supports all of the DB2 object functions.	CMNDB2AT	Optional. Used to exploit management of DB2 versioning for native SQL stored procedures.	Step BINDPLAN			Include only those packages that you have actually bound in the PKLIST.	Step GRANT			Required.
Step TABLE:																			
CMNZMF.CMNDB2_ATTRIBS	Optional. Used to exploit management of DB2 versioning for native SQL stored procedures.																		
Step BINDPKG:																			
CMNDB2SQ	Required. Used to manage automatic binds against this remote DB2. This package supports all of the DB2 object functions.																		
CMNDB2AT	Optional. Used to exploit management of DB2 versioning for native SQL stored procedures.																		
Step BINDPLAN																			
	Include only those packages that you have actually bound in the PKLIST.																		
Step GRANT																			
	Required.																		



NOTE Only one instance of the CMNZMF.CMNDB2_ATTRIBS table can exist per physical DB2 subsystem. Multiple ZMF instances that use the same physical DB2 subsystem will share this table.

If you license the DB2 option, refer to the following publications for more information about DB2 Option tables and packages:

- *ChangeMan ZMF 8.1.4 DB2 Getting Started Guide*
- [Solution S141663](#) on the Micro Focus Customer Care Web site.

Step 10: Upgrade ERO

If you license the ChangeMan ZMF Enterprise Release Option (ERO), you must bind the packages and plans associated with ERO DB2 programs. Information about ERO components are provided in the *ChangeMan ZMF ERO Getting Started Guide*.

This table shows what sample JCL members in the CMNZMF.V8R1M3.CNTL library you must run to migrate any ZMF 7.1.x release to version 8.1.4.

Sample JCL Member	Run if you are converting from	Table	Change
AUDALTR2	V7.1.0 V7.1.1.x	CMNCLODOBJ	Add columns to area audit table to improve ERO audit auto resolve for object dependencies.
CIMALTR4	V7.1.0 V7.1.1.x	CMNRLSCIM	Add columns to release management table to improve detection of version regression (ERR0417).
CMNLDERT	V7.1.0 V7.1.1.x V7.1.2.x	CMNERRORTYPES	Add column TXT_ERROR_AUTO to area audit table to allow suppression of auto resolve for an error number.
CMNRPKSN	Any pre-8.1 release	n/a	Run member CMNRPKSN with input of RLS=* after all other upgrade activities are complete and your 8.1.4 task has been started. Failure to do so will result in the following message if you attempt to access a release package: CMR6504I - No information found for Package search request This utility creates a new Package Master record for each package in an ERO release. See "Step 18: Submit Job CMNRPKSN if You License ERO" on page 39 .
HSTALTR4	V7.1.0 V7.1.1.x	CMNRLSHST	Add columns to release management table to improve detection of version regression (ERR0417).

Follow these steps to expand ERO DB2 tables and bind the needed packages and plans:

- 1 Use existing pre-conversion housekeeping jobs or other JCL to back up ChangeMan ZMF 7.1.x ERO DB2 tables before you begin converting files to version 8.1.4. An image copy is recommended.
- 2 Copy the sample JCL members from the ZMF 8.1.4 vendor CMNZMF CNTL library to your custom CMNZMF CNTL library. Edit the sample JCL members in your custom library.
 - a Code your JOB statement at the top.

- b** Change each of the following to fit the DB2 subsystem where ERO tables reside and to match the DB2 version running on that subsystem:
 - *dsnvr*m.SDSNLOAD in the JOBLIB statement
 - SYSTEM(*ssss*), where *ssss* is the DB2 subsystem ID
 - PLAN(DSNTIA*vr*) for utility DSNTIAD
 - DSN*vr*m.RUNLIB.LOAD
 - SET CURRENT SQLID = '*auth-id*', where *auth-id* is a user ID that has been granted sufficient authority to execute the DB2 commands in this job.
 - CMN*x*, where *x* is the one-character subsystem ID that identifies the ChangeMan ZMF instance where the ERO option runs. For example, change CMN*x* to CMN5 for the ZMF instance with subsystem ID of 5.
- 3** Submit the first two jobs in the following order:
 - a** AUDALTR2
 - b** CIMALTR4
- 4** When each job completes, examine the job output for problems.
- 5** Submit job HSTALTR4.
When the job completes, examine the job output for problems.
- 6** Submit job CMNLDERT.
When the job completes, examine the job output for problems.
- 7** Follow the instructions in topic "Bind ERO DBRM" in the *ChangeMan ZMF ERO Getting Started Guide* to bind the SQL in programs CMNDB2RQ, CMNRARTM, CMNRARPT, and CMNRA905 into DB2 packages. Those instructions explain how to customize and execute sample JCL members in the version 8.1.4 CMNZMF.CNTL library.

All ChangeMan ZMF DB2 programs are precompiled with VERSION(AUTO) so you can bind SQL before you actually install the load module for the new version of the program.
- 8** When all jobs have executed successfully, take an image copy of the expanded ERO DB2 tables.

Step 11: Customize SERLCSEC

Follow these steps:

- 1** Compare the version of SERLCSEC that is distributed in the ZMF 8.1.4 SERCOMC ASMSRC library with your current version of SERLCSEC.
- 2** Copy the SERLCSEC that is distributed in the ZMF 8.1.4 SERCOMC ASMSRC library to your new 8.1.4 customized source library.
- 3** Edit the copy of SERLCSEC in your customized source library as appropriate, and reassemble the program.

Step 12: Customize Other Version 8.1.4 Components

Find and analyze the components that you customized in the ChangeMan ZMF 7.1.x version that you are upgrading, and decide whether to bring those modifications forward into version 8.1.4. You may decide that some of your modifications are not appropriate for version 8.1.4 because:

- ChangeMan ZMF 8.1.4 includes functions that can replace your custom code.
- Your company does not need the custom function anymore.
- Your custom code may not work with revised functions in version 8.1.4.

If your custom code will not work with revised functions in version 8.1.4, consult with Micro Focus Customer Care if you want to explore alternatives.

When you analyze the modifications in the version from which you are upgrading and apply customization to version 8.1.4, follow these recommendations:

- Before you begin, review ["Strategies to Reduce Risk" on page 13](#).
- Verify each change to be sure you do not mistake customized code for changes that Serena made between versions.
- Thoroughly test customized components on a test ChangeMan ZMF 8.1.4 instance.

General Procedures For Reapplying Customization

Follow these steps to update your custom libraries:

- 1 Allocate a new set of the desired custom libraries. Copy any custom components that are all original code into your new custom libraries.
- 2 If you use the ChangeMan ZMF M+R Option:
 - a On the Versions (SERCDFCM) panel, define your base and derivative libraries as follows:
 - Base:** Vendor library for old version
 - Drv1:** Custom library for old version
 - Drv2:** Vendor library for new version
 - b On the Consolidation Workplace panel, reconcile your old customization with the new version 8.1.4 components.
 - c When you have reconciled all of your customizations, export reconciled components to your new custom library.

For abbreviated instructions for installing and using the M+R Option, see [Appendix A, "ChangeMan® M+R Option Quick Start" on page 55](#).

- 3 If you do not use the ChangeMan ZMF M+R Option:
 - a Determine what components are changed in version 8.1.4 by comparing vendor libraries in the version 7.1.x release that you are upgrading with the components in the corresponding version 8.1.4 distribution libraries.
 - b Find components in your custom libraries that are changed in version 8.1.4.
 - c Determine whether your modifications will be valid in version 8.1.4.

- d** Copy the desired version 8.1.4 components from the vendor distribution libraries to a new custom library and reapply your modifications.
- 4** Assemble any custom source members into your custom load library.

Panel Changes

Starting with ChangeMan ZMF 8.1, you can code and invoke exit processing routines in REXX and in any Language Environment (LE)-compliant programming language, such as COBOL and PL/I. Any client that can connect to ZMF, such as ChangeMan ZDD or ChangeMan ZMF for Eclipse, can call these user-written exits. The same, customer-supplied, exit code will be executed regardless of the client that is being used.

