

TURNOVER® FOR ISERIES

Synchronizer User Guide

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Documentation set

The documentation relating to this product includes:

- Getting Started with TURNOVER® for iSeries Client
- Getting Started with TURNOVER® for iSeries
- TURNOVER® for iSeries User Guide
- TURNOVER® for iSeries Developer's Guide
- Application Planning Guide
- Managing IFS Objects with TURNOVER® for iSeries
- TURNOVER® for iSeries PWM Quick Reference
- Synchronizer User Guide

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TURNOVER® for iSeries

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PREFACE

The TURNOVER® for iSeries Information Library

Other sources of information about TURNOVER® for iSeries include:

- The TURNOVER® for iSeries information library, consisting of this *Getting Started with TURNOVER® for iSeries* manual, a user guide, and a tutorial:
 - o *Getting Started with TURNOVER® for iSeries* provides instructions for installing TURNOVER® for iSeries on your computer (for the first time), upgrading to a new release, and applying changes to an existing release.
 - o The *TURNOVER® for iSeries Tutorial* presents an example of a TURNOVER® for iSeries application, and walks you through the steps you would typically perform in your actual working environments.
 - o The *TURNOVER® for iSeries Developer's Guide* contains topics of specific interest to software developers. It also serves as an effective introduction to TURNOVER® for iSeries.
 - o The *Synchronizer User Guide* describes all of the features of the Synchronizer system, including the source compare and merge programs.
- The *TURNOVER® for iSeries Application Planning Guide* provides information to help you understand TURNOVER® for iSeries and TURNOVER® for iSeries application definitions. (This information is user interface independent.)
- The TURNOVER® for iSeries Supplements and Technical Bulletins are articles on specialized or advanced topics.
- The TURNOVER® for iSeries Interface Guides describe how to use TURNOVER® for iSeries to manage objects created by other products.¹
- The *Getting Started with the TURNOVER® for iSeries Client* guide provides installation and configuration instructions for using the Eclipse-based TURNOVER® for iSeries plug-ins, either in the standalone TURNOVER® for iSeries Client or within an Eclipse-based IDE such as IBM's RDi.

¹ For a complete list of products with which TURNOVER® for iSeries interfaces, visit the [SoftLanding website](#) or contact your UNICOM Systems, Inc. Sales Representative.

- **TURNOVER® for iSeries Supplement #66: Implementing TURNOVER® for SVN** provides complete information for installing and configuring the TURNOVER® for SVN version control product for your Web/PC/Java development projects. This product integrates seamlessly with the Eclipse-based TURNOVER® for iSeries plug-ins running either in the TURNOVER® for iSeries Client or another Eclipse-based IDE such as IBM's RDi.

In addition, Help text (both field sensitive and extended help) is available for every display. Position the cursor to any field, or to the panel title, and press the F1/Help key.

All TURNOVER® for iSeries documentation is available as Adobe™ Acrobat® PDF files within the TurnOverDocsClients.zip file. Using the Acrobat® Reader with Search (also provided), you can search, view, and print TURNOVER® for iSeries information.

About this guide

This guide describes how each of the features of **Synchronizer** works and how **Synchronizer** fits into the TURNOVER® for iSeries application lifecycle management solution.

We start by describing a typical vendor change environment, as you would manage it with TURNOVER® for iSeries, without **Synchronizer**.

Then we describe the features and procedures you would follow when using **Synchronizer**.

Installing Synchronizer

Synchronizer is installed automatically, when you install TURNOVER® for iSeries, a new release of it, or cumulative changes. See your **Getting Started with TURNOVER® for iSeries** guide for installation instructions.

SYNCHRONIZER

If you modify vendor software, then **TURNOVER® for iSeries' Synchronizer** is for you.

Synchronizer is a vendor change synchronization facility and source compare and merge utility, in one package.

Up until Release 4.0, TURNOVER® helped you to manage the day-to-day modifications of your vendor software, always retrieving the correct object and ensuring that your changes were kept separate for the vendor's base application. **Synchronizer** goes much further by integrating your changes with periodic updates or a new release that your application software vendor has sent you.

Before Synchronizer, you had to perform several tedious and time consuming steps in order to implement updates or a new release. You had to compare each object in the distribution with the objects you changed. Frequently, you had to compare the vendor's new objects with the vendor's old objects. You had to discover what new objects were sent and where they fit into the picture. You had to compare source, often three ways, to determine the full extent of the changes; and then you had to merge the source and then compile and test the new objects. In all but the smallest updates, this process could take weeks or even months.

With Synchronizer, you run **one** command to analyze all of the changes and let you quickly see the effort required to retrofit your changes into the vendor application – whether they are program fixes or a complete new release.

