CA Endevor® Software Change Manager

Parallel Development Option Guide

Version 17.0.00

CA Technologies Product References

This document references the following CA Technologies products:

- CA Endevor® Software Change Manager (CA Endevor SCM)
- CA Endevor® Software Change Manager Parallel Development (CA Endevor Parallel Development)
- CA Librarian® Base for z/OS (CA Librarian)
- CA Panvalet® for z/OS (CA Panvalet)

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Documentation Changes

The following documentation updates have been made since the last release of this documentation:

Note: In PDF format, page references identify the first page of the topic in which a change was made. If the topic is long, the actual change may appear on a later page.

Release 15.1

- The Merge Output File (see page 57)—Updated to remove an obsolete note and cross reference.
- Merge a WIP File to a CA Endevor SCM Location—Deleted this obsolete topic.
- Chapter 5: Merging WIP Files Directly to CA Endevor SCM Locations—Deleted this obsolete chapter including the following topics:
  - Direct Merge of WIP files to CA Endevor SCM Locations
  - How the Merge Process Works
  - Merge Process Considerations
  - How to Merge Multiple WIP Files
- Merge Output WIP Statement Batch SCL Syntax (see page 98)—Updated to remove information about merging to a CA Endevor SCM location.
- Merge Output WIP Statement Batch SCL Syntax Parameters (see page 99)—Updated to remove information about merging to a CA Endevor SCM location.

Version 15.0

- Specifying a Root Member or Element (see page 30)—Updated to indicate that if an element of log delta format is selected, only the current level is a valid selection.
- Specifying Derivation 1 (see page 31)—Updated to indicate that if an element of log delta format is selected, only the current level is a valid selection.
- Specifying Derivation 2 (see page 33)—Updated to indicate that if an element of log delta format is selected, only the current level is a valid selection.

Contents

Chapter 1: Introduction

This section contains the following topics:

Parallel Development

Parallel development is a term used to describe the concurrent development activities necessitated by the complexity of today's applications and the pace at which these applications are developed. Aspects of parallel development include:

- Several programmers working on the same application and often the same programs.
- Identifying and resolving conflicts in programs that have been independently updated by more than one programmer.
- The time-consuming, resource-intensive, and error-prone process of manually integrating independent changes to a program.
- Reconciling differences between customized vendor software packages and vendor release updates.
- Assessing project complexity, duration, and the resource requirements.

There are three general kinds of parallel development:

Simple parallel development

Concurrent work by a small number of programmers on modifications to a single program.

Complex parallel development

Concurrent work on multiple or overlapping releases by several teams of programmers.

Vendor application updates

Integrating customization to a base release of vendor or internally developed software with a subsequent release of the software.

Each of these is discussed in the following sections. The discussion includes a problem typical of that kind of parallel development.

Simple Parallel Development

Simple parallel development is the concurrent and independent development of applications by different programmers within the same company. In most simple parallel development situations, modifications are minimal and conflicts are few or nonexistent. Managerial intervention is rarely required. Most of the time the developers themselves can determine the time needed to make the necessary changes.

The problem when using simple parallel development may arise, for example, when two programmers have been independently enhancing a single report generation program. Potential conflicts and overlaps need to be identified and resolved and the program modifications must be integrated before the program is placed into production.

Complex Parallel Development

Complex parallel development, like simple parallel development, involves more than one programmer working individually on the development of the same base program, with an eventual need to integrate the two sets of changes. But the actual complexity of the project--whether it be the degree of difficulty involved in the modifications required, the sheer number of changes involved, or the need for accurate and accessible information between all parties--sets it apart from a simple development situation. Complex parallel development can even involve two or more different sites. In this situation, the programs are not only being coded by different programmers, they are being coded by people who often have little or no communication with each other.

Complex parallel development occurs in situations such as these:

- A company must maintain an existing software release while developing a new release. For example, one team of developers must continue to write maintenance against an existing release, while another team of developers works on a new release of the product. Eventually, the maintenance changes must be incorporated in the next release.
- A company has multiple sites that are doing development at the same time. For example, a state university with campuses in several cities may be upgrading its admissions tracking program. Two of the campuses are making modifications that eventually need to be integrated into the existing admissions tracking program.

The problem when using complex parallel development may arise, for example, when modified copies of a program must be integrated to produce a single, updated package. In complex parallel development situations, the potential for conflict tends to be higher, and the changes more difficult. Management intervention is usually required to determine the best approach and the most appropriate resources to produce the final product.

Vendor Application Updates

Vendor products, such as proprietary or in-house developed products, need to be maintained and updated on a regular basis. Whether you have purchased a vendor package that was customized by the vendor before delivery, or customized the package yourself, you need to integrate periodic vendor updates into the modified vendor code.

The problem when using vendor application updates may arise, for example, when the user customizes the base product and those changes must be identified and carried forward into the new release.

How to Integrate Concurrently Developed Software

Integrating concurrently developed software requires varying levels of involvement by programmers and managers, depending on the complexity of the parallel development effort.

There are three steps to the integration process:

- Analysis, to determine the scope of the integration project. This can be handled by programmers in simple parallel development situations. More managerial involvement is often required for vendor updates or more complicated development projects.

- Consolidation and conflict resolution. Procedures need to be established for gathering the proper programs and identifying conflicts for resolution. Again, managerial involvement increases as project complexity increases.
- Integrating the changes. This is often a manual process, one that can be very time consuming and error prone in large or complicated projects.

The Parallel Development Option

The Parallel Development Option (PDM) is a powerful tool to help both developers and managers address the problems inherent in the three steps of parallel development projects. PDM can help:

- Analyze the complexity of parallel development projects.
- Consolidate changes and identify conflicts more quickly.
- Automate the integration process.

PDM Tools for Project Analysis

PDM produces a set of reports that managers can use for project planning. The reports are based on one or more Work-in-Process (WIP) files. PDM builds WIP files from a base file and one or two files derived from the base. The Build WIP process analyzes the input files, identifies differences and conflicts, and creates statistics and reports.

The PDM reports include information such as numbers of inserted and deleted lines in specific input files, and an assessment of the complexity of the WIP file. By interpreting the Build WIP reports, programmers or managers can more accurately plan the resources and time needed to complete the assignment.

PDM Tools for Consolidation and Conflict Resolution

The Build WIP process is the PDM mechanism for consolidating changes and identifying conflicts. By automating the consolidation of changes and identification of conflicts, PDM both speeds up and increases the accuracy of this step in parallel development.

PDM also provides editing tools to speed up the process of resolving any conflicts that exist.

PDM Tools for Integrating Changes

Once a WIP file has been edited to resolve conflicts, PDM can create an integrated output file by inserting and deleting lines based on the annotations in the WIP file, then write the integrated output file to a user specified location.

How PDM Works

The Parallel Development Option operates with standard PDS, PDSE and sequential data sets, as well as CA Panvalet files, CA Librarian files, and CA Endevor SCM elements.

You can use PDM interactively (in foreground) or in batch. In either mode, PDM processing involves three basic steps:

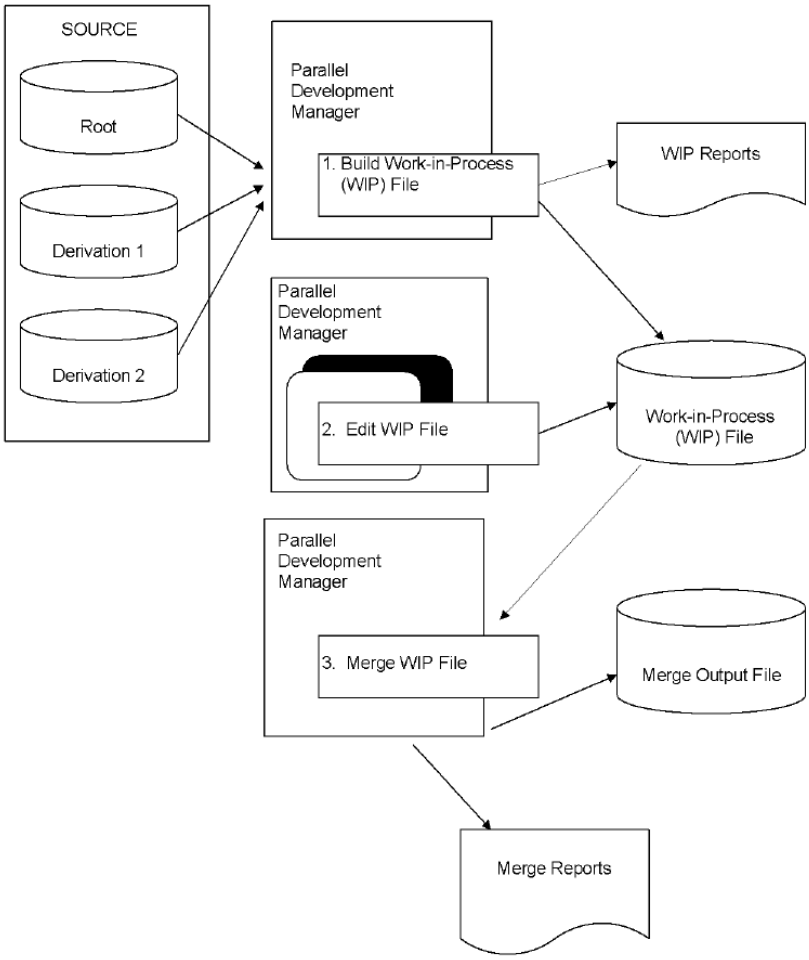
1. Build the Work-in-Process (WIP) File. PDM builds a Work-In-Process (WIP) file by comparing a base program and one or two files derived from the base. PDM annotates the WIP File to clearly mark all insertions, deletions, and conflict areas.

   The Build WIP process also produces reports and statistical data which allow a manager to estimate the time and resources required to resolve the conflicts.

2. Edit the WIP File. Programmers edit the WIP File to resolve annotated conflicts. Editing tools provided by PDM allow a project team to try different edit scenarios before actually integrating the changes in the WIP file.

3. Merge the WIP File. The final step in the PDM process is to merge the WIP File into a Merge Output File. A Merge Output File is a source file that can be stored in the appropriate source repository, input to a compiler, or added into CA Endevor SCM. PDM uses the WIP File as input, performs the insertions and deletions noted, and produces the integrated source file.

The following illustration outlines the basic PDM operation.



As previously illustrated:

1. The Work-in-Process (WIP) File is created and reports are produced.
2. The WIP File is edited and conflicts are resolved.
3. The WIP File is integrated into a Merge Output File.

PDM Terminology

Several PDM terms, including file names and reports, have already been mentioned in this chapter. To help familiarize you with these terms before you read the rest of the manual, they are defined here.

PDM File Names

Here's a list of PDM file names you should know.

Root

The base program with which programmers are working. Derivation 1 and Derivation 2 files are derived from this program. For example, the Root might be Release 1.0 of a vendor product; Derivation 1, your modifications to the product; and Derivation 2, the vendor's new release (1.1) of the product.

Derivation 1

A modified copy of the Root.

Derivation 2

Another modified copy of the Root.

Work-In- Process (WIP) File

The file built when PDM compares the Root and one or two Derivations. The WIP File is an annotated intermediate file that identifies the insertions and deletions made individually by the Derivations, as well as the insertions and deletions common to both. Potential insert conflicts are also identified.

Merge Output File

An output file created by PDM using the WIP File as input. When the Merge Output File is created, the annotations from the WIP File are removed, and all insertions and deletions are performed.

Statistics File

An optional file that can be created by the Build WIP or Merge function. This file contains statistics that describe the members involved in the Build WIP or Merge operation. These statistics include items such as the number of insertions made by Derivation 1, the number of insertions made by Derivation 2, and the like. This file can be used as input to an existing report package or a user written reporting system.

PDM Terms

Here's a list of PDM terms you should know:

Common Insertion

Common Deletion

The result of both programmers inserting or deleting the same line at the same place in their respective copies of the Root program.

Conflict

The result of both programmers inserting different lines at exactly the same place in their respective copies of the Root program. Conflicts are identified in the WIP File.

Conflict Area

A place in the WIP File where a conflict occurs. A conflict area involves at least two records--one from Derivation 1 and one from Derivation 2.

Contention Area

A place in the WIP File where conflicting changes exist, but are "offset;" that is, both Derivations have changed a section of code, but the changes do not begin at exactly the same place in each derivation. Because these sections of code overlap, however, they are considered conflicting in nature.

Complexity Factor

A value assigned to the WIP file, to help identify the resources required to resolve conflicts. The complexity factor is a function of the number of:

- Records in the WIP file.
- Derivation 1 records in conflict.
- Derivation 2 records in conflict.
- Conflict areas and contention areas.

The complexity factor ranges from 0-5:

- 0--indicates that no changes occurred in the member.
- 1--indicates that changes occurred but there are no conflict or contention areas.
- 2-5--indicate that the member contains conflicts, where 2 indicates simple conflicts and 5 indicates complex conflicts.

Note: The complexity factor reflects the number of conflicts found in the WIP File, not the number of changes. The comparison procedure may identify many changes, but few or no conflicts, resulting in a low complexity factor. Conversely, you may find that although you have a small number of conflicts, each is relatively complex, resulting in a high complexity factor.

WIP Member Selection Matrix

A special PDM screen that shows side-by-side alignment, within the WIP data set, of the Root, Derivation 1, and Derivation 2 members. The matrix is used when dealing with multiple sets of Root, Derivation 1, and Derivation 2 members.

Access PDM

To use PDM, select the program from the ISPF/PDF Primary Option Panel by entering the appropriate code.

The CA Endevor Parallel Development Option menu is used to select each step of the PDM process.

Use this panel to indicate the primary option processing you want:

0

Establish defaults for work-area space allocations. These defaults are user ID-specific.

1

Build a WIP File or write Build WIP requests to a batch request data set.

2

Edit a WIP file.

3

Merge a WIP file into an output source library. You can use either foreground or batch mode to merge the WIP File.

4

Build a job that executes Build WIP or Merge requests in batch.

T

Invoke an online tutorial that describes PDM procedures and panel fields.

C

View a summary of the new features that have been added to PDM for this release.

Specify User Defaults

The PDM User Defaults panel allows you to override defaults for space allocation of work areas and temporary data sets that are used in foreground. The defaults remain in effect until you change them, either in this particular session or in a subsequent work session.

Allocation information is initially taken from the settings in the C1DEFLTS Table. The PDM User Defaults panel allows you to override those default values for your user ID only.

1. To select this option, type 0 in the option field of the Parallel Development Option menu.

2. When you press Enter, the PDM User Defaults screen appears.

   These fields define the default allocation for your work.

   Primary Quantity

   Number of units of space in the primary allocation.

   Secondary Quantity

   Number of units of space in each secondary allocation.

   Space Units

   Units in which space is allocated. Acceptable values are TRK (tracks), CYL (cylinders) or BLK (blocks).

   Unit Name

   Descriptive name of the disk device. You can specify any value appropriate in the UNIT=parameter of DD (JCL) statements at your site.

   Volume Serial

   Volume serial number of the specific device you want to use for your work areas. Leave blank to use the site default.

3. When you press Enter, the Parallel Development Option menu appears, with the following message in the upper right-hand corner of the screen:

   ```
   Defaults Updated
   ```

   This message indicates that the defaults have been updated.

PRTMAT Output Defaults

These fields allow you to set PDM defaults for the PRTMAT output destination for WIP Member Selection matrix output processing. The value of these fields depends on the standards established for your site.

SYSOUT Class

Required alphanumeric character defining the SYSOUT output class designation. This field is initialized to A.

Destination

Optional up to 17 character output destination identifier. The format is node.user. If only one parameter is used, PDM assumes that it designates the user. If blank, PDM uses the destination value LOCAL. This field is equivalent to the DEST= JCL statement.

For example, to set the default PRTMAT destination to the locally defined printer PRINTER1, specify PRINTER1 in the destination field.

Disable the Build WIP and Merge Performance Enhancement Option

If PDM is executing on an z/OS system, it uses virtual storage as a work area during certain build and merge operations. If the Root file, Derivation files, or the WIP file is extremely large, PDM may exhaust all available virtual storage and the Build or Merge action will fail.

The disable the build WIP and merge enhancement field controls whether PDM uses external (disk) storage instead of virtual storage during builds and merge processing. Specify Y (yes) if PDM is to use external storage for its work area. Specify N (no) if PDM is to use virtual storage. The default is N.

Specify a value of Y in this field if PDM issues error message PDM2001E and the corrective action for this message does not correct the error.

Quick Edit Access to the Parallel Development Option

Clients who are licensed for the Quick-Edit option and the Parallel Development option can access PDM from the Quick-Edit Option panel. Provided PDM is enabled in the C1DEFLTS table, users can access PDM by selecting the PD Parallel Dev option, which appears in the Dialog Commands section of the Quick-Edit panel. If PDM is not enabled, then the option is displayed on the panel in lower intensity than the rest of the panel and if you select this option a message is displayed indicating that the option is not available. If PDM is enabled, but you are not licensed for PDM, when you select the PD Parallel Dev option from the Quick-Edit panel, the LMP licensing rules are invoked.

Chapter 2: Building Work-in-Process Files

This section contains the following topics:

How PDM Builds WIP Files

The first step in using the Parallel Development Option is to build the Work-in-Process (WIP) file and analyze the results. The WIP file is produced by comparing the Root (or base) file against one or two Derivation (modified) files. The WIP file combines the Root file and every insertion and deletion that has been made to the Derivation file(s), noting conflicting changes. When building the WIP file, PDM uses the Derivation 1 and Derivation 2 files to determine which lines to include in the WIP file.

The following table describes how the PDM writes the line.

If there is a	PDM writes the line from
Common insertion (% I-1,2)	Derivation 2
Insertion from Derivation 2 (% I-2)	Derivation 2
Insertion from Derivation 1 (% I-1)	Derivation 1
No change from the Root	Derivation 2 (or Derivation 1 if there is a two-way compare.)

The Build WIP process produces one or more of the following reports:

- PDM Syntax Report
- PDM Build WIP Detail Report
- PDM Build WIP Summary Report

Note: PDM can produce a Build WIP Summary Report during the Build WIP process without actually creating the WIP file.

To begin the Build WIP process, select option 1 from the CA Endevor Parallel Development Option menu.

When you select option 1, you must also indicate in the FOREGROUND OR BATCH field whether you want to create the WIP File in foreground or batch mode. Enter F to indicate foreground; enter B to indicate batch. If you specify B, you must also provide request data set information.

There are up to five steps in the Build WIP process:

1. Specify a WIP library and build WIP options.
2. Specify a Root library.
3. Specify a Derivation 1 library.
4. Optionally, specify a Derivation 2 library.
5. Optionally, specify a Merge Output data set.

These steps are discussed in the following sections.

Specify a WIP Library and Build WIP Options

To begin the Build WIP process, select option **1** from the Parallel Development Option menu.

Note: When you select option **1**, you must also indicate in the FOREGROUND OR BATCH field whether you want to create the WIP File in foreground or batch mode. Enter F to indicate foreground; enter B to indicate batch. If you specify B, you must also provide request data set information.

When you type 1 in the OPTION field and press Enter, the WIP Specification panel displays. The WIP Specification Panel identifies the library or data set containing the WIP files you build.

WIP Library Specification Panel Fields

WIP Library

Required. Using standard ISPF naming conventions, specifies the library containing the new WIP files. Optionally, you can enter MEMBER information.

The WIP data set must be a partitioned or sequential data set. Its LRECL is equal to the LRECL of the Root library plus eight bytes.

Example The Root library's LRECL is 80 bytes, the WIP data set's LRECL is 88 (80 + 8).

WIP Other Partitioned or Sequential Data Set

This field is an alternative to entering WIP LIBRARY information, using standard ISPF conventions.

If Partitioned, Replace Like-Named Members

Indicates whether you want to replace like-named members in the WIP data set. Acceptable values are:

- Y—Default. Replace like-named members.
- N—Do not replace like-named members.

Note: This option does not apply to a sequential WIP file.

WIP Build Options

The WIP Build options fields allow you to select several options for WIP Build processing.

Number of Derivation Files

Required. Indicates the number of modified files the Root file is compared against. Valid values are:

- 1—One file.
- 2—Default. Two files.

Create WIP

Required. Indicates if PDM should write a WIP file. Value values are:

- Y—Default. PDM creates and writes to the WIP file.
- N—PDM bypasses writing to the WIP file, and still produces all the requested PDM reports and statistics.