If an appropriate high-level language exit point is available, custom processing currently being executed through ISPF modification (for example, the addition of ISPF panel exits) can be moved to the high-level language exit. In turn, this will simplify upgrading to new ChangeMan ZMF releases in the future.

ChangeMan ZMF 8.1.4 provides exit processing routines for the following ZMF functions:

- Build (including Stage, Recompile, and Relink)
- Package Create
- Package Update
- File Tailoring
- Checkout
- Promote/Demote
- Audit
- Freeze
- Approve/Reject
- Revert

Refer to the *ChangeMan ZMF High Level Language Functional Exits Getting Started Guide* for details.

Most ZMF panels have been changed in version 8.1 and later in the effort to make all ZMF panels follow the IBM guidelines for Common User Access (CUA). CUA guidelines were only partially implemented in the panels of previous ZMF releases.

Exit Changes

Exit changes can result from changes to:

- Exit copybooks
- Exit program source

Follow these steps:

- 1** Compare the exit copybook and program source modules that are distributed in the ZMF 8.1.4 CMNZMF ASMCPY and CMNZMF ASMSRC libraries respectively.
- 2** Copy the needed exits to your customized ZMF 8.1.4 source library.

- 3 Edit the exit modules in your customized ZMF 8.1.4 source library as appropriate, and reassemble them.

Step 13: Replace *somnode* with Variables

The CMN\$\$DSN member of the CMNZMF SKELS library defines and initializes the data set names for system libraries, Sernet and ChangeMan JOBLIBs and STEPLIBs, and 3rd-party product data sets.

It replaces the *somnode* high-level qualifier definitions, which were embedded in skeletons in previous releases, with variables.

Customize the variable definitions in CMN\$\$DSN to reflect the data set naming conventions used in your installation.

Step 14: Implement RACF PassTicket Support in Sernet

Background

In ChangeMan ZMF 8.1, RACF[®] PassTickets were implemented for mainframe clients connecting through TCP/IP.

The actions detailed below are required for customers that have mainframe users or batch jobs that:

- 1 Connect to ZMF from LPARs other than the one that hosts the Server started task (that is, those connections that use the ChangeMan ZMF Load Balancing Option (LBO)).
- 2 Explicitly request TCP/IP connection. For example:
 - a Those customers specifying CON(T) in their connection REXX or CLIST.
 - b Those customers specifying <method>T</method> in XML Service requests.
 - c Those customers using the 'CONNECT=T' JCL parameter (for example, on program CMNVSVC execution).



NOTE TCP/IP connections will also be attempted if an XMS (Cross Memory Services) connection attempt fails.

Some connection mechanisms (for example, SERXMLRC) default to TCP/IP.

Serena recommends that you enable PassTicket Support even if you are not explicitly requesting TCP/IP connections.

Required RACF Administration

To enable RACF PassTickets, customers must:

- 1 Activate the PTKTDATA class by entering:

```
SETROPTS CLASSACT(PTKTDATA) RACLIST(PTKTDATA)
```

- 2 Refresh the PTKTDATA class by entering:

```
SETROPTS RACLIST (PTKTDATA) REFRESH
```

- 3 Create a profile in the PTKTDATA class by entering:

```
RDEFINE PTKTDATA SERNET SSIGNON(user_must_choose) APPLDATA('NO REPLAY PROTECTION')
```

The value SERNET in the above RDEFINE command is mandatory and should not be altered. The SSIGNON specification value is a 64-bit Data Encryption Standard (DES) key that must be uniquely assigned by each customer. Refer to the *RACF Command Language Reference* manual for details.

The PassTicket support information given here is for RACF customers. If you use CA ACF2™ or CA Top Secret®, check the appropriate ACF2 or Top Secret documentation for instructions on implementing PassTicket support. Use the provided RACF instructions as a guide.

Role of the SERSET Utility

Support for PassTickets in Sernet is provided through the execution of the SERSET utility.

Each time the ChangeMan ZMF started task is brought up, the SERSET utility is invoked during the initialization process. This addresses the case where clients connect to a started task running on the same LPAR.

However, the SERSET utility can also be executed as a batch utility, provided in the SERSET member of the SERCOMC CNTL distribution library. If users are signing on to the started task from other LPARs, you need to run the SERSET batch job on all of these other LPARs to provide support for the PassTickets.

The SERSET utility *must* be executed on all LPARs hosting ChangeMan ZMF users or batch jobs before TCP/IP connection will be possible.

PassTicket Generation

Sernet generates PassTickets when SERCLIEN calls SERXPTIK. The generation process requires authorization (key zero), so SERXPTIK executes as a PC routine to obtain authorization (that is, supervisor state). The sole purpose of the SERSET utility is to implement this routine.

SERCLIEN only needs to know the PC number associated with SERXPTIK to generate a PassTicket. To find this number, SERCLIEN retrieves two system-level tokens, as follows:

Token	Description
SerNet.PTickTok	Contains the SerNet.PTickX value.
SerNet.PTickX	Contains the PC number. Note: The X in this token name corresponds directly to the TOKEN= value established when SERSET runs.

Failures in Passticket Generation

SERXPTIK calls the routine anchored in field RCVTPTGN of the RACF CVT. Errors will be returned to the caller of SERCLIEN, as follows:

```
SER6035E Passticket generation failed, RCVTPTGN RC=nnnn
```

RCVTPTGN and its accompanying return codes are documented in the section titled "Using the service to generate a passticket" in the *RACF Macros and Interfaces* manual.

For more information about Passticket support in Sernet, refer to the *ChangeMan ZMF Installation Guide*.

Step 15: Synchronize Impact Analysis Data

If you change any library type definitions or baseline library definitions while migrating to version 8.1.4, you must synchronize your impact analysis data with your current package and component information. It is recommended that this is done during the migration process even if you don't change these definitions.

Synchronizing impact analysis data is a two step process:

- 1 Execute impact analysis data extract.
- 2 Load data to the impact analysis LDS.

See topic "Generating and Updating Impact Analysis Data" in the *ChangeMan ZMF Administrator's Guide* for instructions.

Step 16: Customize User Exit SEREX006

A customized Sernet user exit, SEREX006, is **required** in ZMF 8.1.4 and later releases. A sample version of the user exit is provided as member SEREX006 of the SERCOMC ASMSRC distribution library.

Its job is to provide the necessary parameters for Sernet to perform dynamic allocation of user-specific log data sets. Sernet started tasks will abend with code S806-4 if the SEREX006 user exit is missing or with code U0044 if the SEREX006 user exit does not provide all required information.

Note that the Sernet started tasks will need ALTER access (in RACF) to the high-level-qualifier specified.

Step 17: Perform Post-Migration Checks

Perform some checks such as the following after you bring up your migrated ChangeMan ZMF 8.1.4 instance:

- Check for messages such as the following in your task output to ensure the release numbers reflect ZMF 8.1.4:

```
2017/07/16 19:26:26.09 CMN6308I CMNSTART ZMF version: 8.1.4
```

```
...
```

```
2017/07/16 19:26:27.13 SER6414I SERXMLDB Header: SERNET XML Dsect  
Cross Reference. Created: 16 Jun 2017
```

```
2017/07/16 19:26:27.13 SER6415I SERXMLDB Version: 814
```

- Check for obsolete start-up keywords in the task output, such as:

```
SER0804W Obsolete parameter ignored: ECLIPSE
```

Step 18: Submit Job CMNRPKSN if You License ERO

Customize and submit the job in member CMNRPKSN of the CMNZMF CNTL library with input of RLS=* after all other upgrade activities are complete and your 8.1.4 task has been started. Failure to do so will result in the following message if you attempt to access a release package:

```
CMR6504I - No information found for Package search request
```

This utility creates a new Package Master record for each package in an ERO release.

Chapter 3

Converting ChangeMan ZMF 8.1.x Instances to Version 8.1.4

This chapter provides detailed information about the tasks you need to perform to convert ChangeMan instances to version 8.1.4.

Read the assumptions, constraints, and strategies in [Chapter 3, "Converting ChangeMan ZMF 8.1.x Instances to Version 8.1.4" on page 41](#) before you start work on the tasks in this chapter. Have a comprehensive migration plan in place before you execute conversion tasks.