Synchronizer will analyze the vendor's old objects and source, new objects and source, and the changes you have made; it will also provide source comparison reports, and can (optionally) merge the source changes to create a new source member with which you can work.

Synchronizer contains a source compare and merge utility that is useful elsewhere to:

- Verify changes before they are promoted to production
- View changes made in an emergency
- View changes where more than one programmer has checked out a member, and
- Merge changes into a new member.

TURNOVER® for iSeries provides the framework for performing all of these functions as a normal part of the software change process.

INTRODUCTION

Throughout this guide, we refer to the process of merging your changes with a vendor's new release or update as the *synchronization project*. This project has a beginning, a middle, and, certainly, an end. We provide you with interactive checklists that will lead you through the process and help you keep track of where you are in the process. A handy checklist, accessible by pressing **F10=Sync checklist** on many Synchronizer panels, allows you to mark each step as **Done** as you complete them. It also allows you to change existing steps or add steps of your own. By selecting the appropriate option, you can see help explaining more about that particular step. In many cases, you can even run a procedure directly from the checklist. (For more about using this feature, see The Synchronizer Project Checklist, beginning on page 37.)

The diagram in **Figure 1** summarizes the major steps you will take to complete your *synchronization project*. Once you have set up Synchronizer (these steps are not illustrated in **Figure 1**), you simply have to run a command to build the **change impact file** and then analyze the impact. At first, your analysis is a process of elimination, putting aside those vendor changes that do not impact *your* changes. Then, after analyzing what's left, and considering such things as who worked on an object last; what objects are related to each other; and after reviewing time-estimates, and so on; you will assign these to programmer worklists. Then the programmers will code and test the changes. Once these changes have been thoroughly tested, one or more TURNOVER® for iSeries forms are created and these are run together.

Whether you are reviewing some fixes your vendor has sent, or analyzing an entire new release, the process is essentially the same. With small changes, you may elect not to use all of the features of Synchronizer, opting instead for only the source compare or merge utilities. In most instances, though, you will find that Synchronizer will help you analyze and organize the project to ensure that you spend as little time as possible installing your vendor's changes.

The Vendor Change Synchronization Process

Note: We suggest that, as you read this section, you refer to **Figure 1** on the next page.

Merging a vendor's new release or changes with your own custom modifications is a process with distinct **Phases** that require expert coordination.

Synchronizer supports this entire process from the point at which you load the vendor's changes into a holding library, through distribution and installation. An **On-line Checklist** guides you through the entire synchronization project.

In the first phase, you build a **change impact file**. The vendor's new source and objects are compared with the old version and your modifications. The results are stored in the change impact file.

Once built, the change impact file can be analyzed using the **Work with Impact File** panels, and by running various **Impact Analysis Reports**. To aid your analysis, you can view or print program source and source compare output; and you can quickly view your object and project history to remind you of the reasons for your custom changes. .

Incidentally, one great feature of Synchronizer's Source Compare and Merge is that, once a source compare has been run – and as long as none of the members compared have changed – the presentation, reporting and merge steps take just a few seconds, no matter how big your programs.

The objective of the analysis phase is to identify all of the objects you modified that require revisions so they will work with the vendor's new objects.

The analysis phase culminates when you partition the big list into smaller ones called **Programmer Worklists**, and assign each to the programmer responsible for working on them. Said another way, the big list is partitioned into smaller ones called **Programmer's Worklists**, each of which is assigned to a programmer. Each programmer will **Code and test changes** and then, depending on your environment, promote these to a consolidated test environment for further testing before installing all of the changes and the new base into production.

After you test all of the changes together, Synchronizer coordinates the promotion of all of the objects – those you changed along with the vendor's new base – into production. These promotions, often run as several independent jobs, are grouped to ensure that they are all run together. If one fails for any reason, all can be held and, if necessary, backed out.

How do you manage all of this activity? The change impact file and its **Work with** panels provide the means to keep it all straight. And the **On-line Checklist** guides you throughout the entire synchronization project.