Automatically Merge

Required. Indicates if PDM should automatically merge the WIP data set. Valid values are:

- N—Default. Do not merge the WIP data set.
- Y—Automatically merge the WIP data set if no conflicts are detected.

Generate WIP Reports

Required. Valid values are:

- A (All)—Default. Generates both the WIP Summary and Detail Reports.
- S (Summary)—Generates only the WIP Summary Report.
- N (No)— Prevents the generation of any reports.

Write Stats to Data Set

Optional. Specifies the name of the data set used to capture PDM statistics. It must conform to the normal ISPF/PDF naming conventions.

Note: For more information about statistics data set characteristics, see the appendix “Statistical Data Control Blocks”.

Allocating a WIP Library

If the WIP library you specify on the WIP Specification panel is not cataloged, PDM displays the WIP Dataset Allocation panel. This panel allows you to create a new WIP data set with the characteristics that you specify on the panel. This panel contains the following fields:

Management Class

Optional. If you specify a management class that is not defined, the allocation fails and PDM issues an error message.

Storage Class

Optional. If you specify a storage class that is not defined, the allocation fails and PDM issues an error message.

Volume Serial

Optional. If you specify a volume serial that is not defined, the allocation fails with a recoverable application error.

Data Class

Optional. If you specify a data class that is not defined, the allocation fails and PDM issues an error message.

Space Units

Acceptable values are:

- BLKS—Blocks
- TRKS—Tracks
- CYLS—Cylinders

Primary Quantity

Numeric field. Space is allocated in the units specified in the SPACE UNITS field.

Secondary Quantity

Numeric field. Space is allocated in the units specified in the SPACE UNITS field.

Directory Blocks

Numeric field.

- Non-zero values are required when specifying a WIP member
- Zero—Required for a sequential data sets.

Record Format

Acceptable values are:

- F
- FB
- V
- VB

Record Length

Must be numeric, greater than zero, and less than 32000 (fixed) or 32004 (variable)

Block Size

Required if the space unit is BLKS (blocks), otherwise optional. If left blank, the block size is set to zero. If provided, the value must be numeric, and greater than zero.

If the block size is specified and is not zero, and the record format is:

- F—The block size must be equal to the record length.
- FB—The block size must be an integral multiple of the record length.
- V or VB—The block size must be at least four bytes larger than the record length.

Specifying a WIP Member

You have three alternatives when entering member names in conjunction with the WIP library. You can:

- **Leave the field blank**. PDM builds a WIP library member list that is identical to the Root library member list.
- **Type a specific member**. If you type a specific member name, the WIP File is built for that member only.

- **Type an overlay mask**. An overlay mask differs from a standard name mask in that the characters specified before the asterisk (*) overlay the corresponding characters in the Root member name.

  For example, if you provide an overlay mask of **W***, every WIP member name begins with the letter **W**. This means that Root member BC1PAL00 appears in the WIP library as member WC1PAL00.

Press Enter when you have completed all the WIP specification data. The Root Specification Panel appears next.

Specifying a Root Library or CA Endevor SCM Location

When you press Enter after specifying a WIP library and WIP build options, the Root Specification panel displays.

Use the Root Specification Panel to define the Root library (and members) or the Root CA Endevor SCM location (and elements) you want to use when building the WIP file.

Note: You can specify a Root library and members or a Root CA Endevor SCM location and elements, but not both.

Root Specification Panel Fields

Enter the following information:

Build Root from

Indicates if the Root source is built from a data set or CA Endevor SCM. Valid values are:

- D—Default. The root source is built from a data set.
- E—CA Endevor SCM.

Root Library

Identifies the library containing the Root files. Define the library using standard ISPF naming conventions.

Root Other Partitioned or Sequential Data Set

This field can be used as an alternative to entering ROOT LIBRARY information.

Compare Columns

Required. Indicates the columns to be compared (from and through) during the Build WIP operation.

Important! Specify the correct compare column values for the data you are processing. For example, columns 1-6 of a COBOL program usually contain sequence numbers. You should therefore specify a compare range of columns 7-72 for COBOL. PDM then builds the WIP file based on the contents of columns 7 through 72. Likewise, if the Root is an assembler program, the compare range should be columns 1-72. If the Root is a CA Endevor SCM location, PDM uses the compare column information on the type definition for that element. In addition, if the compare through value specified on the element type definition is greater than the Root or Derivation data set length or the element source length, PDM writes an error message and terminates the Build WIP process.

Use caution when specifying a compare range for variable length records. If record lengths are different, PDM may annotate a record (line) as changed, even if record data is identical. For example, trailing blanks may be truncated in a variable length record.

CA Endevor SCM fields

These fields must be explicit:

- ENVIRONMENT
- SYSTEM
- SUBSYSTEM
- TYPE

Selection lists are provided if necessary. If you provide an invalid Stage ID, acceptable stage ID values are displayed to the right of this field after you press Enter.

Note: For more information about providing these element names, see Specifying a Root Member or Element (see page 30).

Version and Level

These fields allow you to build a WIP member using a specific version and level of an element. You can:

- Type a version and level on the Root Specification Panel.
- Use a Summary of Levels panel to select a version/level of the element.

Where CCID and CCID Type fields

These fields allow you to specify a CCID as a selection criterion when building a list of elements. The CCID TYPE field allows you to further qualify the CCID. The valid values are:

- A—Default. Any matching CCID field.
- B—The Base CCID field.
- L—The Last Action CCID field.
- G—The Generate CCID field.
- R—The Retrieve CCID field.

CCID selection is done only when a CCID is specified in the WHERE CCID field.

Specifying a Root Member or Element

Specify a Root member or element according to how the WIP Library Member was specified and how you can specify Root Members or Elements.

If the WIP Library Member was specified:

- By leaving the field blank
- By using an overlay mask.

You can specify root members or elements:

- By leaving the field blank
- Using a name mask
- As an explicit value

If the WIP Library Member was specified as an explicit value, then you can specify root members or elements only as an explicit value.

If the WIP library is a sequential data set, you must specify an explicit member or element name.

Sourceless elements are not valid for the Root, Derivation 1, or Derivation 2. If a sourceless element is specified on an input specification panel, an error message results. When elements with log delta format are used as input for the Root, Derivation 1, or Derivation 2, then the current (last) level must be specified. If the current level is not specified, an error message results.

Selecting a Member

If you provide an explicit member name for the WIP library, but do not specify an explicit member at the Root location, PDM displays a Build WIP - Member Selection List. PDM allows you to select only one member from this list. After you select a member, you can do one of the following:

- Press PF3 to deselect the member and return to the Root Specification Panel.
- Press Enter to display the Derivation 1 Specification Panel.

Selecting an Element

If you provide an explicit member name for the WIP library, but do not specify an explicit element at the Root CA Endevor SCM location, PDM displays an Element Selection List. The list contains the current level of the selected elements at the specified location.

PDM allows you to select only one element from this list. To access a Summary of Levels panel for an element, first type S in the COMMAND field, then type S next to the desired element, and press Enter.

The sourceless element indicator column is titled NS. If a Y is shown in this column, you cannot use this element, because sourceless elements cannot be used for the Root, Derivation 1, or Derivation 2. If a sourceless element is selected, an error message will indicate that an invalid selection was made.

Note: If the Root Specification Panel reappears with the message "Type "S" for Levels," and S is preloaded in the COMMAND field, press Enter to access a Summary of Levels panel.

After you have selected an element you can do one of the following:

- Press PF3 to deselect the element and return to the Root Specification Panel.
- Press Enter to display the Derivation 1 Specification Panel.

Specifying Derivation 1

The Derivation 1 Specification Panel appears when you press Enter after completing the Root Specification Panel. Use the Derivation 1 Specification Panel to define the Derivation 1 source location (and members) you want to use when building the WIP File.

Sourceless elements are not valid for the Root, Derivation 1, or Derivation 2. If a sourceless element is specified on an input specification panel, an error message results. When elements with log delta format are used as input for the Root, Derivation 1, or Derivation 2, then the current (last) level must be specified. If the current level is not specified, an error message results.

Specify a Derivation 1 library member according to the following table.

If the Root Library Member or Element is Specified	You Can Specify the Derivation 1 Member or Element
By one of these methods: ■ Leaving the field blank ■ Using an overlay mask	Using one of these methods: ■ Leaving the field blank ■ Using a name mask ■ An explicit value
As an explicit value	Only as an explicit value

If you provide an explicit member or element name for the Root location, but do not do so at the Derivation 1 location, PDM displays a member or element selection list.

When you have specified all Derivation 1 source information and press ENTER, one of the following occurs:

- The Derivation 2 Specification Panel appears if you specified NUMBER OF DERIVATION FILES=2 on the WIP Specification panel.
- The Merge Output Specification panel appears if you specified NUMBER OF DERIVATION FILES=1 and AUTOMATICALLY MERGE=Y on the WIP Specification panel.

  To proceed, specify a library to which PDM can write the merged output from the WIP file.
- The Parallel Development Option menu appears if you provided explicit Root library and Derivation 1 library member names, and specified NUMBER OF DERIVATION FILES=1 and AUTOMATICALLY MERGE=N on the WIP Specification panel.

  The Parallel Development Option menu displays the message WIP BUILD COMPLETE, meaning that PDM has created a WIP file from the Root and Derivation 1 library members.
- The message log appears if the Build WIP process fails, and you specified NUMBER OF DERIVATION FILES=1 and AUTOMATICALLY MERGE=Y on the WIP Specification panel.
- The Parallel Development Option menu appears if the Build WIP process fails, and you specified NUMBER OF DERIVATION FILES=1 and AUTOMATICALLY MERGE=Y on the WIP Specification panel, and there are conflicts in the WIP file.

- The WIP Member Selection Matrix appears if you specified:
  - NUMBER OF DERIVATION FILES=1 and AUTOMATICALLY MERGE=N on the WIP Specification panel
  - The WIP Library by leaving the MEMBER field blank or using an overlay mask
  - The Root library member by leaving the MEMBER field blank or using an overlay mask
  - The Derivation 1 library member by leaving the MEMBER field blank, using an overlay mask, or providing an explicit value

Specifying Derivation 2

The Derivation 2 Specification Panel appears when you press Enter after completing the Derivation 1 Specification panel and if you specified NUMBER OF DERIVATION FILES=2 on the WIP Specification panel.

Use the Derivation 2 Specification Panel to define the Derivation 2 library (and members) or the Derivation 2 CA Endevor SCM location (and elements) you want to use when building the WIP File.

Sourceless elements are not valid for the Root, Derivation 1, or Derivation 2. If a sourceless element is specified on an input specification panel, an error message results. When elements with log delta format are used as input for the Root, Derivation 1, or Derivation 2, then the current (last) level must be specified. If the current level is not specified, an error message results.

Specify a Derivation 2 library member according to the following table.

If the Root Member or Element Was Specified	You Can Specify the Derivation 1 Member or Element	And You Can Specify the Derivation 2 Member or Element
By one of these methods: ■ Leaving the field blank ■ Using a name mask	Using one of these methods: ■ Leaving the field blank ■ Using a name mask ■ An explicit value	Using one of these methods: ■ Leaving the field blank ■ Using a name mask ■ An explicit value
As an explicit value	Only as an explicit value	Only as an explicit value

If you provide an explicit member or element name for the Root location, but do not do so at the Derivation 1 location, PDM displays a member or element selection list.

When you have specified all Derivation 2 source information and press ENTER, one of the following happens:

- The Merge Output Specification panel appears if you specified NUMBER OF DERIVATION FILES=2 and AUTOMATICALLY MERGE=Y on the WIP Specification panel.

  To proceed, specify a library to which PDM can write the merged output from the WIP file.
- The Parallel Development Option menu appears if you provided explicit Root library, Derivation 1 and Derivation 2 library member names, and specified NUMBER OF DERIVATION FILES=2 and AUTOMATICALLY MERGE=N on the WIP Specification panel.
- The Parallel Development Option menu displays the message WIP BUILD COMPLETE, meaning that PDM has created a WIP file from the Root, Derivation 1 and Derivation 2 library members.
- The message log appears if the Build WIP process fails, and you specified NUMBER OF DERIVATION FILES=2, AUTOMATICALLY MERGE=N on the WIP Specification panel, and the WIP, Root, and Derivation 1 files were explicitly specified.
- The WIP Member Selection Matrix appears if you specified:
  - NUMBER OF DERIVATION FILES=2 on the WIP Specification panel
  - The Root library member by leaving the MEMBER field blank or using an overlay mask
  - The Derivation 1 and Derivation 2 library members by leaving the MEMBER field blank, using an overlay mask, or providing an explicit value.

Creating a Merge Output File During the Build WIP Process

If you specify AUTOMATICALLY MERGE=Y on the WIP Specification panel, PDM will try to create automatically a merge file from the WIP file as the last step in the Build WIP process. PDM will create the Merge file only if it finds no conflicts in the WIP file.

When you specify AUTOMATICALLY=Y on the WIP Specification Panel, the Merge Output Specification Panel appears when you press Enter after providing necessary information on either the Derivation 1 or Derivation 2 Specification panel.

Use the Merge Output Specification Panel to:

- Identify the library to which you want PDM to write the merge output file.
- Specify other options related to the merge process

Note: When PDM creates the merge output file automatically during the Build WIP process, the merge output file name is the same as the WIP member name. You cannot change the name of the Merge Output file.

When you press Enter after providing information on this panel:

- The CA Endevor Parallel Development Option menu appears with a message indicating the merge process has succeeded or failed. The merge process fails if there are conflicts in the WIP file.
- The message log appears if the merge process fails for some other reason.
- The WIP Selection Matrix appears if Root or either of the Derivation files were not explicitly specified.

Merge Output Specification Panel Fields

Merge Library fields

Use to specify the merge library, using standard ISPF conventions.

Note: The record length of the Merge data set must be large enough to support the largest WIP record. Generally this means that the Merge data set must be no shorter than eight bytes less than the WIP record length. For example, if the WIP data set record length is 88, then the Merge data set record length must be at least 80.

Data Set Name

Use as an alternative to the MERGE LIBRARY fields.

If Partitioned, Replace Like-named Members

Indicates whether PDM is to replace like-named members in the merge output library. The default is Y.

Delete WIP Member after Merge

Tells PDM whether to delete the WIP member after creating the merge output file. The default is N.

CA Panvalet or CA Librarian Language

Optional. This field associates a CA Panvalet or CA Librarian type identifier with the named output member. PDM ignores the field if the merge data set is not a CA Panvalet or a CA Librarian data set. Selections include:

- **CA Panvalet—**ALC, ANSCOBOL, AUTOCODE, BAL, COBOL, COBOL-72, DATA, FORTRAN, JCL, OBJECT, PL/1, RPG, USER180, USER780, OTHER.
- **CA Librarian—**ASM, COB, DAT, FOR, FRG, FRS, GIF, GOF, JCL, PLF, PLI, RPG, TXT, VSB.

If left blank, the default value is DATA for CA Panvalet, and DAT for CA Librarian.

Using the WIP Member Selection Matrix

The WIP Member Selection Matrix contains a header identifying the WIP, Root, Derivation 1 and Derivation 2 libraries or CA Endevor SCM locations. The matrix also displays the member or element names within the Root, Derivation 1, and Derivation 2 libraries or CA Endevor SCM locations next to their corresponding WIP member names. Any sourceless elements are excluded from the display.

The only difference caused by designating Root, Derivation 1, and/or Derivation 2 from CA Endevor SCM is in the format of the matrix header, as follows:

- A CA Endevor SCM source name is defined using the environment, stage, system, subsystem, and type, separated by slashes.

```
Work-in-Process:  ENDEVOR.PDM.WIPLIB
Root:             SUPPORT /B /FINANCE /ACCTREC /COPYBOOK
Derivation 1:     SUPPORT /A /FINANCE /ACCTREC /COPYBOOK
Derivation 2:     DEMO    /P /FINANCE /ACCTREC /COPYBOOK
```

- A data set source name is defined using standard data set naming conventions.

```
Work-in-Process:  ENDEVOR.PDM.WIPLIB
Root:             ENDEVOR.PDM.ROOT
Derivation 1:     ENDEVOR.PDM.DV1LIB
Derivation 2:     ENDEVOR.PDM.DV2LIB
```

Sample Matrix

The matrix can be a useful tool because it allows you to view and manipulate matrix rows prior to invoking the Build WIP process.

Each row in the matrix consists of the name of a WIP file and of the Root and Derivation files from which it is built. Rows that contain the names of a WIP and Root are assigned a sequence number. Unmatched Derivation 1 or Derivation 2 members appear on the matrix after the last sequenced row, and are not assigned sequence numbers.

Use the PF8 and PF7 keys to scroll through the matrix. To find a particular WIP member within the matrix, you can use the locate command. When you issue the CREATE command PDM processes all matrix rows containing:

- WIP, Root and Derivation 1 file specifications.
- WIP, Root, Derivation 1 and Derivation 2 file specifications.

Note: PDM does not process rows with only WIP, Root, and Derivation 2 file specifications.

For example, PDM processes rows 0001, 0009, and 0012. The remaining rows are not processed because they do not include a Derivation 1 file.

The WIP Member Selection Matrix panel provides row commands that allow you to restrict the rows processed by PDM, by:

- Excluding rows from the Build WIP process.
- Including previously excluded rows in the Build WIP process.
- Renaming members that currently exist in the WIP data set.
- Moving any Derivation 1 or Derivation 2 members to match them with specific Root members.

The WIP Member Selection Matrix panel also provides commands for manipulating the entire matrix. Specifically, you can:

- Print the matrix, using the PRTMAT command.
- Position the matrix on a line using the LOCATE command.
- Sort the matrix, using the SORT command
- Create WIP files or build SCL using the CREATE command.

These rows and matrix commands are discussed in the following sections.

Excluding a WIP Member

Use the EXCLUDE command to exclude a WIP matrix row from processing. You may decide that rather than rename a particular member, you will just not process it. Or, you may want to build WIP Files for only those matrix rows with members in the Root and at least one Derivation. The exclude command allows you to quickly eliminate unnecessary processing.

To exclude a WIP member(s) from processing, type X in the SELECTION field =next to the WIP member(s) to be excluded. Then, press Enter. The screen returns with the message *EXCLUDED in the RENAME field, next to the appropriate WIP member(s). Note that there is no longer a sequence number for the member.

Including Matrix Rows

The INCLUDE command can be used to include a matrix row that you have previously excluded, or to override the "no replace" parameter. To include a matrix row, type I next to the appropriate member(s), then press Enter.

The screen returns with the message *INCLUDED in the RENAME field, next =to the appropriate WIP member(s), to indicate that the member has been included. A sequence number also appears for the member.

Renaming a WIP Member

Use the RENAME command to assign a new name to a member with the same name as another member in the WIP data set. To rename a member, type an R in the SELECTION field next to the member(s) to be renamed, type the new name in the RENAME field, then press Enter.

The screen returns with the message *RENAMED in the RENAME field, next to the new member name.

Moving a Derivation 1 or Derivation 2 Member

Unmatched Derivation 1 and Derivation 2 member names are listed at the end of the WIP Member Selection Matrix. You may realize that some of these members actually do match listed Root members. Or, you may want to replace a Derivation 1 or Derivation 2 member in a matrix row with a different member. PDM allows you to move Derivation 1 and Derivation 2 members into the different matrix rows.

To move the member, tab to the member name you want to move. Type the number of the matrix row to which you want to move this member before the member name, then press Enter. If the member being moved is replacing an existing member, the old member is moved to the first available open slot in the matrix, after the last matrix row with a sequence number.

Like-Named WIP Members

Occasionally, you may specify a WIP data set that contains a member with the same name as another member. If you answered Y for the IF PARTITIONED, REPLACE LIKE-NAMED MEMBERS option on the WIP Specification Panel, PDM replaces the existing member with the new member. If you indicated N for the option, the like-named member is not processed.

The message *NO-REPL in the RENAME column indicates that the data set ENDEVOR.PDM.WIPLIB already contains the member WC1PAL10, and that the IF PARTITIONED, REPLACE LIKE-NAMED MEMBERS option was not chosen (that is, N was entered in this field).

In this situation, you have three options:

- You can leave the member name as is, which means that the member is not processed.
- If you want to replace this particular member in the WIP data set and you are in foreground mode, you can simply include the member. The INCLUDE command is discussed earlier in this section.
- If you want to keep both like-named members and/or you are processing in batch mode, you must include and rename the member. The RENAME command is also discussed earlier in this section.