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Conversion Task Dependencies

The steps that you execute in this chapter and the specific actions within each step may depend on the level of the last ChangeMan ZMF maintenance release, patch release, or hotfix that you applied to your system.

- Read the instructions in each step carefully to determine if a specific action applies to you.
- In some steps, such as bringing customization forward and upgrading housekeeping jobs, assess the scope of the action you must take by comparing the vendor libraries at your current release level to the vendor libraries for ChangeMan ZMF 8.1.4.

If you have questions about whether a step or action applies to you, contact Micro Focus Customer Care.

Step 1: Apply ChangeMan ZMF License

If you license the ZMF Client Pack, you may need to obtain a new license key to install ZMF 8.1.4. The new license key provides a number for the ZMF Client Pack that identifies the ChangeMan ZDD and ChangeMan ZMF for ECL products as a single product. If your license file does not contain a member called LIC00213, you need to request a new license key.

The *SER10TY User's Guide* provides instructions for applying those licenses.

Step 2: Build JCL INCLUDEs for JOBLIBs and STEPLIBs

You may have a number of jobs already generated (for example, for frozen packages awaiting install) that need to run successfully once you have completed your conversion from version 8.1.x to version 8.1.4. If these jobs reference skeletons (such as CMN\$\$JBL) that have hardcoded JOBLIB/STEPLIB concatenations pointing back to version 8.1.x software, they may fail when they run against the upgraded version 8.1.4 instance.

One way to avoid this failure is to keep the same execution library names and replace the contents with the version 8.1.4 software.

However, it is safer (and recommended) to keep different versions of ZMF software in different named libraries.

This can also be implemented by the use of aliases for the datasets involved.

A method for addressing this situation by the use of INCLUDE JCL members follows:

- 1 Ensure you have separate execution libraries for the two different releases of ZMF.
- 2 Set up two JCL members to be INCLUDED into CMN\$\$JBL for each ZMF instance: one for JOBLIB and one for STEPLIB. Prior to any conversion these members will contain version 8.1.x execution libraries.
- 3 Modify skeleton CMN\$\$JBL to reference these INCLUDE members based on the subsystem ID of the ZMF for which the job is being generated.

- 4 Make the modified CMN\$\$JBL skeleton live in your ZMF instance(s).



NOTE You have to take these steps well in advance of any conversion so that all frozen package jobs will be using the modified CMN\$\$JBL at the time of the conversion to version 8.1.4.

- 5 As part of the upgrade process for each ZMF instance, update the relevant INCLUDE member so that the JOBLIB and STEPLIBs point to version 8.1.4 execution libraries.

Step 3: Update Started Procedures and Log-on CLIST

This section tells you how to modify the started procedures and log-on CLIST for the version from which you are migrating for use with version 8.1.4. You can compare the following members between the libraries of the version from which you are migrating and ZMF 8.1.4 libraries to see what is changed.

- **SERVER** in the SERCOMC.CNTL library
- **STARTJCL** in the CMNZMF.CNTL library
- **CMNADSP** in the CMNZMF.CNTL library
- **CMN** in the CMNZMF.CLIST library



IMPORTANT! When you create a new DD statement or add a file or library, change the placeholder *somnode* for the high-level qualifier in the examples shown here to make the library or data set name fit the naming conventions that you use for ChangeMan ZMF.

Started Procedure for ALL, DP, and D Instances

Follow these steps to create a started task procedure for ChangeMan ZMF 8.1.4:

- 1 In the custom CNTL library that you create for version 8.1.4, append the JCL in member STARTJCL of the CMNZMF CNTL distribution library to the JCL in member SERVER of the SERCOMC CNTL distribution library. You must do this to enable ChangeMan ZMF to run under the Serena Network (Sernet).
- 2 Follow the comments in the JCL to customize the started task JCL for version 8.1.4 as appropriate for your installation standards. You can use the customizations that your made to the started task JCL for the 8.1.x version that you are upgrading as a guide. However, some of the customizations that you made for version 8.1.x may no longer be appropriate for version 8.1.4.
- 3 Serena recommends that you make the SYSMDUMP data set a GDG as in the supplied SERVER example to prevent diagnostic information from being overwritten when the Sernet instance is restarted after an abend.
- 4 If not already present, create a GDG base for the dump capture data set name in the SYSMDUMP DD statement.
- 5 Copy the customized procedure to the appropriate system PROCLIB library for testing.

Started Procedure for P-Site Instances

Follow similar steps to create the Sernet/ChangeMan ZMF started procedure for the 8.1.x P-site instances that you are upgrading to run version 8.1.4.

File Tailoring Procedures - CMNADSP

The started procedures defined on panel Global Parameters - Part 2 of 8 (CMNNGGP02) are based on JCL sample CMNADSP in the CMNZMF.CNTL library.

Follow similar steps to create your 8.1.4 file tailoring started procedures.

Log-on CLIST

Follow these steps to create the log-on CLIST for ChangeMan ZMF 8.1.4 instance:

- 1 Copy the log-on CLIST CMN from the vendor CMNZMF CLIST library to your custom version 8.1.4 CMNZMF CLIST library.
- 2 In the ALTLIB statement, ensure the *somnode* values are pointing to your new 8.1.4 libraries, retain the custom libraries in the order they are in.
- 3 In the LIBDEF statements, ensure the *somnode* values are pointing to your new 8.1.4 libraries, retain the custom libraries in the order they are in.

You will allocate and populate the TABLES (ISPTLIB) libraries later in this chapter.

- 4 Copy the updated CLIST to the CLIST library that is allocated to //SYSPROC in your ZMF users' TSO log-on procedure for testing.

Step 4: Back Up Version 8.1.x Files

Use your existing preconversion housekeeping jobs or other JCL to back up ChangeMan ZMF files and clear log files for the 8.1.x release that you are migrating before you begin converting files for version 8.1.4.



NOTE ZMF 7.1.3 and later P instances do not use Component Master or impact analysis data. Start-up processing for Component Master and impact analysis files is suppressed, eliminating warning and information messages about these files.

The following table lists the files you should back up. To accomplish this task use the sample JCL members in the vendor CMNZMF CNTL library that was distributed with the ZMF 8.1.x instance that you are migrating.

Last DSN Node of the File To Be Backed Up	Description	Type	Vendor CMNZMF.CNTL Job of Your Existing, Preconversion Instance
CMNPMAS CMNCMPNL CMNCMPNT CMNSVSM CMNSVOM CMNSVDM CMNSVAM	Package Master Long-Name Component Master Short-Name Component Master Staging Versions Site Master Staging Versions Object Master Staging Versions Delta Master Staging Versions Archive Master See Note 1.	VSAM	BACKUP See Note 2
CMNRECV	Package Master, Short-Name Component Master, and Long-Name Component Master Forward Recovery File	VSAM	CLEARRCV See Note 1
CMNLOG	Activity Log	VSAM	CLEARLOG
CMNDELAY	Delay file	VSAM	See Note 3
IADSP	Impact Analysis	LDS	LDSBKUP
IALOG	Impact Analysis Forward Recovery Log	QSAM	LDSLOGR
CMNSVSM	Staging Versions Site Master	VSAM	SVBKUP See Note 4
CMNSVOM	Staging Versions Object Master	VSAM	SVBKUP See Note 4
CMNSVDM	Staging Versions Delta Master	VSAM	SVBKUP See Note 4
CMNSVAM	Staging Versions Archive Master	VSAM	SVBKUP See Note 4

Note 1: Please read the comments in the supplied sample JCL members.

Note 2: The BACKUP sample job will do the files listed, and optionally has a step to take an image copy of SQL Process Admin tables if so desired.

Note 3: There is no sample job for backing up the CMNDELAY file. Use IDCAMS with output QSAM file attributes RECFM=VB, LRECL=5000, BLKSIZE=32700.

Note 4: These jobs do the same work as the second step of the BACKUP job. You may use either.

Step 5: Convert Package Master and Create a New Forward Recovery File

The format of the Package Master changed in ZMF 8.1.2 and remains the same format in 8.1.4. Read the CMNZMF CNTL distribution library member \$\$\$INDEX for a short description of all sample JCL.