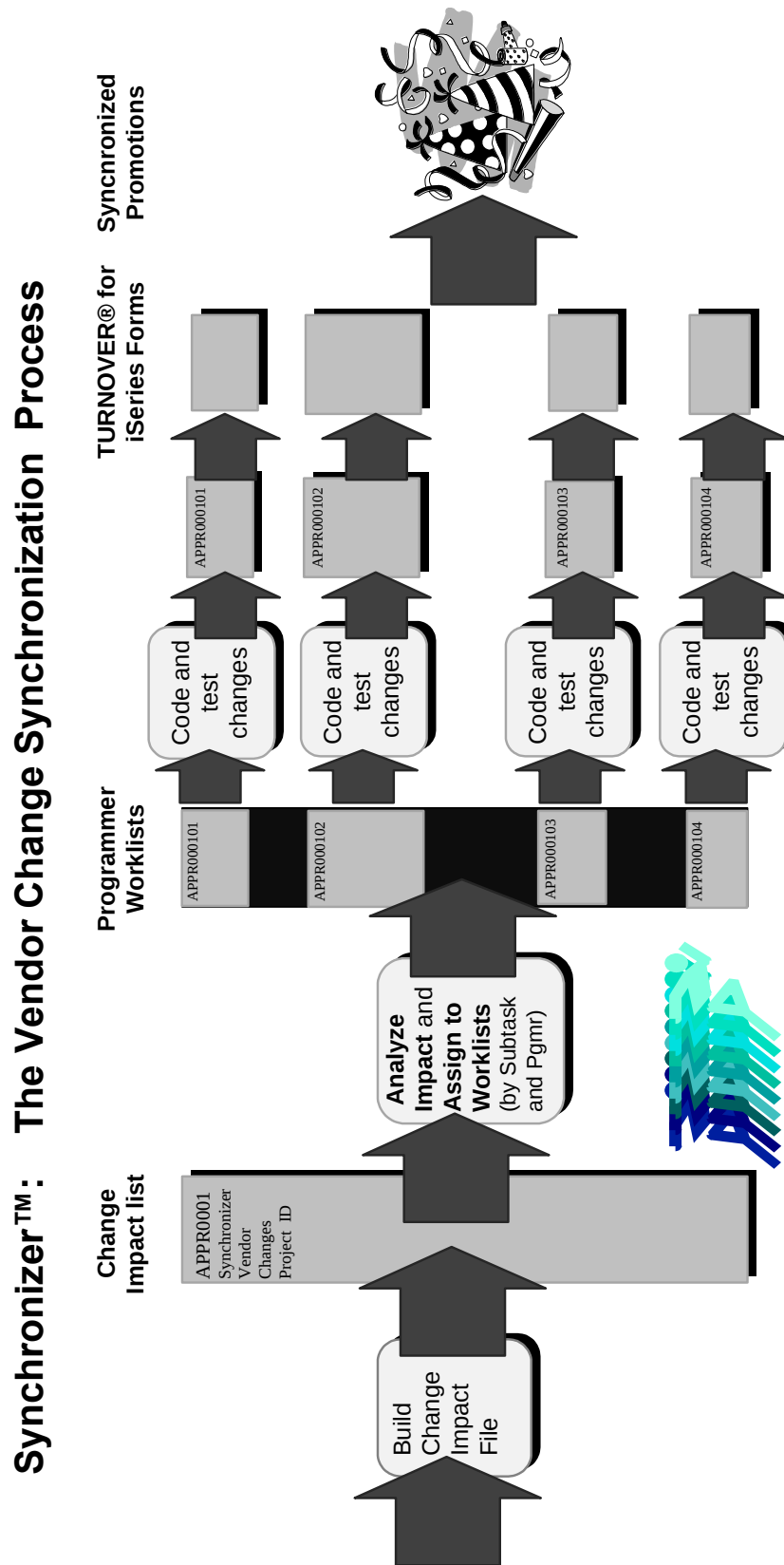


Figure 1. The Vendor Change Synchronization Process

SOME GUIDELINES FOR MANAGING VENDOR SOFTWARE

When you receive changes or a new release of your vendor software, you need to perform several steps to retrofit your modifications to the vendor's new base (or the vendor's changes to your version of a program). It follows that the more careful you have been about making changes to the vendor's source, the easier this job will be.

There are two rules to consider for managing vendor-supplied software:

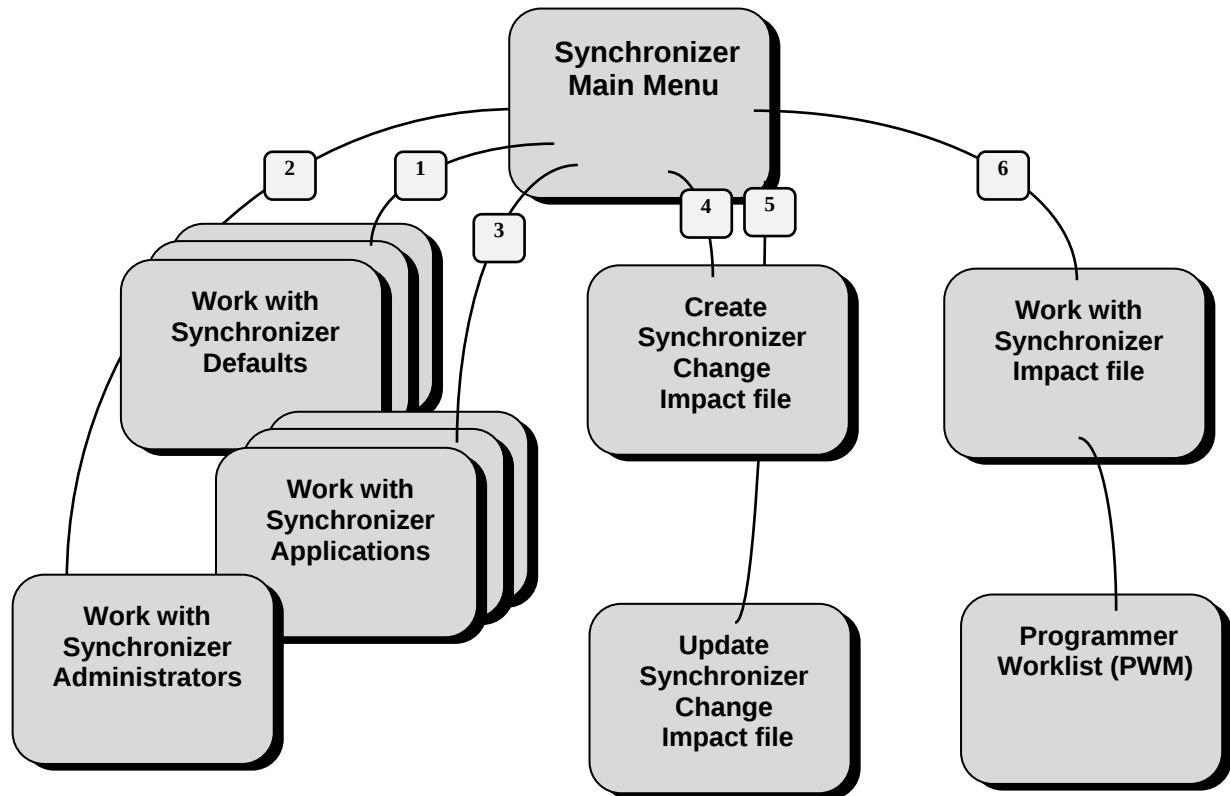
1. Make as few changes as possible to the vendor's source. If you have a significant change to make, contact the vendor first to see if they will make the change to the base for you. If not, can they suggest an exit point to use? Even if the vendor can't identify a pre-existing exit, the vendor should be able to help you identify where to code an exit and the parameters you may need. Then, instead of inserting your changes directly into the vendor's code, code a simple exit to call your new program that fulfills your special requirements. As a last resort, if you do need to imbed your code into the vendor's program, isolate your changes in subroutines and document them very carefully. Remember, you may need to carry this change again several times, through several vendor updates, whenever you get changes from your vendor.
2. Be realistic about the quality of output you can expect from the source compare and merge programs contained in the Synchronizer product or any other similar product. The extent to which you or the vendor has radically changed a piece of code will affect the quality of compare or merge output that you could reasonably expect. We think that our compare and merge utilities are among the best available; however, there are limits beyond which any program will produce unsatisfactory results. You must inspect the results for reasonability. In some cases, you will reject the resulting merged source and resort to manual procedures to merge source. ***You must test the results rigorously.*** You can reasonably expect Synchronizer to merge source correctly most of the time, but you must recognize that some source changes will confuse even the best merge program ... and possibly even the best programmer!

DATA MANAGEMENT IN SYNCHRONIZER

If you have followed the recommendations in TURNOVER® for iSeries to put all of your live data in your modification (production) library level, then Synchronizer will manage updates to data objects, without any special considerations. If live data exists in both the User modification libraries and the Vendor Base libraries, or just the Vendor Base libraries, then you will need to update and convert your files (if necessary), carefully, using special application definitions. If you have any doubts, we suggest that you give us a call to discuss your environment so that we can advise you.

THE SYNCHRONIZER SYSTEM PANELS

The following diagram illustrates the panels in Synchronizer and their interrelationship.



THE SYNCHRONIZER MAIN MENU

You can access the Synchronizer Main Menu by typing **STRSYN** on a command line.

```
8/15/18 Ver 101 Synchronizer Main Menu Your Company, Inc.
12:12:39 SLS

Select one of the following:

1. Work with Synchronizer defaults
2. Work with Synchronizer administrators
3. Work with Synchronizer application definitions

4. Create Synchronizer change impact file
5. Update Synchronizer change impact file
6. Work with Synchronizer change impact file

7. Submit Synchronizer source change impact report
8. Submit Synchronizer object change analysis report

9. Work with Projects and Tasks

Selection or command
===>

F3=Exit F4=Prompt F6=Display messages F9=Retrieve F10=Sync Checklist
F12=Cancel F13=Information assistant F14=Work with submitted jobs
```

What you can do:

Work with Synchronizer defaults

You can set global defaults to be used when you create or work with the Synchronizer change impact file. You probably will not need to change these defaults to represent your environment. From the default panel, you can access and change the time estimation rules and object compare rules Synchronizer uses during processing.