Printing the Matrix

The PRTMAT command syntax is:

```
PRTMAT sysout-class destination
```

PRTMAT

Prints a formatted version of the matrix.

sysout-class

An optional parameter that identifies the output class. If the output class is not specified, PDM uses the values specified on the PDM User Defaults panel.

destination

An optional parameter that identifies the output destination. If the destination is not specified, PDM uses the values specified on the PDM User Defaults panel.

Note: If no defaults are provided, PDM routes the output to SYSOUT class A.

Example

Command	Description
PRTMAT C	Prints the matrix to class C.
PRTMAT C PRNT15	Prints the matrix to class C printer number 15.

Positioning the Matrix

The LOCATE command syntax is:

```
LOCATE row-value column-name
```

Locate

Positions the matrix to a specified row value. This command can be abbreviated to *loc* or *l*

row-value

Identifies the value being used in the search.

column-name

This optional parameter identifies the column being searched. The default LOCATE column is the WIP member name. If a SORT command is issued, the column name parameter provided becomes the default LOCATE column. Valid values include:

- WIPSEQ—WIP sequence number
- WIP—WIP member name
- ROOT—Root member name
- DER1—Derivation 1 member name
- DER2—Derivation 2 member name

If the column name specified in the LOCATE command is not the current sort column, the LOCATE command may appear to position the matrix to the incorrect row. This can occur if:

- The column name specified is not sorted.
- The column contains renamed members.
- The column contains unmatched members.

To correctly position the matrix in these instances, use the SORT command to sort the matrix.

Example

Command	Description
LOC PROGX	Positions the matrix at the first row containing PROGX.
L PROGX DER1	Positions the matrix at the first row containing PROGX in the DER1 column.

Sorting the Matrix

The SORT command syntax is:

```
SORT column-name
```

SORT

Orders the matrix into ascending sequence based on the value of column-name.

column-name

Identifies which column to sort into ascending order. The default column is the WIP member name. Valid values include:

- WIPSEQ—WIP sequence number.
- WIP—WIP member name.
- ROOT—Root member name
- DER1—Derivation 1 member name
- DER2—Derivation 2 member name.

Example

Command	Description
SORT ROOT	Sorts the matrix based on the Root column. The Root column now becomes the default LOCATE column.

Creating WIP Files or SCL

Once you have edited the matrix to meet all your requirements, you can create WIP files or SCL for each member or element. To do this, type CREATE in the COMMAND field, then press Enter.

Note: When you issue the CREATE command, PDM processes all the rows that are not excluded and that have at least a Root and Derivation 1 member.

If you are in foreground mode, PDM begins the Build WIP process for all the rows that are not excluded. If you are in batch mode, PDM creates batch requests for all the rows that are not excluded and writes the requests to the batch request data set. The batch files can be processed with the Submit option on the Primary Option Menu.

To cancel the Build WIP process, type QUIT in the OPTION field and press Enter to return to the Parallel Development Option menu.

When the Build WIP process is complete, the Parallel Development Option menu returns with one of these messages:

- **WIP Build Complete**—If you are processing in foreground mode
- **Requests Written**—If you are processing in batch mode

Using the Summary of Levels Panel

When using a CA Endevor SCM location as the Build WIP input location, you can tell PDM to use a level other than the current version and level during the build operation.

If you know the version and level you want to use, you can enter them directly on the Root, Derivation 1, or Derivation 2 Specification Panel. Otherwise, you can review a Summary of Levels panel to find the version/level you want to use. To access a Summary of Levels panel:

- From a specification panel, type **S** in the COMMAND field, an explicit name or name mask in the ELEMENT field, then press Enter.
  - If you provide an explicit element name the Summary of Levels panel displays.
  - If you provide a mask, an Element Selection List displays. Select an element from this list, then press Enter to display the Summary of Levels panel.
- From an Element Selection List, type **S** in the COMMAND field, **S** to the desired element, then press Enter.

Note: To find a particular version/level within the Summary of Levels display, you can use the ISPF locate command. The command must be specified in the COMMAND field, and pertains to version and level only. You can either enter the full command (locate 01.01) or abbreviate it (loc 01.01 or l 01.01).

Using the Summary of Levels Panel with the WIP Member Selection Matrix

You can also access the Summary of Levels panel from the WIP Member Selection Matrix. Type an S next to the element name for which you want to use a particular version and level. Press Enter; the Summary of Levels screen is returned.

Select the version and level you want to use from the Summary of Levels screen, as described in the preceding section. Press Enter; the WIP Member Selection Matrix reappears.

When you view this panel, the "<" appended to the end of the element name indicates a version and level other than the current version/level is used for this element when building the WIP File.

Clearing an Assigned Version/Level

You can clear the version and level designated for an element by blanking out the entries on either the specification panel on which they appear or the Summary of Levels screen.

To clear the version and level on the specification panel, tab to the VERSION and LEVEL fields and space through the entries. The current version and level will now be used for the element. If you want to assign a different version and level, type the new entries on this panel or use the Summary of Levels panel.

To clear the version and level on the Summary of Levels panel, tab to the version/level displayed next to the element name (in the top portion of the screen) and space over the entry. Press Enter.

The Summary of Levels screen reappears, with no version/level for the element. The current version and level will be used automatically for the element, unless you select a different version/level from the panel. You must press PF3 to return to your previous screen.

Once you clear the version and level for the element, the "**<**" no longer appears at the end of the element name on the WIP Member Selection Matrix.

How to Proceed After Building the WIP File

Building the WIP File (or WIP File requests) and analyzing the results is the first step in the PDM process. You can review the WIP Summary Report during the Build WIP process without actually building the WIP file.

The PDM reports, listed below, can be generated during Build WIP processing:

- PDM Syntax Report
- PDM Build WIP Detail Report
- PDM Build WIP Summary Report

The next step is to consolidate and resolve conflicts and duplicate code by editing the WIP File. Use the PDM edit WIP function to make the appropriate changes to the WIP file.

Chapter 3: Editing WIP Files

This section contains the following topics:

The Format of the WIP File

PDM builds the WIP File by adding, and annotating, all the changes made in the Derivation 1 and Derivation 2 files to the Root file. It then writes this new file to the WIP library. The WIP file is made up of:

- Header information
- WIP file annotations
- The WIP file itself

This section describes these components.

The WIP File Header

Number of WIP Records

The number of lines in the WIP file.

Number of Deleted Records

The total number of lines flagged as deleted. The number of the deletions in DER1, in DER2, and common deletions are noted to the right of this figure.

Number of Inserted Records

The total number of lines flagged as inserted. The number of the insertions in DER1, in DER2, and common insertions are noted to the right of this figure.

Number of Conflicts

The number of areas where conflicting changes were found.

Complexity Factor

The PDM-calculated estimate of the severity of the conflicts in the WIP file.

Build Return Code

The highest return code from the Build WIP process.

The WIP File

As you review the WIP File, you notice various lines are annotated on the left side--in the first eight columns of the file. These annotations indicate the changes made to the Root program by each Derivation.

%

Indicates that a change has occurred between the Root and one of the Derivations.

?

Indicates that a conflict exists at this point; this means that both Derivations made different changes to this line of the Root file.

I

Indicates that a line was added (inserted) by one of the Derivation files.

D

Indicates that a line was deleted by one of the Derivation files.

1 or 2

Indicates which Derivation the change came from, either 1 or 2. If the change came from both derivation files, the annotation would be 1,2.

*****

Indicates a comment line. One or more asterisks may appear at the beginning of the line, but an asterisk in the first position of the line signifies that it is a comment line. PDM merge processing ignores comment lines.

Examples

% I-1

A line has been inserted by Derivation 1.

% D-2

A line has been deleted by Derivation 2.

% D-1,2

There has been a common deletion; both Derivation files deleted the same line.

%?I-1

%?I-2

A potential conflict exists at this point in the original program. Both versions inserted different lines at the same place in the original program.

Note: See Editing the WIP File for instructions on editing a WIP file.

Editing the WIP File

Once the WIP File has been built, you can edit it using the PDM Edit WIP function. The (edited) WIP File will be used as input to the Merge process, the result of which is an output file that can be added back into CA Endevor SCM, stored in a source repository, or serve as input to a compiler.

To edit a WIP file, do the following:

1. Type **2** (EDIT WIP) in the OPTION field on the CA Endevor Parallel Development Option menu:
2. Press Enter to display the Edit - Entry Panel. Specify the WIP library and the member you want to edit on this panel, using standard ISPF conventions.
3. When you have specified the member you want to edit, press Enter to display an ISPF/PDF edit panel.

PDM invokes the standard ISPF/PDF editor. All ISPF/PDF edit commands are available. Resolve the conflicts in the WIP File, using these ISPF/PDF editing tools.

Note: Remember that the WIP File contains all insertions and deletions made by both Derivations, and flags any potential conflicts. If you decide not to edit the WIP File, PDM inserts all lines marked as insertions and deletes all lines marked as deletions during the Merge process. Because this could result in unresolved conflicts within the file, we recommend that you edit any WIP File member with a complexity factor higher than zero.

PDM provides commands, implemented as ISPF/PDF edit macros, to help you edit WIP files. These commands are described in the next section.

WIP Edit Commands

To help edit the WIP file, PDM includes several commands that you can invoke from the ISPF/PDF Edit command line.

Note: To use these commands you must have accessed the WIP file using option 2 on the CA Endevor Parallel Development Option menu. These commands are not available if you edit the WIP file through the ISPF/PDF edit option.

WIP Edit Command Syntax

The syntax for invoking these commands is:
COMMAND-NAME parameter1 parameter2 parameter2

COMMAND-NAME

The following commands are valid:

WIPCOUNT

Counts the number of line records in the WIP member from the Root, Derivation 1, and Derivation 2 files.

WIPLDEL

Logically deletes lines from a specified WIP member.

WIPUNDEL

Restores any lines logically deleted by WIPLDEL, next it automatically invokes WIPCOUNT to recount the WIP statistics.

WIPSHOW

Displays only the lines that have not been logically deleted from the WIP member.

WIPCHANG

Displays only the lines that have changed during the WIP edit session.

WIPPARA

Identifies each inserted or deleted paragraph within the WIP member.

WIPCON

Displays only those lines identified as conflicts within the WIP member.

WIPMERGE

Creates a temporary Merge file from the WIP file.

WIPHELP

Displays help and tutorial information about the available WIP edit commands.

parameter1 parameter2 parameter2

When a command can use parameters, the acceptable values of the parameters are:

R

To specify a Root file

1

To specify a Derivation 1 file

2

To specify a Derivation 2 file

WIP Edit Examples

These examples provide an overview of the WIP edit command's general functionality.

WIPSHOW Example

To use the WIPSHOW command to display records for the Root and Derivation 2 files, you would type:

```
WIPSHOW  R  2
```

WIPLDEL Example with Multiple Files

When you specify more than one file in a command, the command executes against lines that include identifiers for any or all of the specified files. When you issue the WIPLDEL command below, the WIPLDEL command logically deletes lines that were inserted from the Derivation 1 file (%I-1), the Derivation 2 file (%I-2), or both files (% I-1,2):

```
WIPLDEL  1  2
```

WIPLDEL Example with a Single File

When you specify one file in a command, the command executes against lines that include the specified identifier. When you issue the command:

```
WIPLDEL  1
```

The WIPLDEL command logically deletes lines that were inserted from the Derivation 1 file (%I-1) or both files (% I-1,2).

WIPCOUNT

The WIPCOUNT command counts the number of lines in the WIP member from the included Root, Derivation 1, and Derivation 2 files. The command places the result in a message line at the top of the WIP member. The message looks like this:

```
WIPCOUNT RESULTS:
NUMBER OF ROOT/COMMON LINES:
LINES INSERTED BY DERIVATION 1:
LINES INSERTED BY DERIVATION 2:
LINES INSERTED BY BOTH DERIVATION 1/2:
TOTAL COMMON AND INSERTED LINES:
```

Execute and Use WIPCOUNT

To execute the WIPCOUNT command, type **WIPCOUNT** in the COMMAND field, then press Enter.

Use the WIPCOUNT command to assess the condition of the WIP file.

Note: The WIPCOUNT command does not update the WIP header.

WIPLDEL

The WIPLDEL command logically deletes all lines in the specified file or files, by placing a comment indicator (*) in the first column of the line. The command then automatically invokes WIPCOUNT to recount the WIP statistics.

Execute and Use WIPLDEL

To execute the WIPLDEL command, type **WIPLDEL** and the desired parameters (R, 1, 2) in the COMMAND field, then press Enter.

Use the WIPLDEL command to:

- Compare any two of the three input files.
- View a single input member.

WIPUNDEL

The WIPUNDEL command undeletes any lines logically deleted by WIPLDEL. The command then automatically invokes WIPCOUNT to recount the WIP statistics.

Execute and Use WIPUNDEL

To execute the WIPUNDEL command, type **WIPUNDEL** and the desired parameters (R, 1, 2) in the COMMAND field, then press Enter.

Use the WIPUNDEL in conjunction with the WIPLDEL and WIPSHOW commands to try out different editing scenarios before beginning the merge process.

WIPSHOW

The WIPSHOW command displays the lines in the Root, the Derivation 1, or the Derivation 2 file. It does not display lines that have been logically deleted.

Execute and Use WIPSHOW

The user first types the command **WIPSHOW R 1** in the COMMAND line.

The following is an example of how the WIPSHOW command works.

```
EDIT ---- ENDEVOR.PDM.WIPLIB(WIPAA) - 01.01 ------------------ COLUMNS 001 072
COMMAND ===> WIPSHOW R 1                                       SCROLL ===> HALF
000009 ******* ----+----1----+----2----+----3----+----4----+----5----+----6----
000010         THIS IS ROOT LINE 1
000011 * I-1   INSERT BY DV1, LINE 1
000012 % I-1   INSERT BY DV1, LINE 2
000013 % I-2   INSERT BY DV2, LINE 1
000014         THIS IS A ROOT LINE
000015 % I-1,2 INSERT COMMON, LINE 1
000016 % I-1   INSERT BY DV1, LINE 3
000017         THIS IS A ROOT LINE
000018 % D-1,2 THIS IS A COMMON DELETE
000019 % I-2   INSERT BY DV2, LINE 1
000020 % I-1,2 INSERT BY DV2, LINE 1
000021         THIS IS A ROOT LINE
000022         THIS IS A ROOT LINE
000023 % I-2   INSERT BY DV2, LINE 2
000024 % I-1,2 INSERT COMMON, LINE 1
000025 % I-2   INSERT BY DV2, LINE 3
000026 % D-2   INSERT BY DV2, LINE 3
000027         THIS IS ROOT LINE 2
****** *************************** BOTTOM OF DATA ****************************
```

Pressing Enter executes the WIPSHOW command, which produces the following output.

```
EDIT ---- ENDEVOR.PDM.WIPLIB(WIPAA) - 01.02 ------------------ 11 LINES FOUND
COMMAND ===>                                                 SCROLL ===> HALF
****** **************************** TOP OF DATA ******************************
- - -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  9 LINE(S) NOT DISPLAYED
000010         THIS IS ROOT LINE 1
- - -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  1 LINE(S) NOT DISPLAYED
000012 % I-1   INSERT BY DV1, LINE 2
- - -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  1 LINE(S) NOT DISPLAYED
000014         THIS IS A ROOT LINE
000015 % I-1,2 INSERT COMMON, LINE 1
000016 % I-1   INSERT BY DV1, LINE 3
000017         THIS IS A ROOT LINE
- - -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  2 LINE(S) NOT DISPLAYED
000020 % I-1,2 INSERT BY DV2, LINE 1
000021         THIS IS A ROOT LINE
000022         THIS IS A ROOT LINE
- - -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  1 LINE(S) NOT DISPLAYED
000024 % I-1,2 INSERT COMMON, LINE 1
- - -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  2 LINE(S) NOT DISPLAYED
000027         THIS IS ROOT LINE 2
****** *************************** BOTTOM OF DATA ***************************
```

In this example, the WIPSHOW command displays only those lines that are from the Root and the Derivation 1 file and that have not been logically deleted. Line 11 is excluded from the display because it was logically deleted from the WIP member. Lines 15, 20 and 24 are included in the display because they are common between the Derivation 1 and the Derivation 2 file.

WIPCHANG

The WIPCHANG command displays only the lines in the WIP file that have changed.

Execute and Use WIPCHANG

To execute the WIPCHANG command, type **WIPCHANG** in the COMMAND field, then press Enter.

Use the WIPCHANG command to assess the condition of the WIP file.

WIPPARA

The WIPPARA command identifies each paragraph in a WIP file. A paragraph is defined as a block of lines that have the same operation (insert or delete) from the same derivation file(s).

The WIPPARA command identifies each paragraph in the WIP file and adds a =NOTE= line immediately before the first line in the paragraph. The =NOTE= line identifies the type of paragraph. If the WIP file contains at least one paragraph, PDM positions the WIP member at the first paragraph found. To locate subsequent paragraphs in the WIP file, you can use the ISPF/PDF LOCATE SPECIAL command. The ISPF/PDF RESET command will remove the =NOTE= lines.

Execute and Use WIPPARA

To execute the WIPPARA command, type **WIPPARA** in the COMMAND field then press Enter. The following is an example of the output from the WIPPARA command.

```
EDIT ---- ENDEVOR.PDM.WIPLIB(WA) - 01.00 ------------------- 6 PARAGRAPHS FOUND
COMMAND ===>                                                 SCROLL ===> HALF
=NOTE= * THE FOLLOWING PARAGRAPH IS A COMMON INSERT BLOCK
000019 % I-1,2 INSERT BY DV1, LINE 1
000020 % I-1,2 INSERT BY DV1, LINE 2
000021         THIS IS ROOT LINE 3
000022         THIS IS ROOT LINE 4
000023         THIS IS ROOT LINE 5
=NOTE= * THE FOLLOWING PARAGRAPH IS A CONFLICTING INSERT FROM DERIVATION 1
000024 %?I-1   INSERT BY DV1, LINE 3
000025 %?I-1   INSERT BY DV1, LINE 4
000026 %?I-1   INSERT BY DV1, LINE 5
=NOTE= * THE FOLLOWING PARAGRAPH IS A CONFLICTING INSERT FROM DERIVATION 2
000027 %?I-2   INSERT BY DV2, LINE 3
000028 %?I-2   INSERT BY DV2, LINE 4
000029 %?I-2   INSERT BY DV2, LINE 5
000030         THIS IS ROOT LINE 6
000031         THIS IS ROOT LINE 7
=NOTE= * THE FOLLOWING PARAGRAPH IS AN INSERT BLOCK FROM DERIVATION 2
000032 % I-2   INSERT BY DV2, LINE 6
000033 % I-2   INSERT BY DV2, LINE 7
=NOTE= * THE FOLLOWING PARAGRAPH IS A COMMON DELETE BLOCK
000034 % D-1,2 THIS IS ROOT LINE 8
```

Use the WIPPARA command to assess the condition of the WIP file.

WIPCON

The WIPCON command displays only those lines identified as conflicts within the WIP member.

Execute and Use WIPCON

To execute the WIPCON command, type **WIPCON** in the COMMAND field, then press Enter.

Use the WIPCON command to view quickly those areas of the WIP file where you will need to resolve conflicts.

WIPMERGE

The WIPMERGE command allows you to test edits by creating a temporary merge file within an edit session. If you do not like the results of the temporary merge file, you can return to the WIP file and continue editing it.

The WIPMERGE command:

- Executes pending edit commands.
- Saves the current WIP member.
- Displays the merge file in browse mode.

When you end the browse session, the WIP edit session resumes.

Execute and Use WIPMERGE

To execute the WIPMERGE command, type **WIPMERGE** and, optionally, a single character change identifier in the COMMAND field, then press Enter.

WIPMERGE uses the single optional character in the command line to identify inserted lines in the merge file. PDM places the identifier in column 1 of the merge file when a line has been inserted by either the Derivation 1 or Derivation 2 file.

The following command instructs PDM to put the letter C in the first column of any lines in the merge file that were inserted by the Derivation 1 or Derivation 2 files.

```
WIPMERGE  C
```

When you specify a change ID in the WIPMERGE command, the message **Change ID Specified** appears in the upper right hand corner of the merge file.

What You Do After Editing the WIP File

When you have finished editing the WIP File, press PF3; the Edit - Entry Panel reappears. The message **Member Saved** appears in the upper right-hand corner of the screen.