Customize and execute the following jobs from the CMNZMF CNTL distribution library, as appropriate, to convert the Component and Package Master to a format that ZMF 8.1.4 can use and create a new forward recovery file for ZMF 8.1.4. There are steps to do the various conversions from version to version. See the comments in the supplied sample JCL:

Job Name	Description
ZMF 8.1.1 or 8.1.1.01 to ZMF 8.1.4	
CMVCONVB	For non P-sites. Run the job in member CMVCONVB to convert the ZMF 8.1.1.x Package and Component Master files for ALL-, D-, and DP-sites to a format that supports ZMF 8.1.4.
CMVCONPB	For P-sites. Run the job in member CMVCONPB to convert the ZMF 8.1.1.x Package Master file for a P-site to a format that supports ZMF 8.1.4.
ZMF 8.1 to ZMF 8.1.4	
CMVCONVA	For non P-sites. This job converts the ZMF pre 8.1.2 package and component master files to a format that can be used to support v8.1.4. ChangeMan ZMF 8.1.2 and 8.1.3 have the same format as 8.1.4 so this does not need to be run in that case.
CMVCONP9	For P-sites. This job converts the ZMF pre 8.1.2 package master file to a format that can be used to support v8.1.4. ChangeMan ZMF 8.1.2 and 8.1.3 have the same format as 8.1.4 so this does not need to be run in that case.

Step 6: Reload XMLSPACE VSAM LDS

The contents of sequential file MAPDATA and VSAM LDS XMLSPACE have changed in ChangeMan ZMF 8.1.4. Follow these steps to define and populate the MAPDATA sequential file and the XMLSPACE VSAM LDS:

- 1 Copy member XMLLOAD from the SERCOMC CNTL distribution library to your ZMF 8.1.4 custom SERCOMC CNTL library. Edit XMLLOAD in your ZMF 8.1.4 custom SERCOMC CNTL library.
- 2 Replace ZMF 8.1.* library names with ZMF 8.1.4 library names.
- 3 Submit job XMLLOAD.
- 4 Examine the job output for problems:
 - a Examine the output of job step RECEIVE in SYSTSPRT.
 - b Examine the job's JESMSG LG to verify that job step LOAD completed with RC=00.
 - c Browse member XMLDATA in your SERCOMC CNTL library. Note the date and time in this line of text near the top of the data set:


```
SERNET XML Dsect Cross Reference. Created: dd mmm yyyy hh:mm:ss
```
 - d Browse the new MAPDATA file and look for the same text at the top of that file. The date and time should be the same as in the XMLDATA member.

Step 7: Update Sernet Keyword Options

Sernet keyword options are input to Sernet through one of these methods:

- In the PARM= parameter for program SERVER in the started procedure (SERVER member of the SERCOMC CNTL library).
- In the library at the DDname specified in keyword parameter DDNAME= in the PARM= parameter for program SERVER in the started procedure.

Sernet keyword options are described in an appendix of the *ChangeMan ZMF Installation Guide*.

Update Sernet keyword options as appropriate.

Step 8: Implement Changes for the DB2 Option

If you license the DB2® Option, then there are a number of changes (at ZMF 8.1.1) which are aimed at extending the facilities of that option which impact on existing facilities (see the DB2 option GSG for details). New packages need to be bound; all existing packages have been changed and so must be rebound. The Database Request Modules (DBRMs) that are delivered in the CMNZMF DBRM distribution library have been generated under DB2 version 10. Contact Micro Focus Customer Care if a DBRM is incompatible with the version of DB2 that you use.

Some of the admin definitions for the DB2 option have been moved to DB2 tables of their own. The DB2 subsystem in which they reside must be specified as the first physical DB2 subsystem, with a blank site, in DB2 option global admin. This is the DB2 subsystem which ZMF will connect to for these tables. In the following ZMF instance these tables reside in D10J.

```

Command ==>          DB2 Physical Subsystems - Part 1 of 2   Row 1 to 5 of 5
                   Scroll ==> CSR

```

DB2		
subsys	Site	DB2 System Load Library
D10J		SYS2.DB21010.SDSNLOAD
D10J	D001	SYS2.DB21010.SDSNLOAD
D109	D001	SYS2.DSN710.SDSNLOAD
D10G	D001	SYS2.DB2910.SDSNLOAD
D206	D001	SYS2.DB2810.SDSNLOAD

The Database Request Modules (DBRMs) that are delivered in the CMNZMF.V8R1M4.DBRM distribution library have been generated under DB2 version 10. Contact Micro Focus Customer Care if a DBRM is incompatible with the version of DB2 that you use. Note you must be on a supported version of DB2.

The steps that are required to enable the ZMF DB2 option have been gathered together into three sample members. You need to customize and execute the jobs in the following members of the CMNZMF CNTL distribution library, as appropriate:

CNTL Library Member	Description								
DB2OPTN	<p>This sample JCL can be run on each local DB2 system that is connected to an ALL, D, or DP ZMF site. Note that it will DROP the database first so anything existing will be removed. It shows the steps required to define, to the local DB2 subsystem to which the ZMF started task connects, all of the objects required to make use of the ZMF DB2 option. These objects are:</p> <ul style="list-style-type: none"> ■ Step TABLES: <table border="1" data-bbox="560 562 1465 1003"> <tr> <td data-bbox="560 562 1018 604">CMNx.CMNADMIN_NAMED</td> <td data-bbox="1018 562 1465 604">Required.</td> </tr> <tr> <td data-bbox="560 604 1018 898">CMNx.CMNADMIN_GENERAL</td> <td data-bbox="1018 604 1465 898">Required. The CMNx.CMNADMIN_NAMED and CMNx.CMNADMIN_GENERAL tables are required to store the DB2 logical subsystem template definitions and other admin values associated with SQL operations (which were stored in the Package Master in pre-8.1.4 releases).</td> </tr> <tr> <td data-bbox="560 898 1018 1003">CMNZMF.CMNDB2_ATTRIBS</td> <td data-bbox="1018 898 1465 1003">Optional, used to exploit the management of DB2 versioning for native SQL stored procedures.</td> </tr> </table> 	CMNx.CMNADMIN_NAMED	Required.	CMNx.CMNADMIN_GENERAL	Required. The CMNx.CMNADMIN_NAMED and CMNx.CMNADMIN_GENERAL tables are required to store the DB2 logical subsystem template definitions and other admin values associated with SQL operations (which were stored in the Package Master in pre-8.1.4 releases).	CMNZMF.CMNDB2_ATTRIBS	Optional, used to exploit the management of DB2 versioning for native SQL stored procedures.		
CMNx.CMNADMIN_NAMED	Required.								
CMNx.CMNADMIN_GENERAL	Required. The CMNx.CMNADMIN_NAMED and CMNx.CMNADMIN_GENERAL tables are required to store the DB2 logical subsystem template definitions and other admin values associated with SQL operations (which were stored in the Package Master in pre-8.1.4 releases).								
CMNZMF.CMNDB2_ATTRIBS	Optional, used to exploit the management of DB2 versioning for native SQL stored procedures.								
	<ul style="list-style-type: none"> ■ Step BINDPKG: 								
	<table border="1" data-bbox="560 1052 1465 1808"> <tr> <td data-bbox="560 1052 1018 1178">CMNDB2SQ</td> <td data-bbox="1018 1052 1465 1178">Required. This package supports all of the DB2 object functions that existed pre-8.1.4 and continue to exist in 8.1.4 and later releases.</td> </tr> <tr> <td data-bbox="560 1178 1018 1283">CMNDB2VB</td> <td data-bbox="1018 1178 1465 1283">Optional, used to stage native SQL stored procedures directly from a DB2 catalog.</td> </tr> <tr> <td data-bbox="560 1283 1018 1682">CMNDB2AD</td> <td data-bbox="1018 1283 1465 1682">Required. This package manages Select, Insert, Update, and Delete operations through admin specifications for template definitions and other SQL operations. These specifications were stored in the Package Master in pre-8.1.4 releases. They are stored in the CMNx.CMNADMIN_NAMED and CMNx.CMNADMIN_GENERAL tables in 8.1.4 and later releases.</td> </tr> <tr> <td data-bbox="560 1682 1018 1808">CMNDB2AT</td> <td data-bbox="1018 1682 1465 1808">Optional, used to exploit the management of DB2 versioning for native SQL stored procedures.</td> </tr> </table>	CMNDB2SQ	Required. This package supports all of the DB2 object functions that existed pre-8.1.4 and continue to exist in 8.1.4 and later releases.	CMNDB2VB	Optional, used to stage native SQL stored procedures directly from a DB2 catalog.	CMNDB2AD	Required. This package manages Select, Insert, Update, and Delete operations through admin specifications for template definitions and other SQL operations. These specifications were stored in the Package Master in pre-8.1.4 releases. They are stored in the CMNx.CMNADMIN_NAMED and CMNx.CMNADMIN_GENERAL tables in 8.1.4 and later releases.	CMNDB2AT	Optional, used to exploit the management of DB2 versioning for native SQL stored procedures.
CMNDB2SQ	Required. This package supports all of the DB2 object functions that existed pre-8.1.4 and continue to exist in 8.1.4 and later releases.								
CMNDB2VB	Optional, used to stage native SQL stored procedures directly from a DB2 catalog.								
CMNDB2AD	Required. This package manages Select, Insert, Update, and Delete operations through admin specifications for template definitions and other SQL operations. These specifications were stored in the Package Master in pre-8.1.4 releases. They are stored in the CMNx.CMNADMIN_NAMED and CMNx.CMNADMIN_GENERAL tables in 8.1.4 and later releases.								
CMNDB2AT	Optional, used to exploit the management of DB2 versioning for native SQL stored procedures.								
	<ul style="list-style-type: none"> ■ Step BINDPLAN <p>Include only those packages that you have actually bound in the PKLIST.</p>								