Work with Synchronizer administrators

You need to tell TURNOVER® for iSeries which users can build and work with the Synchronizer change impact file. (You must have authority in TURNOVER® for iSeries to change other users' authority.)

Work with Synchronizer application definitions

Use this option to quickly define an application definition to identify your vendor's changes and to relate that definition to a new or existing working application you already use to manage the day-to-day change to the vendor's application.

Create Synchronizer change impact file

Use this option to create a change impact file. You use the resulting file to analyze the impact of a vendor's changes. Do this after you have defined the application definition to identify where the vendor's changes are stored.

Update Synchronizer change impact file

Use this option to rebuild or update the change impact file, preserving information you might have added already or changed in the file.

Work with Synchronizer change impact file

Use this option to work with your change impact files, as you would during the analysis phase.

Submit Synchronizer source change impact report

Use this option to produce the change impact report, on demand. This report is also produced automatically when you create the change impact file.

Submit Synchronizer object change impact report

Use this option to submit the Object Change Impact Report, which tells you about any changes to non-source type objects.

Work with Projects and Tasks

Because you may want to view and update project task information while working with Synchronizer, we provide you with an option to go directly to TURNOVER® for iSeries Projects from the Synchronizer Main Menu.

SETTING SYNCHRONIZER GLOBAL DEFAULTS

Select option **1** to view or change global defaults. There are just a few basic global defaults to understand.

```

Work w/ Synchronizer Defaults (WRKSYNDFT)

Type choices, press Enter.

Compare program . . . . . CMPPGMCLP  Name, *SAME
  Library . . . . . SOFTTURN  Name, *LIBL
Merge program . . . . . MRGPGMCLP  Name, *SAME
  Library . . . . . SOFTTURN  Name, *LIBL
Merge source in test . . . . . *NO      *SAME, *YES, *NO
Produce report . . . . . *YES      *SAME, *YES, *NO
Checkout . . . . . *NO      *SAME, *YES, *NO
Create TurnOver forms . . . . . *NO      *SAME, *YES, *NO
Create Programmer Worklists . . . . . *NO      *SAME, *YES, *NO
Merge from intermediate levels . . . . . *YES      *SAME, *YES, *NO
Checkout from lowest level . . . . . *YES      *SAME, *YES, *NO
Work with time estimates . . . . . *NO      *YES, *NO
Work with object compare table . . . . . *NO      *YES, *NO

F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display
F24=More keys
    
```

You don't need to change the default compare and merge program names unless you decide to use another source compare or source merge utility. The programs run the actual compare and merge commands² in batch.

Except for the last two parameters, the remaining parameters are used as defaults by the Synchronizer change impact file create and update commands (**CRTSYNCHGF** and **UPDSYNCHGF**). Initially, the defaults are set as you see here because you will usually want to perform source merges, build Programmer Worklists, checkout objects and create TURNOVER® for iSeries forms after the impact file has been created, as you analyze the impact of changes received from your vendor.

Besides producing an impact file, the **CRTSYNCHGF** command creates a change impact report.³ This report lists the impact of a vendor's changes. Usually, you will want to produce this report.

² See Source compare and Merge commands elsewhere in this guide.

³ See Change Impact Report elsewhere in this guide.

Setting Time Estimation Defaults

You can set and refine time estimation parameters to be used as default time estimates when Synchronizer creates a change impact file. These estimates, expressed in hours, are available on line when working with the Synchronizer change impact file and on the Change Impact Analysis Reports. They provide a picture of the overall effort required to complete your synchronization project. As you gain experience, you can refine these time estimates. As with any estimation process, it is not meant to be a precise predictor, but it does provide a useful measure of the impact of a vendor's changes on your organization.

To view or update this table, select the **Work with Synchronizer defaults** option, set **Work with time estimates** to ***YES** and press **Enter**.