Editing the WIP File is the second step in the PDM process. The next step is merging the edited WIP File into an output source file, which can then be added back into CA Endevor SCM, stored in the appropriate source repository, or compiled.

Chapter 4: Merging WIP Files

This section contains the following topics:

The Merge Output File

PDM creates a merge output file from a WIP file. Before creating a merge output file, all conflicts must be edited out of the WIP file. The WIP file can contain non-conflicting inserts and deletes.

When building a WIP file, PDM:

- Removes the WIP header information.
- Inserts and deletes lines as necessary.
- Removes the WIP annotations.

A portion of a WIP file and the resulting merge output file is shown below.

WIP File

```
               ENVIRONMENT DIVISION.
               INPUT-OUTPUT SECTION.
               FILE-CONTROL.
                   SELECT REPORT-FILE ASSIGN U-T-SYSOUT.
                   SELECT INPUT-FILE ASSIGN U-T-INPUT.
               DATA DIVISION.
               FILE SECTION.
               FD REPORT-FILE
                   LABEL RECORDS ARE OMITTED
                   RECORDING MODE IS F
                   RECORD CONTAINS 133 CHARACTERS
                   DATA RECORD IS OUTPUT-RECORD.
                 01 OUTPUT-RECORD.
                   02 CARRIAGE-CONTROL PIC X.
                   02 OUTPUT-LINE      PIC X(132).
               FD INPUT-FILE
                   LABEL RECORDS ARE STANDARD
                   RECORD CONTAINS 80 CHARACTERS
                   DATA RECORD IS INPUT-FILE-RECORD.
                 01 INPUT-FILE-RECORD.
                   02 INPUT-FIELD1           PIC 9(8).
%?I-1              02 INPUT-FIELD2           PIC X(8).
%?I-2              02 INPUT-FIELD2           PIC X(6).
% D-1,2            02 INPUT-FIELD2           PIC X(10).
                   02 INPUT-FIELD3           PIC X(20).
                   02 INPUT-FIELD4           PIC 9(6).
                   02 INPUT-FIELD5           PIC 9(6).
%?I-1              02 FILLER                 PIC X(32).
%?I-2              02 FILLER                 PIC X(34).
```

Merge Output File Based on Edits to WIP File

```
               ENVIRONMENT DIVISION.
               INPUT-OUTPUT SECTION.
               FILE-CONTROL.
                   SELECT REPORT-FILE ASSIGN U-T-SYSOUT.
                   SELECT INPUT-FILE ASSIGN U-T-INPUT.
               DATA DIVISION.
               FILE SECTION.
               FD REPORT-FILE
                   LABEL RECORDS ARE OMITTED
                   RECORDING MODE IS F
                   RECORD CONTAINS 133 CHARACTERS
                   DATA RECORD IS OUTPUT-RECORD.
                 01 OUTPUT-RECORD.
                   02 CARRIAGE-CONTROL PIC X.
                   02 OUTPUT-LINE      PIC X(132).
               FD INPUT-FILE
                   LABEL RECORDS ARE STANDARD
                   RECORD CONTAINS 80 CHARACTERS
                   DATA RECORD IS INPUT-FILE-RECORD.
                 01 INPUT-FILE-RECORD.
                   02 INPUT-FIELD1           PIC 9(8).
%?I-1              02 INPUT-FIELD2           PIC X(8).
%?I-2              02 INPUT-FIELD2           PIC X(6).
% D-1,2            02 INPUT-FIELD2           PIC X(10).
                   02 INPUT-FIELD3           PIC X(20).
                   02 INPUT-FIELD4           PIC 9(6).
                   02 INPUT-FIELD5           PIC 9(6).
%?I-1              02 FILLER                 PIC X(32).
%?I-2              02 FILLER                 PIC X(34).
```

In this example, two steps were involved in creating the merge output file:

1. The user deleted from the WIP file both inserts from Derivation 2, namely:

```
%?I-2              02 INPUT-FIELD2          PIC X(6).
%?I-2              02 FILLER                PIC X(34).
```

2. During the merge process, PDM:
   - Inserted the two Derivation 1 inserts. The lines annotated with %?I-1.
   - Made the common delete. The line annotated with % D-1,2.
   - Removed the annotation entries to produce the merge output file.

Creating a Merge Output File

PDM creates a merge output file:

- Automatically, during the build WIP process, when you specify AUTOMATICALLY MERGE=Y on the WIP Specification Panel and there are no conflicts in the WIP file.
- Upon request, by invoking option 3 on the CA Endevor Parallel Development Option menu, the following describes this procedure.

Merge a WIP File to a Data Set

You can indicate that you wan t the merge output placed in a data set.

To merge a WIP File

1. Type **3** in the Command field o n the CA Endevor Parallel Development Option menu. and specify the appropriate processing mode in the PROCESSING MODE: FOREGROUND OR BATCH field:
   - F—Foreground
   - B—Background
2. Define the WIP file that you want to merge, using standard ISPF conventions.
   - Enter an explicit member name, to merge only that member.
   - Enter an asterisk (*) to merge all members in the library.
   - Leave the MEMBER field blank or enter a name mask to select a member(s) from the Merge Output Member Selection List.

   When you press Enter after typing in the appropriate information, the Merge Output Specification Panel opens.

3. Select the merge output target location type D and press Enter.

   The next Merge Output Specification Panel opens where you can specify the data set.

4. Specify the library and member to which you want PDM to write the merge output file, using standard ISPF conventions. Press Enter when you have typed in all pertinent data.

   - Enter an explicit member name, to create a merged member in the output data set.
   - Leave the field blank to select member names from the Merge Output Selection List.
   - Provide an overlay mask to be applied to all member names.

   One of the following occurs:

   - If you **specified an explicit member name or entered an asterisk** for all members, the Merge process is immediately invoked. When processing is complete, the Merge Work In Process File screen is returned with the message **MERGE COMPLETE** in the upper right corner.
   - If you **left the MEMBER field blank or provided a name mask**, you must select one or more members from the Merge Output Member Selection List, described in The Merge Output Member Selection List. You complete the merge process from this selection list.

The Merge Output Specification Panel

Merge Library fields1

Used to specify the merge library, using standard ISPF conventions.

Merge Other Partitioned or Sequential Data Set

Used as an alternative for specifying the merge library and target member. Specify using standard ISPF conventions.

If Partitioned, Replace Like-Named Members2

Indicates if you want to replace like-named members in the data set. Valid values are:

- Y—Yes
- N—No

Delete WIP Member After Merge

Required. Specifies if the WIP member should be deleted after the merge action. Valid values are:

- Yes—PDM deletes the WIP member if there are no errors on the MERGE action and the WIP data set is a PDS.
- No—Default. Do not delete the WIP member after a MERGE action.

Generate MERGE Reports

Required. Acceptable values are:

- A—Default. Generates both the Merge Summary and Detail Reports.
- S—Generates only the Merge Summary Report.
- N—Prevents the generation of any reports.

Panvalet/Librarian Language3

Optional. This field associates a CA Panvalet or CA Librarian type identifier with the named output member. Selections include:

- CA Panvalet: ALC, ANSCOBOL, AUTOCODE, BAL, COBOL, COBOL-72, DATA, FORTRAN, JCL, OBJECT, PL/1, RPG, USER180, USER780, OTHER. If left blank, the default value is DATA.
- CA Librarian: ASM, COB, DAT, FOR, FRG, FRS, GIF, GOF, JCL, PLF, PLI, RPG, TXT, VSB. If left blank, the default value is DAT.

Write Stats to Data Set

Optional. Specifies the name of the data set used to capture PDM statistics. If specified, this field must conform to the normal ISPF/PDF naming conventions.

1: The record length of the Merge data set must be large enough to support the largest WIP record. Generally this means that the Merge data set must be no shorter than eight bytes less than the WIP record length. For example, if the WIP data set record length is 88, then the Merge data set record length must be at least 80.

2: This option does not apply to sequential files.

3: PDM ignores the field if the merge data set is not a CA Panvalet or CA Librarian data set.

The Merge Output Member Selection List

PDM produces the Merge Output Member Selection List when you leave the MEMBER field blank or provide a name mask on the Merge Output Specification panel. PDM builds this list using the members in the WIP library.

To select a member type an **S** next to the member name. When you press Enter, the Merge process is invoked for that member and, upon completion, the message ***MERGED** appears in the RENAME field next to each member. Multiple WIP file members can be selected at one time.

Note: If you are using batch mode, the message *WRITTEN appears rather than *MERGED, indicating that the appropriate batch request control statements have been written. The actual merge does not take place until the requests are submitted for processing.

Overlay Masks and the Selection List

When you provide an overlay mask in the MEMBER field, PDM renames each selected WIP member in the output data set. The names that will be used in the merge output library appear in the RENAME field.

For example, if you specify an overlay mask of **W*** on the Merge Output Specification Panel, the Merge Output Member Selection List would appear as illustrated below:

```
Merge ---------------- Merge Output Member Selection List ----------------------
  Command ===>                                                 Scroll ===>
    WIP Data Set Name:
     Output Data Set Name:
      Name      Rename     VV.MM  Created     Changed       Size   Init    ID
    BC1PAL00   WC1PAL00   01.00 01/07/25  01/07/25 18:22     66     66 ZSXPTB1
    BC1PAL10   WC1PAL10   01.00 01/07/25  01/07/25 18:22     66     66 ZSXPTB1
    BC1PBDWK   WC1PBDWK   01.00 01/07/25  01/07/25 16:30     17     17 ZSXPTB1
    BC1PBM30   WC1PBM30   01.00 01/07/25  01/07/25 16:30     17     17 ZSXPTB1
    BC1PBM35   WC1PBM35   01.00 01/07/25  01/07/25 18:00     15     15 ZSXPTB1
    BC1PBM40   WC1PBM40   01.00 01/07/25  01/07/25 20:52     66     66 ZSXLGB1
    BC1PBR10   WC1PBR10   01.00 01/07/25  01/07/25 20:52     66     66 ZSXLGB1
    BC1PCAF    WC1PCAF    01.00 01/07/26  01/07/26 16:31     27     27 ZSXPTB1
    BC1PCIOB   WC1PCIOB   01.00 01/07/26  01/07/26 16:25     55     55 ZSXPTB1
    BC1PCONG   WC1PCONG   01.00 01/07/25  01/07/25 16:30     17     17 ZSXPTB1
    BC1PCONP   WC1PCONP   01.00 01/07/25  01/07/25 16:30     15     15 ZSXPTB1
    BC1PC1PR   WC1PC1PR   01.00 01/07/25  01/07/25 18:37     30     30 ZSXPTB1
    BC1PDCON   WC1PDCON   01.00 01/07/25  01/07/25 16:30     30     30 ZSXPTB1
    BC1PDSIN   WC1PDSIN   01.00 01/07/25  01/07/25 18:21     66     66 ZSXPTB1
    BC1PEFLT   WC1PEFLT   01.00 01/07/25  01/07/25 18:21     66     66 ZSXPTB1
    BC1PESSI   WC1PESSI   01.00 01/07/27  01/07/27 12:20     23     23 ZSXPTB1Q
    BC1PF00T   WC1PF00T   01.00 01/07/27  01/07/27 12:24     17     17 ZSXPTB1Q
```

When you have finished selecting members for the output source file, press PF3. The Merge Work In Process File screen is returned. Because you used the selection list to perform the Merge process, no message appears in the upper right corner of the screen.

What You Do After Merging the WIP Files

The next step in the PDM process depends upon whether you are using batch or foreground mode. If you are using foreground, the Merge process is performed immediately. If you are using batch, you must submit for processing the Merge requests you have just generated. This procedure is described in the next chapter.

Three reports are produced when the Merge step is processed in batch mode.:

- PDM Merge Output Detail Report
- PDM Merge Output Summary Report
- PDM Syntax Request Report

Review these reports as necessary.

Once you have created a merge output file, you can:

- Add the file back into CA Endevor SCM, using the Add/Update capability.
- Store the file in the appropriate source repository.
- Input the file to a compiler.

Chapter 5: Using PDM in Batch

This section contains the following topics:

Generating Build WIP and Merge Requests

You can generate Build WIP and Merge requests for batch submission by:

- Using the appropriate options from the CA Endevor Parallel Development Option menu: option **1** for Build WIP requests, option **3** for Merge requests.
- Coding your own job.

  Note: Batch Syntax for PDM batch syntax.

  You can then submit these requests for execution by:

- Using option **4**, SUBMIT, from the CA Endevor Parallel Development Option menu.
- Submitting your own JCL.

  Note: Refer to Batch Execution JCL for a sample of the required batch execution JCL.

Specifying a Request Data Set

The first step in generating a PDM batch request is to specify a data set in which to store the requests. You do this in the batch specification fields on the CA Endevor Parallel Development Option menu.

Batch Request Data Set fields

The batch request data set must be either a sequential data set or a partitioned data set with an explicitly identified member. The data set can contain either:

- Fixed length records—LRECL must be 80
- Variable length records—LRECL must be 84

Other Partitioned or Sequential Data Set

Used as an alternative for specifying a request data set, using standard ISPF conventions.

Append or Replace

Required. Valid values are:

- R — Default. PDM replaces like-named members in the request data set
- A — PDM appends the statements to an existing data set.

Request Dataset Allocation Panel

If the request data set you specify is not allocated, PDM displays a Request Dataset Allocation panel when you press Enter.

Management Class

Optional. If you specify a management class that is not defined, the allocation fails and PDM issues an error message.

Storage Class

Optional. If you specify a storage class that is not defined, the allocation fails and PDM issues an error message.

Volume Serial

Optional. If you specify a volume serial that is not defined, the allocation fails with a recoverable application error.

Data Class

Optional. If you specify a data class that is not defined, the allocation fails and PDM issues an error message.

Space Units

Acceptable values are:

- BLKS — Blocks
- TRKS — Tracks
- CYLS — Cylinders

Primary Quantity

Must be numeric, and in the same units as the SPACE UNITS field.

Secondary Quantity

Must be numeric, and in the same units as the SPACE UNITS field.

Directory Blocks

Must be numeric. If you specify a request member, you must provide a non-zero value in this field. If you want to allocate a sequential data set, this value must be zero.

Record Format

Acceptable values are:

- F
- FB
- V
- VB

Record Length

Must be numeric, 80 for fixed length records and 84 for variable length records.

Block Size

Required if the space unit is BLKS (blocks), otherwise optional. If left blank, block size is set to zero. If provided, the value must be numeric and greater than zero.

If the block size is specified, if it is not zero, and the record format is:

- F or FB — The block size must be an integral multiple of the record length.
- V or VB — The block size must be at least four bytes larger than the record length.

Generating Build WIP Requests Option 1

To generate Build WIP request statements for later job submission, select option **1** on the CA Endevor Parallel Development Option menu. Make sure that you:

- Indicate **B** for batch processing in the PROCESSING MODE: FOREGROUND OR BATCH field.
- Provide the required BATCH SPECIFICATION information. See the previous section if you need to review this information.

  Press Enter.

You receive the same series of screens that appear when you process PDM to build a WIP File in foreground mode. When you have filled in the last panel or issued the create command on the WIP Member Selection Matrix, the CA Endevor Parallel Development Option menu reappears, with the message **Requests Written** in the upper right-hand corner of the screen This message indicates that the Build WIP requests have been written to the request data set specified on the CA Endevor Parallel Development Option menu.

Generating Merge Requests Option 3

To generate Merge requests for later job submission, select option **3** on the CA Endevor Parallel Development Option menu. Make sure that you:

- Indicate **B** for batch processing in the PROCESSING MODE: FOREGROUND OR BATCH field.
- Provide the required BATCH SPECIFICATION information. See the first section in this chapter if you need to review this information.

  Press Enter. You will receive the same series of screens that appear when you process PDM to merge the WIP File in foreground mode. Follow the procedure to merge the file into an output source file.

If you provide a MEMBER name in the Merge Output Specification Panel, the Merge Work In Process File screen is returned when you press Enter. The message **Requests Written** appears in the upper right-hand corner, indicating that the batch request has been written.

If you leave the MEMBER field blank or specify a name mask on the Merge Output Specification panel, the Merge Output Member Selection List is returned when you press Enter. Select the member(s) to be merged then press Enter. The selection list reappears with the message ***WRITTEN** in the RENAME field next to the selected members.

Submitting Batch Requests for Execution Option 4

To submit batch jobs, select option **4** from the CA Endevor Parallel Development Option menu. Make sure you:

- Indicate **B** for batch processing in the PROCESSING MODE: FOREGROUND OR BATCH field.
- Provide the required BATCH SPECIFICATION information. See the first section in this chapter if you need to review this information.

  Press Enter to display the PDM Batch Options Menu.

The PDM Batch Options Menu

The PDM Batch Options Menu allows you to browse, edit (as necessary), and subsequently submit the request data set you have defined. You can also build additional JCL to be included with the request. Listed below is a brief explanation of each processing option available:

1

Browse the request data set to ensure that the information it contains is correct. The BROWSE option uses a standard ISPF/PDF Browse facility, and lists the request card syntax as it was generated.

2

Edit the request data set, if necessary. The EDIT option uses the standard ISPF/PDF Edit facility.

3

Define additional JCL (generally DD statements) to be included with the JCL to be submitted.

4

Submit a job that executes the requests in the request data set.

Browsing the Request Data Set

Select option **1** from the PDM Batch Options Menu to review the request data set specified. When you press Enter, a standard TSO/ISPF Browse panel returns.

Editing the Request Data Set

Select option **2** from the PDM Batch Options Menu to edit the request data set specified. You can either change the existing Build WIP requests or add new requests using the PDM syntax (described Batch Syntax). When you press Enter, a standard ISPF/PDF Edit panel is returned.

Building JCL to be Included with the Batch Request

Select option **3** from the PDM Batch Options Menu to define JCL (usually DD statements) that should be included with the JCL submitted to execute the request data set. You might use this option if, for example, a request referenced a source or target file by DDNAME.

Submitting the Request Data Set for Batch Processing

Select option **4** to submit the request data set for execution. In addition to specifying the WIP data set, you must also indicate whether you want to include any additional JCL that was defined (by option **3** above).

Enter the following information, then press Enter to submit the job.

Include JCL

Required. Indicates whether you want to include additional JCL when you submit the batch request. Valid values are:

- Y — Yes, include the JCL. The JCL must be defined, using option **3**, BUILD JCL, before entering **Y** in this field.)
- N — No. Default.

Job Statement Information

This is the job card to be submitted with the job. A message similar to that listed on the screen below is returned to inform you that the job has been submitted:

```
*** IKJ56250I JOB JSMITH1F(JOB01743) SUBMITTED
```

Chapter 6: PDM Reports

This section contains the following topics:

General WIP and Merge Information

When you process your Build WIP and Merge requests in batch mode, PDM produces several reports. Use the Build WIP reports to determine the complexity of a project. Use the Merge Output reports to review the outcomes of the Merge process.

The PDM reports contain the following information:

- The **PDM Syntax Request Report** (for Build WIP) lists the exact syntax you used to request the Build WIP operation.
- The **PDM Build WIP Detail Report** lists every member set processed and provides detail information for each member set. You can optionally suppress the detail information from printing.
- The **PDM Build WIP Summary Report** lists summary information about the entire Build action.
- The **PDM Syntax Request Report** (for Merge) lists the exact syntax you used to request the Merge operation.
- The **PDM Merge Output Detail Report** lists the WIP members used to create the merge output source file and detail information about each member. You can optionally suppress the detail information from printing.
- The **PDM Merge Output Summary Report lists** summary information about the Merge process.

Important! If you code the STATS OFF clause using the DETAIL option, all reports are produced, but the Build WIP Detail and Merge Output Detail reports do not contain detail statistics for each member set. If you code the clause using the ALL option, however, only the Syntax reports are produced. The Detail and Summary reports are not produced at all.

In batch mode only, PDM writes the Syntax, Detail, and Summary Reports to the C1MSGS1 DD statement. It is possible to write the summary reports to a separate data set. If the C1MSGS2 DD statement is defined in the PDM execution JCL, PDM writes the Build Summary and Merge Summary Reports to the C1MSGS2 file. The C1MSGS2 DD statement can be added to the PDM batch execution JCL, the PDM batch execution skeleton, or you can specify it as additional, included JCL in the PDM Submit option.

Note: See “Batch Execution JCL” for information on modifying PDM JCL.

When running PDM in foreground, the action reports are written to a data set named userid.C1TEMPR1.MSGS. If you want to review the reports, split the ISPF screen and use the ISPF/PDF browse function to view the data set. To view the action reports, type PMSGS in the command field. This messages data set is automatically deleted when PDM terminates.