CNTL Library Member	Description
	<ul style="list-style-type: none"> ■ Step GRANT Required.
DB2OPTNC	<p>Converts admin values which relate to DB2 admin for SQL based components from pmast records to the DB2 tables used in ZMF 8.1.1 and above. Run this sample JCL to convert DB2 admin values for SQL-based components (for example, user-defined functions, triggers, and stored procedures) from Package Master records to the DB2 CMNADMIN tables that are used in ZMF 8.1.1 and above.</p> <p>Run this job after you have run job DB2OPTN, which defines the tables. <i>This job applies only to customers upgrading an existing system, not to fresh installs.</i></p> <p>In addition to other customizations that you need to make to the supplied JCL, you need to modify the JOBLIB statement of member DB2OPTNC as follows to avoid getting an S806 abend on the CONVERT job step:</p> <pre>//JOBLIB DD DISP=SHR,DSN=somnode.CMNZMF.LOAD // DD DISP=SHR,DSN=somnode.SERCOMC.LOAD // DD DISP=SHR,DSN=DSNvrm.SDSNEXIT // DD DISP=SHR,DSN=DSNvrm.SDSNLOAD</pre>
DB2OPTNR	<p>Run this sample JCL for each DB2 subsystem that is targeted for remote promote or P-site install. (P-sites have a ZMF started task associated with them; remote promote sites do not.) Note that it will DROP the database first so anything existing will be removed.</p> <ul style="list-style-type: none"> ■ Step TABLE: <ul style="list-style-type: none"> CMNZMF.CMNDB2_ATTRIBS Optional, used to exploit management of DB2 versioning for native SQL stored procedures. ■ Step BINDPKG: <ul style="list-style-type: none"> CMNDB2SQ Required. Used to manage automatic binds against this remote DB2. This package supports all of the DB2 object functions that existed pre-8.1.4 and continue to exist in 8.1.4 and later releases. CMNDB2AT Optional, used to exploit management of DB2 versioning for native SQL stored procedures. ■ Step BINDPLAN Include only those packages that you have actually bound in the PKLIST. ■ Step GRANT Required.



NOTE Only one instance of the CMNZMF.CMNDB2_ATTRIBS table can exist per physical DB2 subsystem. Multiple ZMF instances that use the same physical DB2 subsystem will share this table.

If you license the DB2 option, refer to the following publications for more information about DB2 Option tables and packages:

- *ChangeMan ZMF 8.1.4 DB2 Getting Started Guide*
- [Solution S141663](#) on the Micro Focus Customer Care Web site.

Step 9: Upgrade ERO

If you license the ChangeMan ZMF Enterprise Release Option (ERO), you must bind the packages and plans associated with ERO DB2 programs. Information about ERO components are provided in the *ChangeMan ZMF ERO Getting Started Guide*.

- 1 Use existing pre-conversion housekeeping jobs or other JCL to back up ChangeMan ZMF 8.1.x ERO DB2 tables before you begin converting files to version 8.1.4. An image copy is recommended.
- 2 Follow the instructions in topic "Bind ERO DBRM" in the *ChangeMan ZMF ERO Getting Started Guide* to bind the SQL in programs CMNDB2RQ, CMNRARTM, CMNRARPT, and CMNRA905 into DB2 packages. Those instructions explain how to customize and execute sample JCL members in the CMNZMF CNTL library.

All ChangeMan ZMF DB2 programs are precompiled with VERSION(AUTO) so you can bind SQL before you actually install the load module for the new version of the program.

- 3 When all jobs have executed successfully, take an image copy of the expanded ERO DB2 tables.
- 4 ERO customers who are upgrading to a ZMF 8.1.4 release from a pre-8.1.x release need to run member CMNZMF.V8R1M4.CNTL(CMNRPKSN) with input of RLS=* after all other upgrade activities are complete and your 8.1.4 task has been started. Failure to do so will result in the following message if you attempt to access a release package:

CMR6504I - No information found for Package search request

This utility creates a new Package Master record for each package in an ERO release.

- 5 ERO sites must run the job in member CIMALTR5 of the CMNZMF.V8R1M4.CNTL distribution library to avoid having to recycle ChangeMan ZMF during the Autumn time change. See "You No Longer Need To Recycle ZMF During the Autumn Time Change" on page 7 of the latest Readme."
- 6 If you have questions about whether a step or action applies to you, contact Micro Focus Customer Care.

Step 10: Customize SERLCSEC

Follow these steps:

- 1 Compare the version of SERLCSEC that is distributed in the ZMF 8.1.4 SERCOMC ASMSRC library with your current version of SERLCSEC.

- 2 Copy the SERLCSEC that is distributed in the ZMF 8.1.4 SERCOMC ASMSRC library to your customized source library.
- 3 Edit the copy of SERLCSEC in your customized source library as appropriate, and reassemble the program.

Step 11: Customize Other Version 8.1.4 Components

Find and analyze the components that you customized in the ChangeMan ZMF version that you are upgrading, and decide whether to bring those modifications forward into version 8.1.4. You may decide that some of your modifications are not appropriate for version 8.1.4 because:

- ChangeMan ZMF 8.1.4 includes functions that can replace your custom code.
- Your company does not need the custom function anymore.
- Your custom code may not work with revised functions in version 8.1.4.

If your custom code will not work with revised functions in version 8.1.4, consult with Micro Focus Customer Care if you want to explore alternatives.

When you analyze the modifications in the ZMF version that you are upgrading and apply customizations for version 8.1.4, follow these recommendations:

- Before you begin, review ["Strategies to Reduce Risk" on page 13](#).
- Verify each change to be sure you do not mistake customized code for changes that Serena made between versions.
- Thoroughly test customized components on a test ChangeMan ZMF 8.1.4 instance.

General Procedures For Reapplying Customization

Follow these steps to update your custom libraries:

- 1 Allocate a new set of the desired custom libraries. Copy any custom components that are all original code into your new custom libraries.
- 2 If you use the ChangeMan ZMF M+R Option:
 - a On the Versions (SERCDFCM) panel, define your base and derivative libraries as follows:
 - Base:** Vendor library for old version
 - Drv1:** Custom library for old version
 - Drv2:** Vendor library for new version
 - b On the Consolidation Workplace panel, reconcile your old customization with the new version 8.1.4 components.
 - c When you have reconciled all of your customizations, export reconciled components to your new custom library.