8/15/18 12:15:35 Work with Synchronizer Time Estimates Your Company, Inc.					
Type Code	Lines of Source Changed				
	< _10	10 to _20	20 to _30	30 to _40	>= 40
ASFILE	1.50	4.00	4.00	5.00	5.00
ASMSGF	1.50	4.00	4.00	5.00	5.00
ASPGM	1.50	4.00	4.00	5.00	5.00
BAS	1.50	4.00	4.00	5.00	5.00
BAS38	1.50	4.00	4.00	5.00	5.00
BND	1.50	4.00	4.00	5.00	5.00
BSCF38	1.50	4.00	4.00	5.00	5.00
C	1.50	4.00	4.00	5.00	5.00
CBL	1.50	4.00	4.00	5.00	5.00
CBLCPY	1.50	4.00	4.00	5.00	5.00
CBLJDE	1.50	4.00	4.00	5.00	5.00
CBL36	1.50	4.00	4.00	5.00	5.00
CBL38	1.50	4.00	4.00	5.00	5.00
CLEMOD	1.50	4.00	4.00	5.00	5.00
CLP	1.50	4.00	4.00	5.00	5.00
CLPASI	1.50	4.00	4.00	5.00	5.00
CLPCPA	1.50	4.00	4.00	5.00	5.00
					More...
F3=Exit F12=Cancel F13=Set all to first					

The source change statistics are derived from the source compare output generated during the creation of the Synchronizer change impact file.

The time estimate entries should read, “less than 10 source changes; greater than or equal to 10 and less than 20...” You can set these to any values. If you change a less-than value, the adjacent greater-than value will change.

You can specify the time estimates by TURNOVER® for iSeries type code. If your time estimates do not vary by type code, enter the time estimate for the first type code and press **F13** to set the rest to that same value.

Working with the Object Compare Table

The Synchronizer Object Change Impact Analysis Report (as opposed to the Source Analysis Reports and panels) provides you with an analysis of changes made by your vendor to important object parameters such as the **Restore display** parameter for display files and the **Use adopted authority** parameter for programs. Because of the variability in the type of changes that may or may not be important at your company, we have included this table you can use to control what parameters Synchronizer uses in its comparison.

You can change the list of parameters Synchronizer checks by reviewing and changing the contents of the **Object Compare Table**. To view or update this table, select the **Work with Synchronizer defaults** option, set the **Work with object compare table** parameter to ***YES** and press **Enter**.

8/15/18 18:34:23		Work with Object Compare Table		Your Company, Inc.
Object Type	Keyword	Include in test	Keyword description	
DSPF	DEV	Y	Display device	
	MAXDEV	Y	Maximum devices	
	LVLCHK	Y	Record format level check	
	TEXT	N	Text 'description'	
	RSTDSP	Y	Restore display	
	DFRWRT	Y	Defer write	
	CHRID	Y	Character identifier	
	IGCDTA	N	User specified DBCS data	
	IGCEXNCHR	N	DBCS extension characters	
	WAITFILE	Y	Maximum record wait time	
	DTAQ	Y	Data queue	
	SHARE	Y	Share open data path	
LF	SYSTEM	Y	System	
	MAXMBS	Y	Maximum members	
	MAINT	Y	Access path maintenance	
F3=Exit F12=Cancel				More...

After you run the Object Change Impact Report, you can change this table to filter out comparison parameters that are not important to you, and then run the report again.

WORKING WITH SYNCHRONIZER ADMINISTRATORS

Select 2 on the Synchronizer Main Menu.

8/15/18	Work with Synchronizer Administrators	Your Company, Inc.
13:19:11		SLS
1=Add 4=Delete		
Usrprf	Description	
BERNHARD	Roy Bernhardt	
ELSEMIKE	Mike Elms	
KLINE	Steve Kline	
MIKEPHIP	Make Phipps	
PHILLIPS	Ernie Phillips	
F3=Exit F12=Cancel F21=Command line		

To create and work with Synchronizer's change impact file, you must be designated as a Synchronizer administrator in addition to TURNOVER® for iSeries authorities you already have. If you are not designated as a Synchronizer administrator but you are a programmer enrolled in TURNOVER® for iSeries, you will be able to work with the change impact file, but you will see only those items on the list assigned to you. See **Chapter 3: Authorizing Users to TURNOVER® for iSeries** in the **TURNOVER® for iSeries User Guide**.

DEFINING YOUR SYNCHRONIZER APPLICATIONS

If you have been using TURNOVER® for iSeries already to manage the day-to-day changes to your vendor applications, then there is very little setup to be done. The only thing left to do is to create an application definition to make changes to your base vendor application.

Overview of Synchronizer Application Definitions

Application definitions provide TURNOVER® for iSeries with the default values and rules it needs to manage your applications.⁴

This section describes several ways that you might set up Synchronizer to manage your vendor applications. We provide several different cases to illustrate several ways to manage a synchronization project. If you have other requirements, please call our support line to discuss your environment before you try to build your own definitions.