PDM Syntax Request Report for Build WIP

When you enter your Build WIP requests, the Parallel Development Option validates the syntax in the WIP request data set. The PDM Syntax Request Report mirrors exactly what you entered, in the order in which it was entered, and flags any syntax errors.

When all syntax requests have been checked, PDM looks for errors. If no errors can be found, processing continues. If errors do exist, processing terminates at this point. See the *Messages and Codes Reference Guide* for an explanation of any error messages received. Note the last line in the PDM Syntax Request Report above; this message indicates that all request cards have been processed successfully.

PDM Build WIP Detail Report

The Build WIP Detail report is created when your build requests have been validated successfully. This report provides you with information about each member set involved in the Build WIP process, identifying the WIP, Root, Derivation 1, and Derivation 2 sources and members. Additional detail information is included, unless you use the STATS OFF (DETAIL) option when first entering the request. If you enter the STATS OFF (ALL) option, this report is not produced at all.

There are three parts to each member set description:

- Beginning of Build WIP information
- Return code information
- Detail statistics

PDM Build WIP Detail Report Fields Description

Beginning Build of WIP Information

The first section, BEGINNING BUILD OF WIP, indicates the beginning of the Build WIP process for this member only. This line appears as the first line whenever information for a new member is presented. This section provides the following data for each member set:

WIP

The location of the WIP data set.

Member

The WIP member name.

Root

The location of the Root source, either a data set or an CA Endevor SCM location.

Member

The Root member or element name.

Derivation 1

The location of the Derivation 1 source, either a data set or an CA Endevor SCM location.

Member

The Derivation 1 member or element name.

Derivation 2

The location of the Derivation 2 source, either a data set or an CA Endevor SCM location.

Member

The Derivation 2 member or element name.

PDM Return Code Information

The second section of the member set description begins with a time stamp and the informational message PDM0064I, which indicates the generation of a **return code** for the member set. The return code listed indicates whether the WIP file was built successfully; a return code of 0000 indicates that the WIP file was built with no problems.

A return code higher than zero indicates that an error has occurred. A second error message should appear also, providing you with additional information. In this situation, the WIP member built will most likely be invalid.

Detail Statistics

The third section contains **detail statistics** for the member set. This section appears for every member unless you have selected the STATS OFF (DETAIL) option.

Relative Change from Both Derivations

Provides information about the number of changes made by both Derivations, relative to the original (Root) module:

From Derivation 1

Indicates the percent of the original module changed by Derivation 1.

From Derivation 2

Indicates the percent of the original module changed by Derivation 2.

In Common

Indicates the percent of the original module changed by both Derivations at the same (common) place in the program.

Net Change

The total percent by which the original module has changed

Inserts and Deletes

The Inserts and Deletes sections provide information about the number of insert/delete lines from both Derivations.

Total Records

Indicates the total number of lines marked as inserts/deletes into the original module by both Derivation 1 and Derivation 2.

Blocks from Derivation 1

A *block* is a group of consecutive inserted/deleted lines from one Derivation. For example, if Derivation 1 inserts/deletes 10 lines in one place, that group of 10 lines constitutes a block, with a block size of 10. Similarly, if Derivation 2 inserts/deletes 5 lines in one place, that group of 5 lines constitutes a block, with a block size of 5.

BLOCKS FROM DERIVATION 1 indicates the number of blocks of inserted/deleted lines from the Derivation 1 file only.

RECORDS PER BLOCK provides additional detail, by noting:

- MIN — Smallest block size
- MAX— Largest block size
- AVG— Mean average block size

from the Derivation 1 file only.

Blocks from Derivation 2

Indicates the number of blocks of inserted/deleted lines from the Derivation 2 file only.

RECORDS PER BLOCK provides additional detail, by noting:

- MIN— Smallest block size
- MAX— Largest block size
- AVG— Mean average block size

from the Derivation 2 file only.

Blocks in Common (from both)

Indicates the number of blocks of inserted/deleted lines, made by both Derivations, in common (that is, inserts/deletes at the same location, with respect to the Root program).

RECORDS PER BLOCK provides additional detail, by noting:

- MIN— Smallest block size
- MAX— Largest block size
- AVG— Mean average block size

with inserted/deleted lines in common.

Conflicts

The Conflicts section provides information about the number of conflict areas and contention areas found in this particular WIP member. Pay particular attention to this section of the report, as the number of conflicts and contentions can help you assess the complexity of a project.

A *conflict area* is a place within the WIP File where both Derivation 1 and Derivation 2 have inserted lines at exactly the same place in their respective copies of the Root program. The first three fields in this section refer to conflict areas only.

Total Conflict Areas

Indicates the total number of conflict areas in this WIP member.

Derivation 1 Records

Indicates the number of Derivation 1 **records** (not blocks) that have "participated" in conflicts in this WIP member.

Derivation 2 Records

Indicates the number of Derivation 2 **records** (not blocks) that have "participated" in conflicts in this WIP member. A contention area is a place within the WIP File at which both Derivations have inserted a block of changes, but the changes do not begin at exactly the same place in the copies of the Root program. Since these blocks overlap, they are considered conflicting in nature. You should always review contention areas for potential conflicts. The remaining fields in this section of the report refer to contention areas only.

Contention Area Detected at WIP Record Number

Indicates the beginning line, within the WIP file, of a contention area.

Total Contention Areas

Indicates the total number of contention areas in this WIP member.

Build WIP Summary

The Build WIP Summary Summarizes information for this particular WIP member.

Total Records in WIP

Indicates the total number of records contained in this WIP File from:

- Root
- Derivation 1
- Derivation 2

Complexity Factor

A value assigned to the WIP file. The complexity factor is a function of the number of:

- Records in (size of) the WIP file.
- Derivation 1 records in conflict.
- Derivation 2 records in conflict.
- Conflict areas and contention areas.

The complexity factor ranges from **0-5:**

- 0— No changes occurred in the member.
- 1— Changes occurred, but there are no conflict or contention areas.
- 2-5— The member contains conflicts, where
  - 2— Signifies simple conflicts
  - 5— Signifies complex conflicts

Note: Two members may have the same complexity factor, but may be radically different in regard to the nature of the conflicts. Therefore, you should pay careful attention to the complexity factor for each WIP member, and should review those members with factors of 2 or above.

PDM Build WIP Summary Report

The PDM Build WIP Summary Report summarizes the detail information provided on the PDM Build WIP Detail Report, even if you suppressed detail information from printing. Data for the entire WIP data set is presented.

Important If you code the STATS OFF ALL statement, this report is not produced.

PDM Build WIP Summary Report Field Descriptions

WIP Data Set Library Information

This section of the report identifies the **WIP data set** and the components of the WIP data set, the Root and Derivation files.

WIP Data Set

Identifies the WIP data set constructed from the BUILD WIP process.

Root

Identifies the base Root file of this WIP data set.

Derivation 1

Identifies the first Derivation data set used during Build processing.

Derivation 2

Identifies the second Derivation data set used during Build processing.

WIP Data Set Member Information

This section of the report displays specific information regarding the WIP, Root, and Derivation files used during the BUILD WIP process.

WIP Member

Identifies the WIP data set member.

Root Member

Identifies the Root member of the WIP data set.

RC

Identifies the return code generated from the BUILD WIP process.

Complexity Factor

A value assigned to the WIP file. The complexity factor is a function of the number of:

- Records in (size of) the WIP file.
- Derivation 1 records in conflict.
- Derivation 2 records in conflict.
- Conflict areas and contention areas.

The complexity factor ranges from **0-5:**

- 0— No changes occurred in the member.
- 1— Changes occurred but there are no conflict or contention areas.
- 2-5— Indicates that the member contains conflicts, where:
  - 2— Signifies simple conflicts
  - 5— Signifies complex conflicts

Derivation 1 Member

Identifies the Derivation 1 member (or CA Endevor SCM element, including version and level numbering) of the WIP data set.

Der 1 Inserts

Displays the number of records Derivation 1 added to the Root member.

Der 1 Deletes

Displays the number of records Derivation 1 deleted from the Root member.

Derivation 2 Member

Identifies the Derivation 2 member (or CA Endevor SCM element, including version and level numbering) of the WIP data set.

Der 2 Inserts

Displays the number of records Derivation 2 added to the Root member.

Der 2 Deletes

Displays the number of records Derivation 2 deleted from the Root member.

Common Inserts

Displays the number of common inserts made by both Derivation 1 and Derivation 2 to the Root member.

Common Deletes

Displays the number of common deletes made by both Derivation 1 and Derivation 2 to the Root member.

Auto-Merge

States whether PDM invoked the Automerge feature during the BUILD WIP process.

BUILD WIP Summary Information

This section of the report provides an accounting of specific information for all members in the WIP data set.

Selected for Processing

Indicates the total number of members selected for processing.

Successfully Processed

Indicates the number of members processed successfully; that is, with return codes of zero.

With Replace Conflicts

Indicates the number of situations in which there were like-named members in the WIP data set and the replace/no replace option was set to "no replace." The following message that appears to the right of this field:

```
(PROCESSING BYPASSED)
```

IN ERROR

Indicates the number of members that could not be processed due to a problem, such as an I/O or system error. The following message that appears to the right of this field:

```
(PROCESSING INCOMPLETE)
```

When a WIP member is created but flagged as "in error," that member should be considered invalid.

With No Inserts or Deletions

Indicates the number of members that had neither insertions nor deletions from either Derivation. Such members have a complexity factor of zero.

With No Conflicts

Indicates the number of members containing changes, but did not have any conflicts resulting from the changes. Such members have a complexity factor of 1 assigned. If these changes involve a contention area, a complexity factor of 2 is assigned.

With Complexity Factor 5-0

Groups the members of the WIP data set by complexity factor, in descending order. The total number of members with a complexity factor of 5 is listed first, followed by the total number of members with a complexity factor of 4, the total with a complexity factor of 3, and so on.

As mentioned above, you should pay particular attention to those members with a complexity factor of 2 or above, as these factors indicate that there definitely are conflicts within specific members of the WIP data set. A factor of 5 indicates either an especially complex set of conflicts or a large amount of conflicts involved. The lower the factor, the less complex and fewer number of conflicts. Keep in mind, however, that the same complexity factor can signify different types of conflict situations.

A complexity factor of 1 indicates that the member had changes, but there were no conflicts. You should still review this member, however.

A complexity factor of 0 indicates that there no changes at all to the member.

Highest BUILD Return Code

The last line of the report indicates the highest BUILD return code. The return code listed here reflects the highest return code encountered during processing of the entire WIP data set.

If you receive a return code other than zero, check the PDM Build WIP Summary Report to find out which member had that return code and where the member is detailed in the PDM Build WIP Detail Report.

If the Create WIP Never clause was specified on the Build action, the following message appears after the highest BUILD return code:

Note: The WIP file(s) were not created at the user's request.

PDM Merge Output Detail Report

The Merge Output Detail report is created when the Merge request cards have been parsed successfully. This report, like the PDM Build WIP Detail report, provides you with location (source and member) information about each member set involved in the Merge process. Additional detail information is included, unless you code the STATS OFF (DETAIL) option when first entering the requests. Or, if you enter the STATS OFF (ALL) option, this report is not produced at all.

There are three parts to each member set description.

- Beginning merge of WIP member information
- Return code information
- Detail statistics

PDM Merge Output Detail Report Field Descriptions

Beginning Merge of WIP Member Information

The first section, BEGINNING MERGE OF WIP MEMBER, indicates the beginning of the Merge process for this member only. This line appears as the first line whenever information for a new member is presented. This section provides the following data for each member set:

WIP

The location of the WIP data set.

Member

The WIP member name.

Output

The location of the output source file.

Member

The output source member name.

WIP Return Code Information

The second section of the member set description indicates the **return code** for the member set. The return code listed indicates whether the WIP member was merged successfully; a return code of 0000 indicates that the merge was indeed successful.

A return code higher than zero indicates that an error has occurred during processing. A second error message should also appear, providing you with additional information. In this situation, the merged WIP member will most likely be invalid.

WIP Detail Statistics

The third section contains **detail statistics** for the member set. This section appears for every member unless you have selected the STATS OFF (DETAIL) option for your Merge requests. This section provides the following data:

Total Records in WIP

Indicates the total number of records contained in this WIP File.

Total Records in Output

Indicates the total number of records in the Merge Output file.

Total Invalid WIP Records

Indicates the number of invalid WIP records detected in this particular WIP member. Invalid records occur when invalid editing changes are made during the WIP editing process. For example, a character other than an asterisk or percent sign mistakenly may have been coded in the first column of the WIP File annotation section.

PDM Merge Output Summary Report

The PDM Merge Output Summary report summarizes the detail information provided on the PDM Merge Output Detail report, even if you suppressed detail information from printing. Data for all WIP and output source files is presented.

Important! If you code the STATS OFF ALL statement, this report is not produced.

PDM Merge Output Summary Report Field Descriptions

WIP Data Set Library Information

The first line of this report identifies the **WIP data set** for which the Merge process was run.

Output Data Set Information

The second line of this report identifies the **MERGE output** data **set** in which the merged output is stored.

WIP Member Information

This section of the report provides information about each WIP member that was merged into the MERGE output data set.

WIP Member

Identifies the WIP member for which the Merge process was run.

Merge Member

Identifies the Merge output member created by the Merge process.

RC

Displays the return code for the Merge process for each WIP/Merge member.

Number of Records

Displays the number of records in the WIP data set member and the Merge output data set member.

Invalid Records

Displays the number of records from the WIP data set that could not be processed.

WIP Member Disposition

Indicates whether the WIP member has been **KEPT** or **DELETED** after completing the MERGE process.

Merge Summary Information

The next section of the report provides summary information about all the members in the WIP data set:

Selected for Processing

Indicates the total number of members selected for processing.

Successfully Processed

Indicates the number of members processed successfully; that is, with return codes of zero.

Deleted from the WIP data set

Indicates the difference between the WIP members that were selected for processing and those that were actually processed successfully. Members that could not be processed are deleted from the WIP data set.

With Replace Conflicts

Indicates the number of situations in which there were like-named members in the WIP data set and the replace/no replace option was set to "no replace." Such members are not processed. The following message appears to the right of this field:

```
(Not Processed)
```

IN ERROR

Indicates the number of members that could not be processed due to a problem, such as an I/O or system error. The following message appears to the right of this field:

```
(Processing Incomplete) Members flagged as "in error" should be considered invalid.
```

Highest MERGE Return Code

The last line of the report indicates the highest merge return code. The return code here reflects the highest return code that occurred during the merge of the entire WIP data set.

Appendix A: Batch Execution JCL

This section contains the following topics:

Sample Batch Execution JCL

When you use batch processing for the Build WIP or Merge functions, you must submit the resulting batch requests for execution. You can submit these requests using either the PDM batch submit option or by creating your own JCL.

The BC1G1000 program does not have to be called by an authorized program. However, users executing the non-authorized program must have the requisite security access to the CA Endevor SCM data sets for the function requested. The caller's security profile must have sufficient CA Top Secret, CA ACF2, or RACF, access to the CA Endevor SCM control files (catalog, master, package, base, delta), because the CA Endevor SCM alternate ID facility is not available when running in an unauthorized mode.

If you want to call the PDM batch utility from a non-authorized program, specify:

```
EXEC PGM=BC1G1000
```

Before Executing Batch JCL

If you use your own JCL, be sure to do the following prior to execution:

- Construct a valid JOBCARD.
- Ensure that the CONLIB data set name is correct.
- Specify the batch request cards to be used.

The JCL can be found in **iprfx.iqual.CSIQJCL** (member BC1GJCL2).

Appendix B: PDM Batch Syntax

This section contains the following topics:

What PDM Syntax is

PDM syntax is a free-form language consisting of English-like statements. The syntax allows you to drive a PDM Build WIP or Merge batch process quickly and easily.

You can generate PDM syntax request statements by using the PDM Build and Merge dialogs. You can also code the syntax requests yourself. The goal of PDM syntax is to provide you with a flexible yet easy-to-use method for creating your requests and, subsequently, submitting them for processing.

This appendix illustrates and describes how to use PDM syntax.

PDM Syntax Statements

PDM syntax involves only two actions — Build and Merge. PDM syntax is entered in, and referred to as, statements. A PDM syntax statement ends with a period (**.**).

A statement consists of one or more clauses. A clause is an individual line of information within each statement (for example, root DSN "root.lib" or compare 007 through 072). One statement may contain several clauses.

There are three types of statements you can use when coding each action:

- **The ACTION Statement** — The action statement defines the action you want to perform against a set of elements or members, as well as the location of those elements or members. Action statements are the only statements actually executed by PDM, and only one action statement (of either type) is required.

  The action statements are BUILD and MERGE.

- **The MASK Statement** — The mask statement defines the member(s) or element(s) against which the action will take place. You can enter either an explicit member or element name, or you can use a name mask. You can enter as many mask statements as necessary for each action statement.
- **The STATS OFF Statement** — Statistical reports are generated for both the Build WIP and Merge processes. You have the option of suppressing these reports entirely, or limiting the amount of detail printed. The STATS OFF statement allows you to determine how detailed a report you want to print.

The Structure of a PDM Request Statement

When building a PDM request statement:

- **You must always include an ACTION statement.** If you enter a BUILD statement, you must also enter WIP, Root, and Derivation 1 location information. Optionally, you can add Derivation 2, compare columns, and replace/no replace data.
- **You must always include BUILD MASK or MERGE MASK statements** (unless you are using sequential files). MASK statements, defining the members and/or elements designated in the ACTION statement, must follow that ACTION statement (unless you are dealing with sequential files). A MASK statement entered with no preceding ACTION statement is flagged as an error.
- **STATS OFF statements are optional.** If you enter a STATS OFF statement, it must follow the ACTION statement to which it pertains. If you enter a STATS OFF statement before the related ACTION statement, you receive an error.

Note: The positioning of the MASK statement and STATS OFF statement is interchangeable. It does not matter which statement immediately follows the ACTION statement, as long as the ACTION statement is coded first.

PDM Process Flow

When you submit your Build WIP or Merge requests, PDM follows a specific processing flow:

1. PDM first parses, or validates, the syntax.
2. A Build WIP or Merge Syntax Report is produced, echoing the Build WIP or Merge statements entered, and flagging any syntax errors.
3. When all requests have been validated, PDM checks for errors. If any errors exist within the syntax, processing terminates.

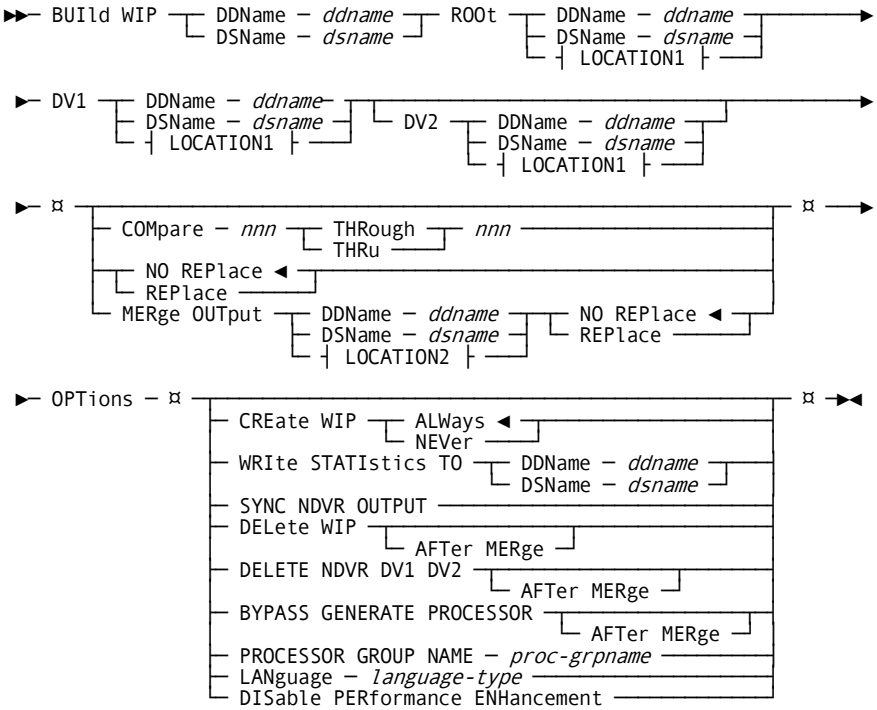
   If no errors exist, PDM continues processing by calling in the appropriate Build WIP or Merge routine.