For abbreviated instructions for installing and using the M+R Option, see [Appendix A, "ChangeMan® M+R Option Quick Start" on page 55](#).

- 3 If you do not use the ChangeMan ZMF M+R Option:
 - a Determine the components that have changed in version 8.1.4 by comparing vendor libraries in the release that you are upgrading with the components in the corresponding version 8.1.4 distribution libraries.
 - b Find components in your custom libraries that are changed in version 8.1.4.
 - c Determine whether your modifications will be valid in version 8.1.4.
 - d Copy the desired version 8.1.4 components to a new custom library and reapply your modifications.
- 4 Assemble any custom source members into your custom load library.

Panel Changes

Starting with ChangeMan ZMF 8.1, you can code and invoke exit processing routines in REXX and in any Language Environment (LE)-compliant programming language, such as COBOL and PL/I. Any client that can connect to ZMF, such as ChangeMan ZDD or ChangeMan ZMF for Eclipse, can call these user-written exits. The same, customer-supplied, exit code will be executed regardless of the client that is being used.

If an appropriate high-level language exit point is available, custom processing currently being executed through ISPF modification (for example, the addition of ISPF panel exits) can be moved to the high-level language exit. In turn, this will simplify upgrading to new ChangeMan ZMF releases in the future.

ChangeMan ZMF 8.1.4 addresses requirements in the following ZMF functions:

- Build (Including checkin, build, recompile, relink, delete)
- Package Create (Initial create of a package)
- Package Update (Subsequent update of package attributes)
- File Tailoring (Define customized ISPF variables for file tailoring)
- Checkout (Component Checkout from baseline/promotion)
- Promote/Demote (Promotion and demotion of components)
- Audit (Audit job submission and audit process)
- Freeze (Package freeze and selective unfreeze/refreeze)
- Approve/Reject (Package approve and reject)
- Revert (Package revert)
- Package Syslib (Package syslib list service)
- Scratch/Rename (Utility functions)

Refer to the *ChangeMan ZMF High Level Language Functional Exits Getting Started Guide* for details.

Most ZMF panels were changed in the effort to make all ZMF panels follow the IBM guidelines for Common User Access (CUA). CUA guidelines were only partially implemented in the panels of previous ZMF releases.

Exit Changes

Exit changes can result from changes to:

- Exit copybooks
- Exit program source

Follow these steps:

- 1 Compare the exit copybook and program source members in your current ZMF 8.1.x libraries to the members that are distributed in the ZMF 8.1.4 CMNZMF ASMCPY and CMNZMF ASMSRC libraries respectively.
- 2 Copy the needed exits to your customized ZMF 8.1.4 source library.
- 3 Edit the exit modules in your customized ZMF 8.1.4 source library as appropriate, and reassemble them.

Step 12: Replace *somnode* with Variables

The CMN\$\$DSN member of the CMNZMF SKELS library defines and initializes the data set names for system libraries, Sernet and ChangeMan JOBLIBs and STEPLIBs, and 3rd-party product data sets.

It replaces the *somnode* high-level qualifier definitions, which were embedded in skeletons in previous releases, with variables.

Customize the variable definitions in CMN\$\$DSN to reflect the data set naming conventions used in your installation.

Step 13: Update RACF PasSTicket Support in Sernet

Refreshing SERXPTIK

You will need to refresh SERXPTIK. SERSET loads SERXPTIK into common storage. By design, SERXPTIK is a very small piece of code that should rarely change. On occasion, however, it may need to be refreshed without an IPL.

To do this, rerun SERSET ensuring it will pick up the new version of SERXPTIK from STEPLIB and specifying a different TOKEN= value. For example, specifying TOKEN=B will result in the following message sequence:

```
SER1704I CSVDYLPA loaded SERXPTIK @ xxxxxxxx
SER1708I SerNet.PtickB token created
SER1708I SerNet.PtickTok token created
SER1709I Passticket support enabled
```

Once SERSET has executed, SerNet.PTickTok will point at SerNet.PTickB. This will cause SERCLIEN to invoke the new version of SERXPTIK with a different PC number.

The TOKEN= parameter will accept any value from A-Z and 0-9 but any use beyond A and, rarely, B would be highly unusual.

Step 14: Synchronize Impact Analysis Data

If you change any library type definitions or baseline library definitions while migrating to version 8.1.4, you must synchronize your impact analysis data with your current package and component information. It is recommended that this is done during the migration process even if you don't change these definitions.

Synchronizing impact analysis data is a two step process:

- 1 Execute impact analysis data extract.
- 2 Load data to the impact analysis LDS.

See topic "Generating and Updating Impact Analysis Data" in the *ChangeMan ZMF Administrator's Guide* for instructions.

Step 15: Customize User Exit SEREX006

A customized Sernet user exit, SEREX006, has been required since ZMF 8.1.1. You should reassemble your source in 8.1.4 to be sure that you use the new SEREX006 copybook. A sample version of the user exit is provided as member SEREX006 of the SERCOMC ASMSRC distribution library.

SEREX006 provides the necessary parameters for Sernet to perform dynamic allocation of user-specific log data sets. Sernet started tasks will abend with code S806-4 if the SEREX006 user exit is missing or with code U0044 if the SEREX006 user exit does not provide all required information.

Note that the Sernet started tasks will need ALTER access (in RACF) to the high-level-qualifier specified.

Appendix A

ChangeMan[®] M+R Option Quick Start

This appendix provides abbreviated instructions for installing the ChangeMan ZMF Merge and Reconcile (M+R) Option and using the option to reapply your customizations to the ChangeMan ZMF 8.1.4 components delivered from Serena.

What is the ChangeMan ZMF M+R Option	56
Installing the M+R Option	56
Using the M+R Option to Reapply Customization	58

What is the ChangeMan ZMF M+R Option

The Serena ChangeMan ZMF M+R Option is an automated version reconciliation tool that is fully integrated with ChangeMan ZMF. The M+R Option can reconcile the components in up to eight separate libraries.

You can use the M+R Option to forward fit your ChangeMan ZMF modifications into components delivered in a new release. In a single operation, you can compare three versions of components:

- Current ChangeMan ZMF vendor components
- Current ChangeMan ZMF custom components
- Vendor ChangeMan ZMF components in the new release

Then, you can select your current modifications that are displayed in the context of the new release components and apply them, discard them, or apply them with edits.

If you do not license the M+R Option, contact your account representative. The M+R Option is included in ChangeMan ZMF libraries, and any version of the M+R Option is suitable for this task.

Installing the M+R Option

If you license the M+R Option, follow the steps to enable the option:

- 1 Allocate a permanent WALKTHRU PDS library with these characteristics:

Primary space allocation	80 Blocks
Secondary space allocation	100 Blocks
Directory Blocks	10
Record Format	VB
Logical Record Length	4096
Block Size	4100

- 2 Copy these members from the vendor CMNZMF SAMPLES library to the WALKTHRU library:

- WALKBAS
- WALKDV1
- WALKDV2

- 3 Allocate a permanent sequential PROJECTS data set with these characteristics:

Primary space allocation	20 Blocks
Secondary space allocation	400 Blocks
Record Format	FB

Logical Record Length	80
Block Size	6000

- 4 Grant the following data set access to all potential users of the ChangeMan ZMF M+R Option:
 - a READ/WRITE authority to the PROJECTS file.
 - b READ authority to the vendor WALKTHRU library.
- 5 Copy panel SEROJECT from the ChangeMan ZMF vendor CMNZMF PANELS library to your custom panel library. Edit the)INIT section of the panel to assign values to these variables:

Variable	Value
&CDFPROJ	DSN of the PROJECTS data set allocated previously.
&CDFSAMPL	DSN of the WALKTHRU library allocated previously.
&CDFUNIT	Generic unit for allocating user work data sets. Variable CDFUNIT is preset to SYSDA. Note: User work data sets are cataloged data sets that hold intermediate or final results from the M+R Option reconcile process. User work data sets include the WIS (Work In Suspense) file, the PRINT file, and the EXPORT file. The ChangeMan ZMF M+R Option can automatically allocate these files for each user.
&CDFDSNQ	High level qualifier(s) for user work data set names. The maximum length is 24 characters. Use literal strings and/or system variables like &ZPREFIX or &ZUSER. The ChangeMan ZMF M+R Option automatically inserts &ZUSER as a mid-level DSN qualifier unless variable CDFDSNQ is set to &ZUSER. CDFDSNQ is preset to CDFUSER, which is the log-on ID of the user.