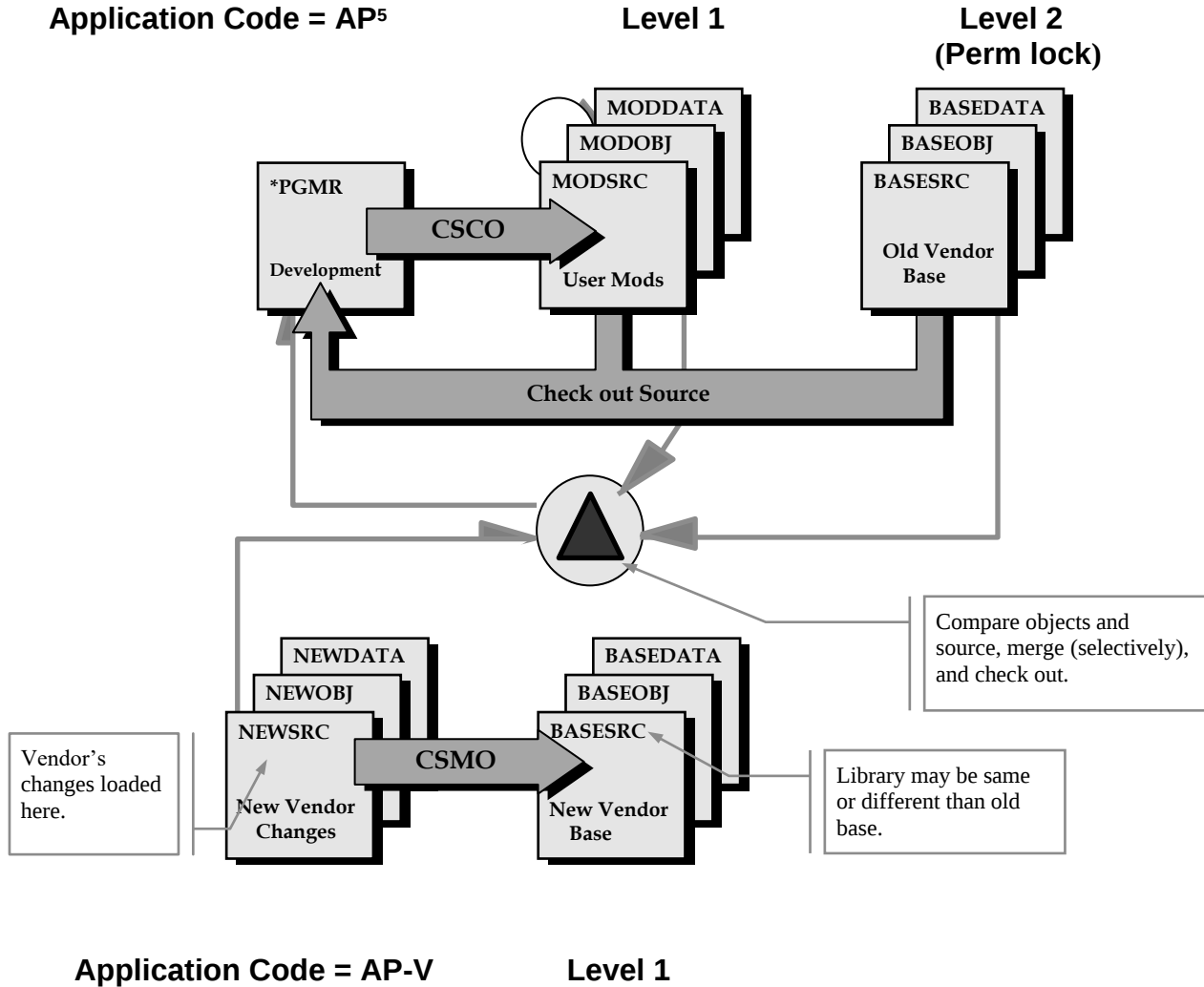
As we mentioned in the introduction, Synchronizer supports a process – the vendor change synchronization process. This includes the following:

- Analysis of the impact of a vendor's changes on your modifications
- Detailed analysis of the changes
- Merging vendor and modified source, where appropriate
- Allocation of work to programmers
- Re-programming and testing of your modifications
- Coordinating the installation of your changes with the vendor's changes
- Coordinating the distribution and installation of all changes on your production computers.

⁴ For more information, see the *Getting Started with TURNOVER® for iSeries* guide.