Build WIP Statement Batch SCL Syntax

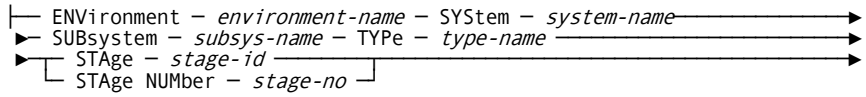
The Build WIP statement compares the root and changes to the root contained in a derivation file. Optionally, you can also compare the changes contained in a second derivation file, compare specific columns, replace data, and merge the WIP data to a merge output library. In addition, you can specify whether to create a WIP file, write statistics gathered during the build process, delete the WIP file after completion of the merge process, and specify the language type for the members when the WIP file is merged and the merge data set is a CA Panvalet or CA Librarian data set.

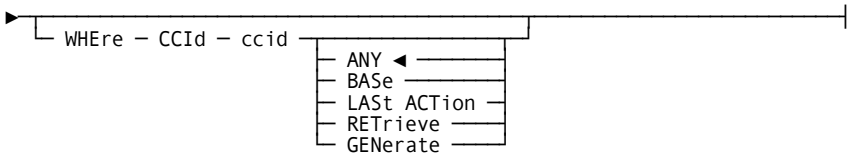
If the merge output option is specified and the merge output location is a CA Endevor SCM location, then the following additional options can be specified: perform element synchronization at the target CA Endevor SCM location against the Root, before performing actions to create the derivation change levels; delete the derivation elements after a successful merge; bypass the execution of the element's generate processor after a successful merge; and specify a processor group name to override the element's processor group name.

The Build WIP statement syntax is shown next.

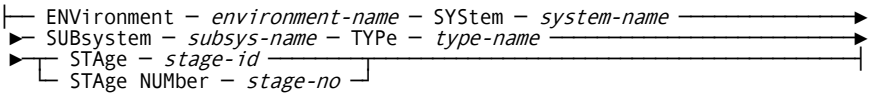


Expansion of LOCATION1





Expansion of LOCATION2



Build WIP Statement SCL Syntax Parameters

This statement has the following parameters:

BUIld

Identifies the action statement. BUIld must be the first word in a Build action statement.

WIP DDName *ddname* | DSName *dsname*

Specifies the WIP file as one of the following:

DDName *ddname*

Specifies the ddname. This requires the appropriate JCL.

DSName *dsname*

Specifies the data set name.

ROOt DDName *ddname* | DSName *dsname* / LOCATION1

Specifies the Root location as one of the following:

DDName *ddname*

Specifies the ddname. This requires the appropriate JCL.

DSName *dsname*

Specifies the data set name.

LOCATION1

Specifies the CA Endevor SCM location. This is a syntax fragment composed of the following keywords and variables:

ENVironment *environment-name* **SYStem** *system_name* **SUBsystem** *subsystem name* **TYPE** *type_name* **STAge** *stage_ID* | **STAge NUMber** *stage_number* [**WHERE CCID** *ccid* [**ANY**|**BASE**|**LAST ACTION**|**RETRIEVE**|**GENERATE**]]

You must specify the environment, system, subsystem, type, and either the stage id or stage number. The optional WHERE CCID clause limits the search to elements that match the ccid you specify.

The following keywords and variables are required:

ENVironment *environment-name*

Specifies the element's environment location.

SYStem *system_name*

Specifies the element's system name association.

SUBsystem *subsystem name*

Specifies the element's subsystem association.

TYPE *type_name*

Specifies the element's type.

Also, you must specify one of the following:

STAge *stage_ID*

Specifies the element's stage ID location.

STAge NUMber *stage_number*

Specifies the element's stage number location.

The following clause is optional:

WHERE CCID *ccid* [**ANY**|**BASE**|**LAST ACTION**|**RETRIEVE**|**GENERATE**]

(Optional) Specifies the element's CCID. The following keywords are optional and let you limit the match to the element whose base, last action, retrieve, or generate CCID matches the CCID you specify. ANY is the default.

ANY - Indicates any element, with the specified CCID, at the specified location. The default.

BASE - Indicates the base level element, with the specified CCID, at the specified location.

LASt ACTion - Indicates the version of the element, with the specified CCID, upon which the last action was performed at the specified location.

RETrieve - Indicates the version of the element, with the specified CCID, that was retrieved to the specified location.

GENerate - Indicates the version of the element, with the specified CCID, that was generated at the specified location.

DV1 DDName *ddname* | DSName *dsname* / LOCATION1

Specifies Derivation 1 location as one of the following:

Note: The maximum LRECL allowed for a Derivation 1 member is 32000.

DDName *ddname*

Specifies the ddname. This requires the appropriate JCL.

DSName *dsname*

Specifies the data set name.

LOCATION1

Specifies the CA Endevor SCM location. This is a syntax fragment.

Note: For more information, see the parameter ROOt DDName ddname | DSName dsname | LOCATION1.

DV2 DDName *ddname* | DSName *dsname* / LOCATION1

(Optional) Specifies Derivation 2 location as one of the following:

DDName *ddname*

Specifies the ddname. This requires the appropriate JCL.

DSName *dsname*

Specifies the data set name.

LOCATION1

Specifies the CA Endevor SCM location. This is a syntax fragment. For more information, see the parameter ROOt DDName ddname | DSName dsname | LOCATION1.

Note: The maximum LRECL allowed for a Derivation 2 member is 32000.

COMpare *nn* THRu *nn*

(Optional) Specifies the columns for comparison during the Build WIP process, to establish changes. If specified, you must provide a beginning column and an ending column with the keyword THRu or THRough. If only one column value is entered, you will receive an error message. The beginning column default is 7. The end column default is 72.

Note: Use caution when specifying a compare range for variable length records. If record lengths are different, PDM may annotate a record (line) as changed, even if record data is identical. For example, trailing blanks may be truncated in a variable length record.

REPlace | NO REPlace

(Optional) Indicates on a global level, whether you want to replace like-named WIP members in the WIP data set. Specify one of the following.

REPlace

Replaces existing members with like-named new members.

NO REPlace

Specifies that PDM will not replace like-named WIP members in the WIP data set and PDM will not write a new member to the WIP data set. The default.

MERge OUTput DDName *ddname* | DSName *dsname* | LOCATION2 [NO REPLACE | REPLACE]

(Optional) Specifies the location for the merge output library associated with this WIP data set. You have the option to replace existing members with like-named new members. If you code this clause, you must provide one of the following:

DDName *ddname*

Specifies the ddname. This requires the appropriate JCL.

DSName *dsname*

Specifies the data set name.

LOCATION2

Specifies the CA Endevor SCM location. This is a syntax fragment composed of the following keywords and variables:

ENVironment *environment-name* **SYStem** *system_name* **SUBsystem** *subsystem name* **TYPE** *type_name* **STAge** *stage_ID* | **STAge NUMber** *stage_number*

You must specify the environment, system, subsystem, type, and either the stage id or stage number. The following keywords and variables are required:

ENVironment *environment-name*

Specifies the element's environment location.

SYStem *system_name*

Specifies the element's system name association.

SUBsystem *subsystem name*

Specifies the element's subsystem association.

TYPE *type_name*

Specifies the element's type.

Also, you must specify one of the following:

STAge *stage_ID*

Specifies the element's stage ID location.

STAge NUMber *stage_number*

Specifies the element's stage number location.

REPlace | NO REPlace

(Optional) Indicates on a global level, whether you want to replace like-named elements at the Merge CA Endevor SCM location or like–named members on a merge to a PDS file.

REPlace

Replaces existing members with like-named new members.

NO REPlace

Does not replace existing members with like-named new members. The default.

OPTions

Specifies optional parameters. You can specify any of the following parameters:

CREate WIP ALWAYS | NEVER

(Optional) Specifies whether PDM is to create a WIP file during the Build process. Specify one of the following.

ALWAYS

Specifies that PDM is to create a WIP file during the Build process. The default.

NEVER

Indicates that PDM is not to create a WIP file.

WRIte STATIstics TO DDName *ddname* | DSName *dsname*

Specifies the location of the statistics file gathered during the Build process. specify one of the following.

DDName *ddname*

Specifies the ddname. This requires the appropriate JCL.

DSName *dsname*

Specifies the data set name.

Note: See “Statistical Data Control Blocks” for information on statistics data set characteristics.

SYNC NDVR OUTPUT

Specifies that element synchronization will be performed at the target CA Endevor SCM location against the Root before performing actions to create the DV1 or DV2 change levels. This clause can only be used if the Merge Output location is in CA Endevor SCM.

DELete WIP AFTer MERge

Specifies that the WIP file is deleted after successful completion of the Merge process. The keywords AFTer MERge are optional.

DELETE NDVR DV1 DV2 AFTer MERge

Specifies that the DV1 and DV2 elements are deleted after a successful merge. This clause can only be used if the Merge Output location is in CA Endevor SCM. The keywords AFTer MERge are optional.

BYPASS GENERATE PROCESSOR AFTER MERGE

Specifies that the execution of the element's generate processor is bypassed after a successful merge. This clause can only be used if the Merge Output location is in CA Endevor SCM. The keywords AFTer MERge are optional.

PROCESSOR GROUP NAME *proc-name*

Specifies a processor group name that will be used to override the element's processor group name, This clause can only be used if the Merge Output location is in CA Endevor SCM.

LANguage

Specifies the associated language type for the members when PDM automatically merges the WIP file and the merge data set is a CA Panvalet or CA Librarian data set.

For CA Panvalet valid values are:

- ALC
- ANSCOBOL
- AUTOCODE
- BAL
- COBOL
- COBOL-72
- DATA
- FORTRAN
- JCL
- OBJECT
- PL/1
- RPG
- USER180
- USER780
- OTHER

For CA Librarian, valid values are:

- ASM
- COB
- DAT
- FOR
- FRG
- FRS
- GIF
- GOF
- JCL
- PLF
- PLI
- RPG
- TXT
- VSB

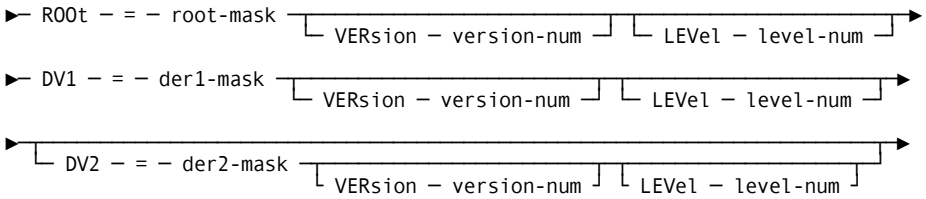
DISable PERformance ENHancement

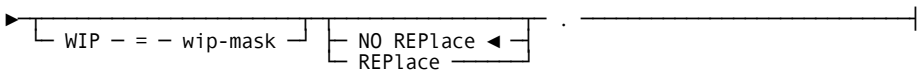
Directs PDM to use external (disk) storage instead of virtual storage for Build WIP processing. Generally, this option is not specified unless necessitated by message PDM2001E. Specifying this option degrades Build WIP processing performance.

Note: For a sequential file, no additional information is required for the BUILD statement, unless you want to use the STATS OFF statement. For partitioned data sets, CA Panvalet, CA Librarian files, or CA Endevor SCM locations, you must enter the appropriate MASK statements.

The BUIld MASK Statement

The BUILD MASK statement defines each set of members or elements for which a WIP File is to be built. You can enter as many BUILD MASK statements as are required. BUILD MASK statements must follow the BUILD statement.





BUIld MASK Parameters

ROOt

Allows you to designate one or more members or elements by providing one of the following:

- An explicit member or element name
- A name mask
- An CA Endevor SCM location and optionally, a specific version and level for that element

This parameter is required.

DV1

Allows you to designate one or more members or elements by providing one of the following:

- An explicit member or element name
- A name mask

This parameter is required.

DV2

Allows you to designate one or more members or elements by providing one of the following:

- An explicit member or element name
- A name mask

This parameter is optional.

WIP

Defines the WIP member to be built. This parameter is optional.

wip-mask

This can be:

- An explicit name.
- Blank. If you do not specify a wip-mask in this MASK statement, the WIP member name defaults to the Root member/element name.
- An overlay mask. An overlay mask differs from the standard name mask in that the characters specified (before the asterisk) overlay the corresponding characters in the Root member name.

For example, you enter a Root name of BC1PAL10 and a WIP mask of W*. The WIP name for this member is WC1PAL10.

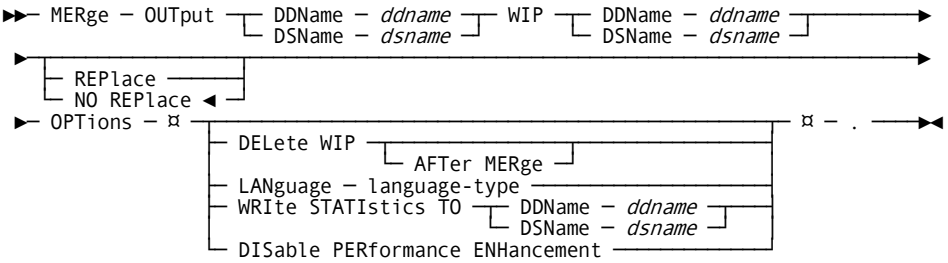
REPlace/NO REPlace

Allows you to override the global replace/no replace setting in the BUILD statement for the member set defined in this MASK statement only. This parameter is optional and if it is not specified, the global setting from the BUILD statement takes precedence.

Merge Output WIP Statement Batch SCL Syntax

The Merge Output WIP statement merges the WIP data to a merge output library. You can specify whether to write statistics gathered during the merge process, delete the WIP file after completion of the merge process, and specify the language type for the members when the WIP file is merged and the merge data set is a CA Panvalet or CA Librarian data set.

The Merge Output WIP statement syntax is shown next.



Merge Output Statement SCL Syntax Parameters

This statement has the following parameters:

MERge OUTput DDName *ddname* | DSName *dsname* | WIP DDName *ddname* | DSName *dsname* [NO REPLACE | REPLACE]

Specifies the merge output file as either a ddname, dsname, or a CA Endevor SCM location. One of the following is required:

DDName *ddname*

Species a defined data set name. This requires the appropriate JCL.

DSName *dsname*

Specifies a data set name.

WIP

Specifies the WIP data set as one of the following:

DDName *ddname*

Species a defined data set name. This requires the appropriate JCL.

DSName *dsname*

Specifies a data set name

REPlace | NO REPlace

(Optional) Indicates on a global level, whether you want to replace like-named elements at the Merge CA Endevor SCM location or like–named members on a merge to a PDS file.

REPlace

Replaces existing members with like-named new members.

NO REPlace

Does not replace existing members with like-named new members. The default.

OPTions

Specifies optional parameters. You can specify any of the following parameters:

SYNC NDVR OUTPUT

Specifies that element synchronization will be performed at the target CA Endevor SCM location against the Root before performing actions to create the DV1 or DV2 change levels. This clause can only be used if the Merge Output location is in CA Endevor SCM.

LANguage

Specifies the associated language type for the members when PDM automatically merges the WIP file and the merge data set is a CA Panvalet or CA Librarian data set.

For CA Panvalet valid values are:

- ALC
- ANSCOBOL
- AUTOCODE
- BAL
- COBOL
- COBOL-72
- DATA
- FORTRAN
- JCL
- OBJECT
- PL/1
- RPG
- USER180
- USER780
- OTHER

For CA Librarian, valid values are:

- ASM
- COB
- DAT
- FOR
- FRG
- FRS
- GIF
- GOF
- JCL
- PLF
- PLI
- RPG

- TXT
- VSB

WRIte STATIstics TO

This parameter denotes the location of the statistics file gathered during the Build process. Valid values are:

- DDName - requires the appropriate JCL
- DSName (data set name)
- **Note:** See “Statistical Data Control Blocks” for information on statistics data set characteristics.

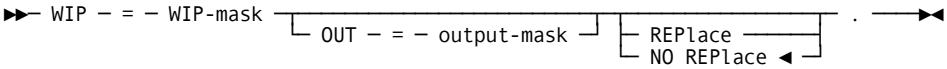
DISable PERformance ENHancement

Directs PDM to use external (disk) storage instead of virtual storage for Build WIP processing. Generally, this option is not specified unless necessitated by message PDM2001E. Specifying this option degrades Build WIP processing performance.

Note: For sequential file, no additional information is required for the BUILD statement, unless you want to use the STATS OFF statement. For partitioned data sets, CA Panvalet, CA Librarian files, or CA Endevor SCM locations, you must enter the appropriate MASK statements.

The MERGE MASK Statement

Use the MERGE MASK statement to define the WIP and output source files involved in the Merge process. You can enter as many MERGE MASK statements as are required. MERGE MASK statements must follow the MERGE action statement.



MERGE MASK Parameters

WIP

Defines the WIP member to be merged.

wip-mask

This can be:

- An explicit member name.
- A name mask.

OUT

Identifies the output file to which the WIP File is merged.

out-mask

Can be one of the following entries:

- An explicit member name.
- Blank.
- An overlay mask.

REPlace/NO REPlace

Overrides the global REPlace/NO REPlace switch in the merge statement for the member set defined in this MASK statement only. This parameter is optional. If it is not specified, the global setting from the MERGE statement takes precedence.

The STATS OFF Statement

The STATS OFF statement controls the generation of the PDM Build and Merge reports. It is an optional statement; but when specified, the STATS OFF statement must follow the related BUILD or MERGE statement. If you enter a STATS OFF statement without a preceding BUILD or MERGE statement, you receive an error message.

Note: The order of the MASK statement and the STATS OFF statement is interchangeable. It does not matter which statement follows the related action statement, as long as the action statement is coded first.

STATS OFF Parameters

STAts OFF

The keywords STAT and OFF must be the first words in a STATS OFF statement and they are required.

Detail Clause

Indicates the level of information you want to suppress:

DETail

Suppresses the detail information provided for each WIP member in the PDM Build WIP Detail Report and/or the PDM Merge Detail Report (depending on the action for which you code this statement). This is the default.

All

Suppresses detail and summary information; that is, no reports are produced. If you select this option, you only receive the final return code in the JCL.

Build WIP and Merge Syntax Examples

The following examples illustrate the use of PDM syntax to enter Build WIP and Merge requests.

Build WIP and Merge EXAMPLE 1

Enter Build WIP and Merge information using an explicit member name.

```
build wip     Dsn 'endevor.pdm.wiplib'
      root    Dsn 'endevor.pdm.rootlib'
      dv1     Dsn 'endevor.pdm.dv1lib'
      dv2     Dsn 'endevor.pdm.dv2lib'
      comPARE 007 thru 072
      no replace      .
      root    progx
      dv1     progx
      dv2     progx
      wip     progx           .
 merge wip     dsn 'endevor.pdm.wiplib'
      output  dsn 'endevor.pdm.mergelib'
      no replace       .
      wip progx
      out progx .
```

The NO REPlace option is globally set for the BUILD and MERGE statements, and is not overridden by either of the MASK statements.

Build WIP and Merge EXAMPLE 2

Enter Build WIP and Merge information using a combination of data set and CA Endevor SCM location information. In this example, the WIP and Derivation 1 locations are data sets; the Root and Derivation 2 locations are from CA Endevor SCM.

```
build wip    dsn   'endevor.pdm.wiplib'
      root   env   support
             sys   finance
             sub   acctrec
             type  copybook
             stage b
      dv1    dsn   'endevor.pdm.dv1lib'
      dv2    env   support
             sys   finance
             sub   acctrec
             type  copybook
             stage p

      compare 007 thru 072
      no replace      .
      root   copy1 ver 01 lev 02
      dv1    progx
      dv2    copy1
      wip    progx      .
merge wip    dsn 'endevor.pdm.wiplib'
      output dsn 'endevor.pdm.mergelib'
      no replace             .
 wip progx
      out progx  .
```

The element COPY 1 is assigned as the explicit element name for both the Root and Derivation 2. Note a version and level have been assigned to the Root element name. This indicates the current version/level of the element is used for Derivation 2, and a previous version/level of the element is used for the Root.

The NO REPlace option is assigned globally to the BUILD statement, with no overriding option in the BUILD MASK statement. The MERGE and MERGE MASK statements are the same as in example 1.