Save your changes to panel SEROJECT.

- 6 Copy panel SER@PRIM from the vendor CMNZMF.PANELS library to your custom panels library. Edit the)INIT section of the panel to assign a value to variable &CDFTIME:

Variable	Value
&CDFTIME	Set to YES to check for a TIME parameter in the JOB card in generated batch jobs. Set to NO to suppress this check.

Save your changes to panel SER@PRIM.

- 7 Stop and start the Sernet started task running ChangeMan ZMF.
- 8 If you use CA ACF2® for your security system, and if you use the ACF2 TSO Command Limiting feature to restrict execution access to TSO commands, add M+R program CDF\$ISPF to the ACF2 Command Limiting Table:

This is the format for the table entries:

```
TSOtable CSECT *      REGIONAL ACF2 TABLE
TSOCST ,             TSO RESTRICTED COMMANDS LIST
$TSOCMD CLS          CLEAR SCREEN
$TSOCMD CDF$ISPF     M+R ISPF DRIVER
$TSOCEND ,           INDICATE END OF LIST
END
```



CAUTION! Do not add CDF\$ISPF to the TSO Command Table IKJTSOnn in SYS1.PARMLIB. If you do and you attempt to use M+R, your session will freeze and this message is displayed:

ISPS118L SERVICE NOT INVOKED. A VALID ISPF ENVIRONMENT DOES NOT EXIST.

- 9 Examine the primary, secondary, and directory allocations of your ISPF profile library (ISPPROF) to verify that there is sufficient space for ZMF and M+R to create profiles and save them after each session. This applies to all ISPF applications that run with ISPF NEWAPPL(yyyy).

Using the M+R Option to Reapply Customization

Execute this procedure to set up the Serena ChangeMan ZMF M+R Option to merge your modifications from the ZMF release from which you are migrating into version 8.1.4 components.

- 1 Log in to ChangeMan ZMF. On the **SERENA ChangeMan(R) Primary Option Menu** (CMN@PRIM), select option **C (M+R)**. The first time you select the M+R Option, the **Reconcile** (CDFPANEL) panel is displayed.

```

View All ----- RECONCILE -----
Command ==> _____ Scroll ==> CSR
B:WALKTR#1 C:WALKTR#2 665
***** TOP OF DATA *****
000000 *****/* 2017/07/26 17:19:40 CMNTP.CMN814.C6.WALKTHRU
000001 WELCOME to Merge+Reconcile (M+R) from Serena Software, Inc.
000002
000003 The M+R walk-through consists of tutorial text and reconciliation
000004 actions that can be browsed and/or executed on the same panel so that
000005 you can immediately try any discussed primary or line command.
000006
000007 The Reconcile panel looks like the ISPF/PDF Edit panel and executes
000008 almost all ISPF/PDF commands. Both have a line command area (first 6
000009 characters on a line) and a data area which is scrollable.
000010 The 3rd line on both panels is reserved for the long text of a message
000011 in case you need it; meanwhile, M+R uses it to relate the nicknames
000012 of the derivative versions with their one-character IDs.
000013 The first record (with 000000 number) is created by M+R to register the
000014 date and time of the reconciliation, and the dataset name of the Base
000015 version.
000016
000017 The Reconcile panel displays the result of the comparison and merging
000018 of the versions, and marks the differences in the line command area:
000019
000020 - records COMMON in all the versions have their sequence numbers
000021 displayed in the command area;
000022 - records in the Base version that are MISSING in some derivatives are
000023 marked with the "less" symbol '<' and the IDs of those derivatives;
000024 - records in some derivatives that are ADDED (i.e. missing in the Base
000025 version) are marked with the "greater" symbol '>' and the IDs of
000026 those derivatives;
000027 - records in some derivatives that are REPLACING records of the Base
000028 version are marked with the "difference" symbol '<>' and the IDs of
000029 those derivatives; the corresponding Base records are marked with
000030 the "less" symbol '<' and keep their sequence number.
000031
000032 Each line on the Reconcile panel has a specific color depending on its
000033 origin. You can choose your own color scheme from the Profile panel.
000034 The default colors are: white for Base records; yellow for the first
000035 derivative records; pink for the second derivative records; etc.;
000036 red reversed for common records in two or more (up to 7) derivatives.
000037

```

- 2 Read the Reconcile tutorial for an overview of the M+R Option. Press **PF8** to page down and **PF7** to page up.

- 3 Further down on this same panel is an example (in color) of some of the results you might see.

```

View All ----- RECONCILE ----- ROW 39 TO 77 OF 173
Command ==> _____ Scroll ==> CSR
  B:WALKTR#1 C:WALKTR#2
000038 An example of the M+R graphics and coloring can be seen if you place
000039 the cursor on the next line and page down. Then page down again.
000040 /**
000041 //WSER37TN JOB (9602,848),'CMNBOW10',CLASS=E,
< 0042 //          TIME=(,15)
<>BC__ //          TIME=(,30)
000043 //STEPLIB DD DSN=WSER99.CMN416.LINKLIB,DISP=SHR
000044 //CMNBOW10 EXEC PGM=CMNBOW10,REGION=4M
000045 //CMNGBLFL DD DISP=(,CATLG,DELETE),
> B__ //          UNIT=SYSDA,
000046 //          SPACE=(CYL,(2,1)),
< _C__ //          VOL=SER=VOL333,
000048 //          DCB=(RECFM=VB,LRECL=5000,BLKSIZE=23476),
000049 //          DSN=&TSOID..&PKG MST..GLOBAL
000050 //CMNCPFL DD DISP=(,CATLG,DELETE),
000051 //          UNIT=SYSDA,
< 0052 //          SPACE=(CYL,(15,5)),
<>B__ //          SPACE=(CYL,(20,10)),
<>_C__ //          SPACE=(CYL,(25,15)),
000053 //          DCB=(RECFM=VB,LRECL=5000,BLKSIZE=23476),
000054 //          DSN=&TSOID..&PKG MST..COMPONNT
000055 //
000056 /**
000057 Let's recap the differences between the 3 versions of the JCL jobdeck.
000058 The 42nd Base record is replaced in both derivatives with the same
000059 text "TIME=(,30)". Accordingly, the Base record is marked with "< 0042"
000060 and the replacing line with "<>BC__" where "B" and "C" are the IDs of
000061 the derivatives.
000062 One record is added in the derivative "B" after the 45th Base record:
000063 it is marked with "> B__".
000064 The 47th Base record is missing in the derivative "C"; therefore, this
000065 record is marked with "< _C__" instead of with its sequence number.
000066 The 52nd Base record is replaced in both derivatives but with different
000067 text: "SPACE=(CYL,(20,10))," vs. "SPACE=(CYL,(25,15)),".
000068
000069 #0 You can browse each of the derivatives separately by issuing "View B"
000070 or "View C". You can try this right now, then issue "Locate 41" to
000071 view, then issue "View All" (or "v *"), and then "Find #1" to continue.
000072 Note that the replacing records are shown together with the replaced

```

- 4 Press **PF3**, or type **End** and press **Enter**, to exit from the **Reconcile** tutorial and select **M** and press **Enter**. The **Member Reconciliation Menu** (SER@MAIN) is displayed.

```

SER@MAIN                               Member Reconciliation Menu
Option ====> _____

0 Profile          Update user profile settings
1 Versions         Specify base and derivative data sets and member names
2 Execute          Execute (compare and merge) the specified versions of a file
3 Save             Save the current reconciliation as "work in suspense" (wis)
4 Load            Load prior "work in suspense" for edit now
5 Edit             Resume editing the current reconciliation or just loaded wis
5P Print           Print the last view (snapshot) of the reconciliation
6 Export           Export a successful reconciliation effort to a file
6P Exp print       Print a successful reconciliation effort
7 Analysis         Analyze the progress and complexity of the reconciliation
7P Anl print       Print analysis of the reconciliation progress and complexity
X Exit

```

Do not merge and reconcile at the *member* level. Instead, merge and reconcile your modifications at the *library* level so you can work with all members in the custom library at the same time.