Build WIP and Merge EXAMPLE 3

This SCL builds and automatically merges three files. The actions create statistics records and delete the WIP member if the Merge is successful. Remember, the automatic merge is performed only if the WIP file contains no conflicts.

```
BUILD WIP  DSNAME     'ENDEVOR.PDM.WIPLIB '
      ROOT DSNAME     'ENDEVOR.PDM.ROOT '
      DV1  DSNAME     'ENDEVOR.PDM.DV1 '
      DV2  DSNAME     'ENDEVOR.PDM.DV2 '
           COMPARE     001 THRU 072
           REPLACE
      MERGE OUTPUT
               DSNAME 'ENDEVOR.PDM.MERGELIB '
              REPLACE
      OPTIONS DELETE WIP
              WRITE STATISTICS TO DSNAME
               'ENDEVOR.PDM.STATS '

                      .
    WIP  'C1BMEI00  '
    ROOT 'C1BMEI00  '
    DV1  'C1BMEI00  '
    DV2  'C1BMEI00  '
                                    .
    WIP  'C1BMEI10  '
    ROOT 'C1BMEI10  '
    DV1  'C1BMEI10  '
    DV2  'C1BMEI10  '
                                    .
```

Appendix C: Extending the WIP Edit Macro Facility

This section contains the following topics:

Before You Begin Using the WIP Edit Macro Facility

The PDM Edit WIP function, option 2 of CA Endevor Parallel Development Option menu, uses the ISPF/PDF Edit Macro facility to implement the WIPCOUNT, WIPLDEL, WIPUNDEL, WIPSHOW, WIPCHANG, WIPCON and WIPPARA commands.

The enhanced WIP edit commands are written in the TSO/E CLIST language and can be easily modified or extended.

The information in this chapter assumes familiarity with the TSO/E CLIST or REXX language, ISPF/PDF concepts and the ISPF/PDF Edit Macro facility. Refer to the appropriate IBM documentation for further information on these facilities.

Existing Edit Macros

During CA Endevor SCM installation, a set of CLISTs is copied into the CA Endevor SCM CLIST library. CLIST member BC1GM100 is the PDM Initial Macro and is used to establish the alias mapping between each CLIST name and the corresponding Edit Macro name.

The following list identifies the CLIST member name and the corresponding WIP Edit Macro name:

BC1GM101

WIPLDEL

BC1GM102

WIPSHOW

BC1GM103

WIPCON

BC1GM104

WIPCOUNT

BC1GM105

WIPCHANG

BC1GM106

WIPPARA

BC1GM107

WIPUNDEL

BC1GM108

WIPHELP

Extending the Edit Macros

Because PDM Edit Macros can be written in the TSO/E CLIST or REXX language, it is easy to add additional customized Edit commands. The existing PDM Edit Macros can be used as guides for developing customized Edit Macros.

Important! If you want to extend the functionality of the supplied edit macros, copy the CA edit macro to a new macro, and make the desired changes to the new macro.

BC1GM100 and BC1GMU01

The PDM Edit WIP Initial Edit Macro, BC1GM100, executes a second CLIST, BC1GMU01, during the edit session startup. BC1GMU01 is available to the installation to perform additional, customized startup functions.

BC1GMU01 can be used, for example, to establish aliases for site customized edit macros or to issue ISPF/PDF Edit commands. The version of BC1GMU01 supplied is a skeleton that does not issue any commands and returns a return code of zero. BC1GMU01 can be enhanced using either the CLIST or REXX language.

Appendix D: Statistical Data Control Blocks

Read this appendix for information about generating and interpreting PDM information.

PDM can optionally create data records containing detail and summary information about Build or Merge actions. The statistical records can subsequently be processed by a user program.

To have PDM create these statistics, you must code the WRITE STATISTICS TO clause with the Build or Merge action.

PDM can create statistical information about the Build WIP and Merge operations. These statistics can then be used to generate customized reports.

PDM writes the statistics to the location specified in the WRITE STATISTICS TO clause of the BUILD and MERGE statements. The statistics data set must have the following attributes:

```
DCB=(LRECL=540,RECFM=VB,BLKSIZE=block_size,DSORG=PS)
```

The block size can be any value greater than or equal to the LRECL value plus four.

Note: PDM allocates the data set specified in the WRITE STATISTICS TODSNAME clause with a disposition of OLD. Therefore, any existing data in the statistics data set is overwritten.

If you are performing multiple build or merge operations in a single job, PDM validates the data set to ensure that it has the correct attributes. PDM writes the statistical data in one of the following formats:

- **$PBWSTAT** - WIP Detail Statistics
- **$PBWSSUM** - WIP Summary Statistics
- **$PBMSTAT** - Merge Detail Statistics
- **$PBMSSUM** - Merge Summary Statistics

These control blocks correspond to the PDM Build WIP and Merge Output Detail and Summary Reports.

This appendix provides the record layouts for the four control blocks and explains all data contained within each block.

This section contains the following topics:

$PBWSTAT: WIP Detail Statistics

The $PBWSTAT control block presents detail information about each member of the WIP data set, and reflects much of the statistical information provided on the PDM Build WIP Detail Report. One $PBWSTAT control block is written for each WIP member set.

```
*------------------------------------------------------------------------*
* MACRO: $PBWSTAT                                                        *
*                                                                        *
* FUNCTION: The $PBWSTAT MACRO maps the PDM BUILD WIP Statistics         *
*  record. One record is created for each WIP file created by the        *
*  BUILD WIP action.                                                     *
*------------------------------------------------------------------------*
$PBWSTAT DSECT                        BUILD WIP Statistics record
$PBWLEN  DC    Y($PBWDSLN)            Length of the Statistics record
$pbwece  dc    cl4'stat'              eyecatcher
$PBWVERS DC    Y(1)                   Version Number
PWTYPE   DC    Y(1)                   Record Type: WIP Statistics
PWREPL   DS    CL1                    Global replace option (Y/N)
PWPRCMDE DS    CL1                    Processing Mode (F/B)
PWCMPBEG DS    H                      Compare FROM column
PWCMPEND DS    H                      COMPARE TO column
PWWIPDSN DS    CL44                   WIP Dataset Name
```

```
*-------------------------------------------------------------------*
* Root information                                                  *
*-------------------------------------------------------------------*
PWROODSN DS    CL44                  Root Dataset Name
PWROOENV DS    CL8                   Root Environment
PWROOSYS DS    CL8                   Root System
PWROOSUB DS    CL8                   Root Subsystem
PWROOTYP DS    CL8                   Root Type
PWROOSTX DS    CL1                   Root Stage (ID or Number)
PWROOST# DS    CL1                   Root Stage Number (Y/N)
*-------------------------------------------------------------------*
* Derivation 1 information                                          *
*-------------------------------------------------------------------*
PWDV1DSN DS    CL44                  DER 1 Dataset Name
PWDV1ENV DS    CL8                   DER 1 Environment
PWDV1SYS DS    CL8                   DER 1 System
PWDV1SUB DS    CL8                   DER 1 Subsystem
PWDV1TYP DS    CL8                   DER 1 Type
PWDV1STX DS    CL1                   DER 1 Stage (ID or Number)
PWDV1ST# DS    CL1                   DER 1 Stage Number (Y/N)
*-------------------------------------------------------------------*
* Derivation 2 information                                          *
*-------------------------------------------------------------------*
PWDV2DSN DS    CL44                  DER 2 Dataset Name
PWDV2ENV DS    CL8                   DER 2 Environment
PWDV2SYS DS    CL8                   DER 2 System
PWDV2SUB DS    CL8                   DER 2 Subsystem
PWDV2TYP DS    CL8                   DER 2 Type
PWDV2STX  DS   CL1                   DER 2 Stage (ID or Number)
PWDV2ST#  DS   CL1                   DER 2 Stage Number (Y/N)

*-------------------------------------------------------------------*
* Other information                                                 *
*-------------------------------------------------------------------*
PWWIPMEM DS    CL10                  WIP Member name
PWROOMEM DS    CL10                  Root Member/Element name
PWROOLVL DS    H                     Root Level (if ENDEVOR)
PWROOVER DS    H                     Root Version (if ENDEVOR)
PWDV1MEM DS    CL10                  DER 1 Member/Element name
PWDV1LVL DS    H                     DER 1 Level (if ENDEVOR)
PWDV1VER DS    H                     DER 1 Version (if ENDEVOR)
PWDV2MEM DS    CL10                  DER 2 Member/Element name
PWDV2LVL DS    H                     DER 2 Level (if ENDEVOR)
PWDV2VER DS    H                     DER 2 Version (if ENDEVOR)
PWRUNTME DS    F                     Time of BUILD WIP action
PWRUNDTE DS    F                     Date of BUILD WIP action
PWPGENUM DS    PL2                   Report page number
PWRETCDE DS    F                     BUILD WIP return code
         SPACE ,
```

```
*-------------------------------------------------------------------*
* General statistics                                                *
*-------------------------------------------------------------------*
PWTOTINS DS    F                       Total Number of inserts
PWTOTDEL DS    F                       Total Number of deletes
PWTOTREC DS    F                       Total Number of WIP records
PWTOTCNF DS    F                       Total Number of conflicts
PWTOTCTA DS    F                       Total Number of Contention Areas
PWTOTC1R DS    F                       Total D1 records in conflict
PWTOTC2R DS    F                       Total D2 records in conflict
PWCOMPFC DS    H                       Complexity Factor for member
PWCOMP0  EQU   0                        - Complexity Factor 0
PWCOMP1  EQU   1                        - Complexity Factor 1
PWCOMP2  EQU   2                        - Complexity Factor 2
PWCOMP3  EQU   3                        - Complexity Factor 3
PWCOMP4  EQU   4                        - Complexity Factor 4
PWCOMP5  EQU   5                        - Complexity Factor 5
PWRSV1   DS    H                       Reserved
         SPACE ,

*-------------------------------------------------------------------*
* Common to both derivations                                        *
*-------------------------------------------------------------------*
PWTOT12I DS    F                       Total common insert recs (D1,2)
PWTOT12D DS    F                       Total common delete recs (D1,2)
PWTOT12C DS    F                       Total common changes (D1,D2)
PWTDCIBL DS    F                       Com - Total Number of ins blocks
PWTDCDBL DS    F                       Com - Total Number of del blocks
PWNDCISZ DS    F                       Com - Min size of insert blocks
PWXDCISZ DS    F                       Com - Max size of insert blocks
PWMDCISZ DS    F                       Com - Mean size of insert blocks
PWNDCDSZ DS    F                       Com - Min size of delete blocks
PWXDCDSZ DS    F                       Com - Max size of delete blocks
PWMDCDSZ DS    F                       Com - Mean size of delete blocks
         SPACE ,
```

```
*-------------------------------------------------------------------*
* Derivation 1 statistics                                           *
*-------------------------------------------------------------------*
PWTD1INS DS    F                      D1 - Total Number of inserts
PWTD1DEL DS    F                      D1 - Total Number of deletes
PWTD1IBL DS    F                      D1 - Total Number of ins blocks
PWTD1DBL DS    F                      D1 - Total Number of del blocks
PWTD1CHG DS    F                      D1 - Total Number of changes
PWND1ISZ DS    F                      D1 - Min size of insert blocks
PWXD1ISZ DS    F                      D1 - Max size of insert blocks
PWMD1ISZ DS    F                      D1 - Mean size of insert blocks
PWND1DSZ DS    F                      D1 - Min size of delete blocks
PWXD1DSZ DS    F                      D1 - Max size of delete blocks
PWMD1DSZ DS    F                      D1 - Mean size of delete blocks
         SPACE ,

*-------------------------------------------------------------------*
* Derivation 2 statistics                                           *
*-------------------------------------------------------------------*
PWTD2INS DS    F                      D2 - Total Number of inserts
PWTD2DEL DS    F                      D2 - Total Number of deletes
PWTD2IBL DS    F                      D2 - Total Number of ins blocks
PWTD2DBL DS    F                      D2 - Total Number of del blocks
PWTD2CHG DS    F                      D2 - Total Number of changes
PWND2ISZ DS    F                      D2 - Min size of insert blocks
PWXD2ISZ DS    F                      D2 - Max size of insert blocks
PWMD2ISZ DS    F                      D2 - Mean size of insert blocks
PWND2DSZ DS    F                      D2 - Min size of delete blocks
PWXD2DSZ DS    F                      D2 - Max size of delete blocks
PWMD2DSZ DS    F                      D2 - Mean size of delete blocks

*-------------------------------------------------------------------*
* Auto-Merge statistics                                             *
*-------------------------------------------------------------------*
PWAMRGRC DS    F                      Auto-Merge Return Code
PWAMRGFL DS    CL1                    Auto-Merge Indicator (Y/N)
$PBWDSLN EQU   *-$PBWSTAT
         MEND
```

Data Displayed by $PBWSTAT

$PBWSTAT presents data in five sections.

- General source location information
- General statistic totals
- Data common to both derivations
- Derivation 1 statistics
- Derivation 2 statistics

Each section, and each field within that section, is explained in the following list.

General Source Location Information ($PBWSTAT)

The first section of this control block provides general information about the WIP, Root, Derivation 1, and Derivation 2 source.

$PBWLEN

Size of the control block.

$PBWEYE

Eye-catcher, to help visually identify this control block.

$PBWVERS

Version to identify the control block.

PWTYPE

Type indicator for the control block. A type of **1** indicates that this is the **WIP Detail Statistics** control block.

PWREPL

Indicates your selection for the replace/no replace option for this member set. Valid values are:

- Y—Yes
- N—No

PWPRCMDE

Indicates the processing mode for this member set:

- F—Foreground
- B—Batch

PWCMPBEG

Indicates the column at which PDM should begin to compare Root, Derivation 1, and Derivation 2 information for the Build WIP process.

PWCMPEND

Indicates the last column of information that should be compared in the Build WIP process.

PWWIPDSN

The WIP data set name.

Note: The information presented in the next three groups of data (for the Root, Derivation 1, and Derivation 2) depends on whether you have a data set source location or an CA Endevor SCM source location. If you use a data set name, the CA Endevor SCM location fields are blank. If you use an CA Endevor SCM location, the data set name field is blank.

PWROODSN

The Root data set name.

PWROOENV

The Root environment name.

PWROOSYS

The Root system name.

PWROOSUB

The Root subsystem name.

PWROOTYP

The Root element type.

PWROOST#

Indicates whether the value in the field above is an ID or a number:

- Y—PWROOSTX is a stage number.
- N—PWROOSTX is a stage ID.

PWROOSTX

The Root stage ID or number, depending on the value entered for this member set.

PWDV1DSN

The Derivation 1 data set name.

PWDV1ENV

The Derivation 1 environment name.

PWDV1SYS

The Derivation 1 system name.

PWDV1SUB

The Derivation 1 subsystem name.

PWDV1TYP

The Derivation 1 element type

PWDV1STX

The Derivation 1 stage ID or number, depending on the value entered for this member set.

PWDV1ST#

Indicates whether the value in the field above is an ID or a number:

- Y—PWDV1STX is a stage number.
- N—PWDV1STX is a stage ID.

PWDV2DSN

The Derivation 2 data set name.

PWDV2ENV

The Derivation 2 environment name.

PWDV2SYS

The Derivation 2 system name.

PWDV2SUB

The Derivation 2 subsystem name.

PWDV2TYP

The Derivation 2 element type.

PWDV2STX

The Derivation 2 stage ID or number, depending on the value entered for this member set.

PWDV2ST#

Indicates whether the value in the field above is an ID or a number:

- Y—PWDV2STX is a stage number.
- N—PWDV2STX is a stage ID.

PWWIPMEM

The WIP member name.

PWROOMEM

The Root member or element name.

PWROOLVL

The level of the Root source, if the Root uses an CA Endevor SCM location

PWROOVER

The version of the Root source, if the Root uses an CA Endevor SCM location.

PWDV1MEM

The Derivation 1 member or element name.

PWDV1LVL

The level of the Derivation 1 source, if Derivation 1 uses an CA Endevor SCM location.

PWDV1VER

The version of the Derivation 1 source, if Derivation 1 uses a CA Endevor SCM location.

PWDV2MEM

The Derivation 2 member or element name.

PWDV2LVL

The level of the Derivation 2 source, if Derivation 2 uses an CA Endevor SCM location.

PWDV2VER

The version of the Derivation 2 source, if Derivation 2 uses a CA Endevor SCM location.

PWRUNTME

The time at which the Build WIP process was executed.

PWRUNDTE

The date on which the Build WIP process was executed.

PWPGENUM

The page on which detail information for this member set appears in the PDM Build WIP Detail report.

PWRETCDE

The return code resulting from the Build WIP processing of this member set.

General Statistics Total

The second section of the control block provides a general summary for the entire WIP member set.

PWTOTINS

The total number of lines marked as insertions to the Root program, from both Derivation 1 and Derivation 2.

PWTOTDEL

The total number of lines marked as deletions to the Root program, from both Derivation 1 and Derivation 2.

PWTOTREC

The total number of records in this WIP member set.

PWTOTCNF

The total number of conflict areas in this WIP member.

Note: Refer to An Introduction to PDM for a definition of a conflict area.

PWTOTCTA

The total number of contention areas in this WIP member.

Note: Refer to An Introduction to PDM for a definition of a contention area.

PWTOTC1R

The total number of Derivation 1 records involved in conflicts in this member set.

PWTOTC2R

The total number of Derivation 2 records involved in conflicts in this member set.

PWCOMPFC

The complexity factor of this WIP member, the format is value—label—complexity factor:

0—PWCOMP0—0

1—PWCOMP1—1

2—PWCOMP2—2

3—PWCOMP3—3

4—PWCOMP4—4

5—PWCOMP5—5

Data Common to Both Derivations

This section of the control block provides information for data that is common to both derivations.

PWTOT12I

Indicates the number of lines marked as insertions, from both derivations, at the same location with respect to the Root program (that is, insertions in common).

PWTOT12D

Indicates the number of lines marked as deletions, from both derivations, at the same location with respect to the Root program (that is, deletions in common).

PWTOT12C

Indicates the number of changes made to the same records of the Root program, by both derivations. This value refers to modifications made to an existing record (such as a change in field size or field name), rather than an insertion or a deletion of a record.

PWTDCIBL

Indicates the total number of blocks of insertion lines, made by both derivations, in common (that is, insertions at the same location, with respect to the Root program).

PWTDCDBL

Indicates the total number of blocks of deletion lines, made by both derivations, in common (that is, deletions at the same location, with respect to the Root program).

PWNDCISZ

The minimum size (smallest) of a common insertion block in this WIP member.

PWXDCISZ

The maximum size (largest) of a common insertion block in this WIP member.

PWMDCISZ

The mean average size of a common insertion block in this WIP member.

PWNDCDSZ

The minimum size (smallest) of a common deletion block in this WIP member.

PWXDCDSZ

The maximum size (largest) of a common deletion block in this WIP member.

PWMDCDSZ

The mean average size of a common deletion block in this WIP member.

Derivation 1 Statistics

This section of the control block presents information pertaining to Derivation 1 only.

PWTD1INS

Indicates the total number of lines marked as insertions to the Root program by Derivation 1.

PWTD1DEL

Indicates the total number of lines marked as deletions to the Root program by Derivation 1.

PWTD1IBL

Indicates the number of blocks of insertion lines from Derivation 1.

PWTD1DBL

Indicates the number of blocks of deletion lines from Derivation 1.

PWTD1CHG

Indicates the number of changes made to existing records in the Root program by Derivation 1.

PWND1ISZ

Indicates the minimum size (smallest) of an insertion block from Derivation 1.

PWXD1ISZ

Indicates the maximum size (largest) of an insertion block from Derivation 1.

PWMD1ISZ

Indicates the mean average size of an insertion block from Derivation 1.

PWND1DSZ

Indicates the minimum size (smallest) of a deletion block from Derivation 1.

PWXD1DSZ

Indicates the maximum size (largest) of a deletion block from Derivation 1.

PWMD1DSZ

Indicates the mean average size of a deletion block from Derivation 1.

Derivation 2 Statistics

This section of the control block presents information pertaining to Derivation 2 only.

PWTD2INS

Indicates the total number of lines marked as insertions to the Root program by Derivation 2.

PWTD2DEL

Indicates the total number of lines marked as deletions to the Root program by Derivation 2.

PWTD2IBL

Indicates the number of blocks of insertion lines from Derivation 2.

PWTD2DBL

Indicates the number of blocks of deletion lines from Derivation 2.

PWTD2CHG

Indicates the number of changes made to existing records in the Root program by Derivation 2.

PWND2ISZ

Indicates the minimum size (smallest) of an insertion block from Derivation 2.

PWXD2ISZ

Indicates the maximum size (largest) of an insertion block from Derivation 2.

PWMD2ISZ

Indicates the mean average size of an insertion block from Derivation 2.

PWND2DSZ

Indicates the minimum size (smallest) of a deletion block from Derivation 2.

PWXD2DSZ

Indicates the maximum size (largest) of a deletion block from Derivation 2.

PWMD2DSZ

Indicates the mean average size of a deletion block from Derivation 2.

Auto-Merge information

This section of the control block presents information pertaining WIP members that were automatically merged.

PWAMRGRC

The merge return code.

PWAMRGFL

The auto-merge indicator. It is set to **Y** if the WIP member was automatically merged.

$PBWSSUM: WIP Summary Statistics

The $PBWSSUM control block presents summary information for the entire WIP data set, and reflects much of the statistical information provided on the PDM Build WIP Summary report. Only one $PBWSSUM control block is written for each Build action.

```
*------------------------------------------------------------------------*
*                                                                        *
* Macro: $PBWSSUM                                                        *
*                                                                        *
* Function: The $PBWSSUM macro maps the PDM BUILD WIP Summary stat-*
*  istics record.                                                      *
*                                                                        *
*------------------------------------------------------------------------*
```

```
$PBWSSUM DSECT
$PWSLEN  DC    Y($PWSDSLN)            Length of the structure
$PWSEYE  DC    CL4'SSUM'              Eye catcher
$PWSVERS DC    Y(1)                   Version number
WSTYPE   DC    Y(2)                   Record Type: WIP Summary
WSWIPDSN DS    CL44                   WIP dataset name
WSMBRSEL DS    F'0'                   Members selected for processing
WSMBRSUC DS    F'0'                   Members successfully processed
WSMBRREP DS    F'0'                   Members with REPLACE conflicts
WSMBRERR DS    F'0'                   Members in error
WSMNOICD DS    F'0'                   Members with no Inserts/deletes
WSMNOCON DS    F'0'                   Members with no conflicts
WSMCOMP5 DS    F'0'                   Members, complexity factor 5
WSMCOMP4 DS    F'0'                   Members, complexity factor 4
WSMCOMP3 DS    F'0'                   Members, complexity factor 3
WSMCOMP2 DS    F'0'                   Members, complexity factor 2
WSMCOMP1 DS    F'0'                   Members, complexity factor 1
WSMCOMP0 DS    F'0'                   Members, complexity factor 0
WSMWPMRG DS    F'0'                   Members Auto-Merged
WSHWIPRC DS    F'0'                   Highest BUILD return code
$PWSDSLN EQU   *-$PBWSSUM
         MEND
```

Each field in the control block is described in the following list.

$PWSLEN

Size of the control block.

$PWSEYE

Eye-catcher, to help visually identify this control block.

$PWSVERS

Version to identify the control block.

WSTYPE

Type indicator for the control block. A type of **2** indicates that this is the **WIP Summary** control block.

WSWIPDSN

The WIP data set name.

WSMBRSEL

Indicates the total number of members selected for processing.

WSMBRSUC

Indicates the total number of members processed successfully (with a return code of 0000).

WSMBRREP

Indicates the number of members flagged as "replace conflicts;" that is, like-named members exist in the WIP data set, but the replace/no replace option has been set to "no replace." These members are not processed.

WSMBRERR

Indicates the number of members flagged as "in error." These members, if processed, should be considered invalid.

WSMNOICD

Indicates the number of members with no insertions or deletions from either derivation (that is, no changes at all were made to the member).

WSMNOCON

Indicates the number of members to which changes were made, but with no conflicts resulting from those modifications.

WSMCOMP5

Indicates the number of WIP members with a complexity factor of 5.

WSMCOMP4

Indicates the number of WIP members with a complexity factor of 4.

WSMCOMP3

Indicates the number of WIP members with a complexity factor of 3.

WSMCOMP2

Indicates the number of WIP members with a complexity factor of 2.

WSMCOMP1

Indicates the number of WIP members with a complexity factor of 1.

WSMCOMP0

Indicates the number of WIP members with a complexity factor of 0.

WSMWPMRG

Indicates the number of WIP members that were automatically merged.

WSHWIPRC

The highest build return code.

$PBMSTAT: Merge Detail Statistics

The $PBMSTAT control block presents detail information about each member set involved in the Merge process, and reflects much of the statistical information provided in the PDM Merge Output Detail Report. One $PBMSTAT control block is written for each member set.

```
*------------------------------------------------------------------------*
*                                                                        *
* Macro: $PBMSTAT                                                        *
*                                                                        *
* Function: The $PBMSTAT macro is used to map the PDM Merge Output *
*  statistics record. An Output statistics record is created for     *
*  each WIP member processed by the PDM MERGE OUTPUT action.         *
*                                                                        *
*------------------------------------------------------------------------*

$PBMSTAT DSECT
$PBMLEN  DC    Y($PBMDSLN)            Length of the structure
$PBMEYE  DC    CL4'STAT'              Structure Identifier
$PBMVERS DC    Y(1)                   Structure Version number
PMTYPE   DC    Y(3)                   Structure Type identifier
PMREPL   DS    CL1                    Global Replace option (Y/N)
PMPRCMDE DS    CL1                    Processing Mode (F/B)
PMWIPDSN DS    CL44                   WIP Dataset Name
PMOUTDSN DS    CL44                   Merge Output Dataset name
PMWIPMEM DS    CL10                   WIP Member name
PMOUTMEM DS    CL10                   Merge Output Member name
PMRUNTME DS    F                      Time of Merge operation
PMRUNDTE DS    F                      Date of Merge operation
         SPACE ,

*------------------------------------------------------------------------*
* Merge Output General Statistics                                        *
*------------------------------------------------------------------------*
PMPGENUM DS    PL2                    Report Page Number
PMWIPMRG DS    CL1                    If 'Y', Merge was run as part  X
                                       of Build WIP processing
PMWIPDEL DS    CL1                    If 'Y', the WIP member was del-X
                                       eted by the Merge operation
PMRETCDE DS    F                      Overall return code for member
PMTWPREC DS    F                      Total number of WIP records
PMTMGREC DS    F                      Total number of Merged records
PMTERREC DS    F                      Total number of invalid records
$PBMDSLN EQU   *-$PBMSTAT
         MEND
```

Data Display by $PBMSTAT

$PBMSTAT presents data in two sections:

- General source location information
- General statistics

Each section, and each field within that section, is explained in the following list.

General Source Location Information ($PBMSTAT)

The first section of this control block provides general information about each WIP and output source member.

$PBMLEN

Size of the control block.

$PBMEYE

Eye-catcher for this control block.

$PBMVERS

Version to identify the control block.

PMTYPE

Type indicator for the control block. A type of **3** indicates that this is the Merge Detail Statistics control block.

PMREPL

Indicates your selection for the replace/no replace option for this member set:

- Y—Yes
- N—No

PMPRCMDE

Indicates the processing mode for this member set:

- F—Foreground
- B—Batch

PMWIPDSN

The WIP data set name.

PMOUTDSN

The output file data set name.

PMWIPMEM

The WIP member name.

PMOUTMEM

The output file member name.

PMRUNTME

The time at which the Merge process was executed.

PMRUNDTE

The date on which the Merge process was executed.

General Statistics

The second section of this control block provides statistical data for each member involved in the Merge process.

PMPGENUM

The page on which detail information for this member appears in the PDM Merge Output Detail Report.

PMWIPMRG

Set to **Y** if the merge operation was done as part of Build WIP processing.

PMWIPDEL

Set to **Y** if the WIP member was deleted by the merge operation.

PMRETCDE

The return code resulting from the Merge processing of this member.

PMTWPREC

The total number of records contained in this WIP member.

PMTMGREC

The total number of records contained in the output source file (merged file).

PMTERREC

The total number of invalid WIP records detected in this particular WIP member.

$PBMSSUM: Merge Summary Statistics

The $PBMSSUM control block presents summary information for the WIP and output data sets involved in the Merge process. Only one $PBMSSUM control block is written for each Merge action.

```
*------------------------------------------------------------------------*
*                                                                        *
* Macro: $PBMSSUM                                                        *
*                                                                        *
* Function: The $PBMSSUM macro maps the PDM Merge Summary statistics     *
*  record. The Summary statistics record contains summary inform-      *
*  ation about the MERGE OUTPUT operation.                              *
*                                                                        *
*------------------------------------------------------------------------*
$PBMSSUM DSECT
$PMSLEN  DC    Y($PMSDSLN)            Length of the structure
$PMSEYE  DC    CL4'SSUM'              Structure identifier
$PMSVERS DC    Y(1)                   Structure version number
MSTYPE   DC    Y(4)                   Structure type identifier
MSOUTDSN DS    CL44                   Merge Output dataset name
MSMBRSEL DS    F'0'                   Members selected for processing
MSMBRSUC DS    F'0'                   Members successfully processed
MSMBRREP DS    F'0'                   Members with replace conflicts
MSMBRERR DS    F'0'                   Members in error
MSWIPDEL DS    F'0'                   Number of WIP members deleted
$PMSDSLN EQU   *-$PBMSSUM
         MEND
```

Each field in the control block is described in the following list:

$PMSLEN

Size of the control block.

$PMSEYE

Eye-catcher for this control block.

$PMSVERS

Version to identify the control block.

MSTYPE

Type indicator for the control block. A type of **4** indicates that this is the Merge Summary control block.

MSOUTDSN

The Merge Output data set name.

MSMBRSEL

Indicates the total number of members selected for processing.

MSMBRSUC

Indicates the total number of members processed successfully (with a return code of 0000).

MSMBRRE

Indicates the number of members flagged as "replace conflicts;" that is, like-named members exist in the WIP data set, but the replace/no replace option has been set to "no replace." These members are not processed.

MSMBRERR

Indicates the number of members flagged as "in error." These members, if processed, should be considered invalid.

MSWIPDEL

Indicates the number of WIP members deleted by merge processing.

Appendix E: PDM Implementation

This section contains the following topics:

Implementation Process Overview

This appendix explains how to implement PDM at your site. It includes the following steps:

1. Customizing the PDM Batch JCL
2. (Optional) Modifying the PDM Dialog Panels
3. Integrating PDM with ISPF
4. (Optional) Testing PDM
5. Link-editing the CA Panvalet Access Modules

Note: If you wish to invoke PDM from CA Endevor SCM, refer to the *Administration Guide*.

Assumptions

This installation procedure assumes that, before installing PDM, you:

- Understand OS JCL.
- Know how to use the TSO ISPF/PDF Editor to customize files.
- Have proper authority to define data sets, and to modify TSO ISPF panels, messages, and CLISTs.
- Are using 3390-type disk devices at your site. Adjust all SPACE parameters accordingly if you are using another type of device.

Step 1: Customize the PDM Batch JCL

The CA Endevor SCM installation unloads two members containing JCL to execute PDM in batch mode. Member BC1GJCL1, in data set iprfx.iqual.CSIQSENU, is used by the PDM batch submit option to build execution JCL. Member BC1GJCL2, in data set iprfx.iqual.CSIQJCL, contains JCL a PDM user can submit to execute PDM in batch. Both JCL and skeletons must be customized. Note that the PDM batch utility BC1G0000 does not have to be called by an authorized program.

- Update the STEPLIB and CONLIB DD statements to refer to the load library created earlier.
- To receive a re-cap and summary report, uncomment the C1MSGS2 DD statement.

Step 2: Modify the PDM Dialog Panels

This step is optional.

By default, PDM dialogs do not save information that you type in the other partitioned or sequential data set fields. This field is found on panels BC1G2000, BC1G2100, BC1G2200, BC1G2300, BC1G2400, BC1G4000, and BC1G4400.

You can modify the standard ISPF dialog panel definitions to save the information typed in these fields.

Important! Do not make any changes other than those in the "Examples" section that follows. Any other changes may adversely affect the operation of the PDM dialog.

PDM ISPF Examples

The PDM ISPF panel data set (iprfx.iqual.CSIQPENU) contains one member for each PDM panel. The member name is the same as the panel name. Use the ISPF/PDF editor to edit the panel. At the bottom of the panel definition there are two sections that contain commented code.

To allow PDM to save the information in the other partitioned or sequential data set fields, uncomment the line containing the VGET and the VPUT statements. Do this be removing the leading /* and trailing */ characters. An example of a modified panel follows.

```
)INIT
   .ZVARS='(PTBREPOP PTBWPDVC PTBWPCRT PTBWPMRG PTBWSTAT)'
   .HELP= BC1T2000
    VGET (PTBWPOTH) PROFILE
)PROC
    VPUT (PTBWPOTH) PROFILE
)END
```

After the panel is modified, save the member and repeat the process for each panel member.

Step 3: Integrate PDM with ISPF

This installation step defines PDM to your ISPF environment. The steps involved are summarized below, then described in more detail in the sections that follow:

1. Define the PDM data sets to ISPF. You can do this through a CLIST, or by editing an existing logon procedure (which in turn allocates the data sets under ISPF).
2. Add PDM as a valid option on an ISPF primary or secondary options panel.

Define the PDM Data Sets to ISPF

Define the PDM data sets to ISPF as follows.

1. **To define the data sets through a CLIST**, use the supplied CLIST (member BC1GCLS1 in the iprfx.iqual.CSIQCLS0 library), first checking to ensure that the names of the libraries match those used at your site. Make any changes necessary, by editing the CLIST.
2. **To define the data sets through an existing logon procedure**, copy the appropriate statements from the CLIST provided with the installation (above) to the logon procedure.

The CLIST library delivered (iprfx.iqual.CSIQCLS0) is fixed blocked (FB). If your existing CLIST libraries are variable blocked (VB), use the TSO utilities to create and populate a VB file.

PDM files are installed with a blocksize of 3120. Make sure to place the file with the largest blocksize first in the concatenation.

Add PDM to an ISPF Option Panel

Add PDM as a valid option on an ISPF primary or secondary options panel. You might define it as an option on the ISPF/PDF Primary Options Menu, for example, which is generally stored in the TSO Panel Library (ISPPLIB) as ISR@PRIM. Edit the panel you have selected, modifying the text portion of the panel to include an option for accessing PDM.

For example, to use option P to select PDM, insert the following line in the list of menu options:

```
P  -  Parallel Development Option
```

Modify the processing portion of the same panel to execute the PDM main program when the defined option is selected:

```
P,'PGM(BC1G1000) NOCHECK NEWAPPL(CTLI)'
```

Step 4: Test PDM

This step is optional.

This installation step walks you through the basic functionality of PDM, using examples provided within the iprfx.iqual.CSIQJCL library. The major steps in this exercise are laid out briefly below, followed by a detailed description of each step.

1. Define **two** data sets, one to hold the work-in-process (WIP) file and one to hold the results of the merge function.
2. Within PDM, perform the Build WIP function
3. View and edit the WIP file
4. Perform the Merge function
5. Test Batch PDM by performing the Build WIP and Merge functions in batch.

Define the WIP and Merge Data Sets

Define two libraries as follows:

1. The work-in-process (WIP) data set must have a record length of at least 88. For the example, one track should be enough space for this library. Use the following specifications as a guideline when defining the WIP file:

   ```
   RECFM=FB,LRECL=88,BLKSIZE=8800, DSORG=PO
   ```

2. The Merge data set should be in an appropriate physical format to hold the resultant source code. For the example, one track should be enough space for this library. Use the following specifications as a guideline when defining the Merge file:

   ```
   RECFM=FB,LRECL=80,BLKSIZE=3120,DSORG=PO
   ```

Perform the Build WIP Function

Using the CLIST or the logon proc defined in the previous step, sign onto PDM. Perform the following:

1. Select option 1 - BUILD WIP from the PDM primary options menu. In the processing mode field, ensure that F (Foreground) is specified. Press Enter.
2. Specify the WIP library defined above on the WIP Specification Panel. Specify PROGX as the member name. Specify Y in the data set options field to replace like-named members in this library. Press Enter.
3. Specify the PDM JCL library (iprfx.iqual.CSIQJCL), and the member PDMROOT on the Root Specification Panel. Also specify the comparison columns desired (7-72 will work in this case). Press Enter.
4. Specify the PDM JCL library (iprfx.iqual.CSIQJCL), and the member PDMDER1 on the Der 1 Specification Panel. Press Enter.
5. Specify the PDM JCL library (iprfx.iqual.CSIQJCL), and the member PDMDER2 on the Der 2 Specification Panel. Press Enter.

When the WIP file has been successfully built, you will be returned to the primary options menu. There should be a message in the upper right-hand corner that says "WIP BUILD COMPLETE".

View and Edit the WIP File

Select option 2 - EDIT WIP from the PDM primary options menu. On the Edit entry panel, specify the name of the WIP data set and member created in the previous step. You will be in ISPF edit at this point and can perform any valid ISPF editing function.

As you review the PDM WIP file, you will notice various lines are annotated on the left side. These annotations indicate the changes made to the root by each derivation.

%

Indicates that a change has occurred between one of the derivations and the root.

?

Indicates that a conflict exists at this point; that is, that both derivations made different changes at this line of the original program.

I

Indicates that one of the derivations inserted this line into the original program.

D

Indicates that one of the derivations deleted this line from the original program.

#

Indicates which derivation the change came from, either 1 or 2.

****

Indicates a comments line. Comments do not appear on the PDM Merge Output.

Note the following examples:

% I-1

Indicates that a line has been inserted (% I) by derivation 1 (1).

% D-2

Indicates that a line has been deleted (% D) by derivation 2 (2).

% D-1,2

Indicates a common deletion; that is, both derivations 1 and 2 deleted the same line.

%?I-2

Indicates with the (?) that a potential conflict exists

%?I-1

at this point in the original program. Both derivations inserted different lines at the same location in the program.

You may perform any valid ISPF editing function within this file. You may also change the annotations in columns 1-8 of the WIP file. Any line marked with a **D** in the annotation area will not be included when the file is merged. Any line not marked or marked with an **I** in the annotation area will be included when the file is merged. Use PF3 to return to the main PDM menu when you are finished.

Perform the Merge Function

Select option 3 - MERGE from the PDM primary options menu. On the subsequent Merge Work In Process File panel specify the name of the WIP data set and member created above.

When you press Enter, the Merge Output Specification Panel appears. Specify on this panel the name of the Merge data set defined in the first step (PROGX). When complete, press Enter.

When the file has been successfully merged into an output data set, the Merge Work in Process File panel reappears with the message "MERGE COMPLETE" in the upper right corner of the screen. Press PF3 to return to the Primary Options Menu.

Test Batch PDM

On the PDM primary options panel, specify B (Batch) as the processing mode and enter the name of a Batch Request Data Set. Perform all the steps described above to Perform the Build WIP Function. Rather than performing the build WIP function immediately, PDM places requests into the specified batch request data set used to drive subsequent batch execution.

Once you have specified all the necessary parameters for building the WIP, and received the message "REQUESTS WRITTEN", select option 4-SUBMIT to execute the Build WIP function in batch. A batch submission panel is displayed. Type a valid jobcard on this panel, then choose option 3 - SUBMIT to submit the batch PDM job.

When the WIP has been successfully built, you can use the Merge panels to cause PDM to code the appropriate commands to perform the Merge function, then submit PDM in batch to perform the Merge function.

Step 5: Link-edit the CA Panvalet Access Modules

If you are using CA Panvalet as a source library manager at your site, you must link-edit the CA Panvalet access method (PAM) module with several of the PDM CA Panvalet interface modules. To do this:

1. Edit member BC1JPAN (in the JCL library) to supply the name of your CA Panvalet load library.
2. Link-edit the PAM module, using the BC1JPAN JCL to do this. Place the output load module created by this job in CONLIB.
3. If necessary, redefine the Defaults Table, specifying LIBENV as PV.

Each of these steps is described in the following sections.

Edit BC1JPAN

Tailor the BC1JPAN JCL to supply the correct name of your CA Panvalet load library on the PAMLIB DD statement.

Run BC1JPAN

If you have not done so already, copy the JOBCARD member (in the JCL library) to the beginning of BC1JPAN. Then submit the job for execution. BC1JPAN link-edits the PAM module and places the output load module in CONLIB.

Redefine Defaults Table

If necessary, redefine the Defaults Table to specify LIBENV as PV. The LIBENV parameter is in the TYPE=MAIN macro.

Note: See Step 2: Create the PDM Defaults Table for related instructions.

Index

E

G

H

I

L

M

O

P

R

S

U

V

W