- 5 Press **PF3**, or type **End** and press **Enter**, to exit from the **Member Reconciliation Menu**. **The Merge+Reconcile** main menu (SER@PRIM) is displayed.

```

SER@PRIM                               Merge+Reconcile
Option ====> _____

M Reconcile        Up to 8 versions of a member or sequential data set
L Consolidate      Up to 8 versions of a library - PDS, panvalet, librarian
S Synchronize      Up to 8 versions of source and copy/include libraries
J Compare          Up to 8 versions of a jcl lib after symbol substitution
C Changes          From prior releases of merge+reconcile (m+r)
W Walk through     The version reconciliation process with m+r
T Tutorial
X Exit

```

- 6 On the **Merge+Reconcile** main menu, choose option **L - Consolidate up to 8 versions of a Library**. The **Library Consolidation Menu** (SER@TEAM) is displayed.

```

SER@TEAM                               Library Consolidation Menu
Option ====> _____

0 Profile          Update user profile settings
1 Versions         Specify base and derivative library data set names
3 Workplace        Display consolidation workplace listing version members
4 Batch job        Batch execution (compare and merge) of version libraries
5 Project          Create or select a consolidation project
X Exit

```

- On the **Library Consolidation Menu**, choose option **0 - Profile**. The **Profile** panel (SERPROFL) is displayed.

```

SERPROFL                                     Profile
Option ==>> _____

0 Restore          Back out all changes to the profile options and data sets
1 Compare          Specify version comparison options
2 Colors           Specify coloring scheme for versions codelines
3 Editing          Select merged versions editing options
4 Export           Select export options for the consolidated version
5 Data Sets        Specify Work In Suspense, print and export data set names
6 Filtering        Auto-delete certain merged code lines upon business rules
T Tutorial         Information about setting up M+R reconciliation profile
X Exit
    
```

- On the **Profile** panel, choose option **5 - Data Sets**. The **Profile Data Sets** panel (SERDSNML) is displayed.

```

SERDSNML                                     Profile Data Sets
Command ==>> _____

WIS dsname . . . . . _____
Print dsname . . . . . _____
Export dsname . . . . . _____
Export DSORG . . . . . PDS (PDS, SEQ, PAN, LIB, or blank)
Export member mask . . . . . _____ (Mask to rename Base members on export)
LIB module name . . . . . LIB (LIBrarian update module name: LIBR, LIBRARY)
    
```

- Type names for three new data sets that are used by the M+R Option when you merge and consolidate libraries. Use data set names that comply with your standards for permanent personal data sets.

WIS dsname	<i>userid.MR.WIS</i>
Print dsname	<i>userid.MR.PRINT</i>
Export dsname	<i>userid.MR.EXPORT</i>



NOTE Press PF1 to obtain help at any time.

- Press **PF3**, or type **End** and press **Enter** to exit from the **Profile Data Sets** panel (SERDSNML). The M+R Option allocates the named data sets with the appropriate characteristics, and the **Profile** panel (SERPROFL) is displayed.
- Press **PF3**, or type **End** and press **Enter**, to exit from the **Profile** panel. The **Library Consolidation Menu** is displayed.

- 12** On the **Library Consolidation Menu** (SER@TEAM), choose option **1 - Versions**. The **Versions** (SERCDFCM) panel is displayed.

```

SERCDFCM                      Versions
Command ==> _____

      CMN Export package: _____ Libtype: ___ Export member: _____
                                     -Member--- Type Nickname Id
Base: _____ Last Member: _____
      or CMN appl/pkg: _____ Libtype: ___
Drv1: _____
      or CMN appl/pkg: _____ Libtype: ___
Drv2: _____
      or CMN appl/pkg: _____ Libtype: ___
Drv3: _____
      or CMN appl/pkg: _____ Libtype: ___
Drv4: _____
      or CMN appl/pkg: _____ Libtype: ___
Drv5: _____
      or CMN appl/pkg: _____ Libtype: ___
Drv6: _____
      or CMN appl/pkg: _____ Libtype: ___
Drv7: _____
      or CMN appl/pkg: _____ Libtype: ___
    
```

- 13** On the **Versions** panel, type the data set names of libraries you want to compare. Define your **Base** and **Derivative** versions in this order:

Base	Vendor library for old version
Drv1	Custom library for old version
Drv2	Vendor library for new version

For the **Base**, **Derivative 1**, and **Derivative 2** libraries, type an entry in the **Type** and **Nickname** fields. For the **Derivative 1** and **Derivative 2** libraries, type an entry in the **ID** fields. Do not type a **Member** name for any library.

```

SERCDFCM ----- VERSIONS -----
Command ==>

      CMN Export Package: _____ LibType: ___
                                     -Member--- Type Nickname Id
Base: PROD99.CMNZMF.OLDREL.SKELS_____ PDS  BASE____ -
      Last Member: _____
      or CMN Appl/Pkg: _____ LibType: ___
Drv1: PROD99.CMNZMF.CUSTOM.SKELS_____ PDS  CUSTOM__ C
      or CMN Appl/Pkg: _____ LibType: ___
Drv2: PROD99.CMNZMF.NEWREL.SKELS_____ PDS  NEW____ N
      or CMN Appl/Pkg: _____ LibType: ___
Drv3: _____
      or CMN Appl/Pkg: _____ LibType: ___
    
```

Press **PF1** to display a help panel if you need assistance.

- 14 Press **PF3**, or type **End** and press **Enter**, to exit from the **Versions** panel. The **Library Consolidation Menu** (SER@TEAM) is displayed.
- 15 On the **Library Consolidation Menu**, choose option **3 - Workplace**, and the **Consolidation Workplace** panel (CDFPANEL) is displayed.

```

CDFPANEL ----- Consolidation Workplace ----- ROW 1 to 20 of 293
Command ==> _____ Scroll ==> CSR
      Base: PROD99.CMNZMF.OLDREL.SKELS_
Difference Base Member Action Compl Custom      New      Derv #3   Derv #4
@$$..... _ $$$INDEX          $$$INDEX $$$INDEX
@$$..... _ #VARLIST          #VARLIST #VARLIST
@.$..... _ CMN$$ACB          CMN$$ACB
@$$..... _ CMN$$ASM          CMN$$ASM CMN$$ASM
@.=..... _ CMN$$AUD          CMN$$AUD
@.=..... _ CMN$$BBL          CMN$$BBL
@.=..... _ CMN$$BDT          CMN$$BDT
@$=..... _ CMN$$BLA          CMN$$BLA CMN$$BLA
@.$..... _ CMN$$BLG          CMN$$BLG
@..... _ CMN$$BND
@.=..... _ CMN$$BSN          CMN$$BSN
@.$..... _ CMN$$CAS          CMN$$CAS
@.=..... _ CMN$$CA7          CMN$$CA7
@.$..... _ CMN$$CBL          CMN$$CBL
@.=..... _ CMN$$CIC          CMN$$CIC
@.$..... _ CMN$$CKA          CMN$$CKA
@.$..... _ CMN$$CKO          CMN$$CKO
@..... _ CMN$$CLN
    
```

- 16 Type **S** next to a component **Base Member** name to see a merged version of the member.

Use instructions in the following resources to merge your custom modifications into the version 8.1.4 members:

- *M+R Option Getting Started Guide*
- *M+R Option Quick Reference*
- PF1 Help from the Consolidation Workplace



NOTE Do not do anything to a component on the Consolidation Workplace panel (CDFPANEL) if no member from the custom library is displayed. Do not reconcile differences between two vendor components.

- 17 Type **E** next to a component **Base Member** name to copy the merged member from your WIS file into the Export File you specified in [Step 9](#).
- 18 Copy the members from your M+R Option Export file into your ChangeMan ZMF 8.1.4 custom library.

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