Matching Synchronizer to Your Project Requirements

Case 1: Single Working level, One Vendor Base level (Perm locked)



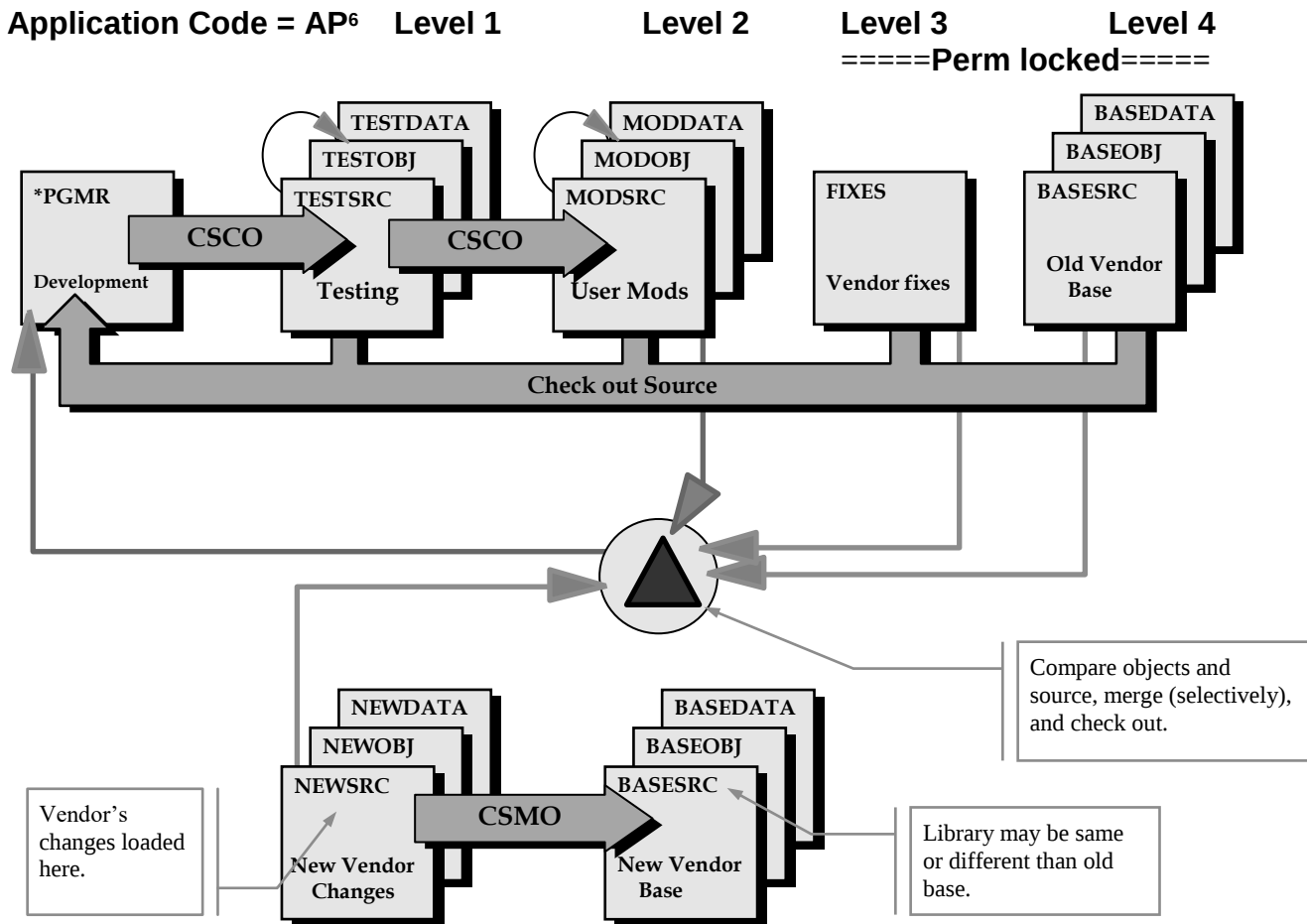
⁵ Application codes used here are examples only. You can substitute your own codes.

This example is a relatively simple one. All of the vendor's source and objects are in a single set of libraries (Old Vendor Base). Your modifications are in a separate set of libraries (User Mods). These modifications represent a subset of the vendor's source and objects you have changed. Vendor changes are delivered and loaded into one or more temporary libraries (New Vendor Changes).

Synchronizer compares the source in the three sets of libraries, as well as changes that may be ***in process*** in your development or test libraries. It builds a Synchronizer change impact file, which you can use to analyze the impact of the vendor's changes on your environment. Synchronizer provides you with all the tools, such as source compare and merge utilities, to analyze and resolve differences.

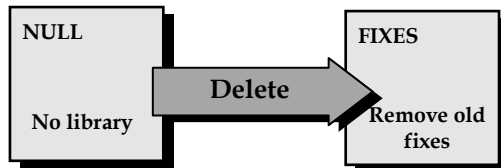
Synchronizer doesn't just help you identify the scope of the synchronization project. From there, you can go on to allocate resources, create project tasks, categorize objects, and assign them to Programmer Worklists.

Case 2: Two Working levels, Two Vendor levels (Perm locked)



Application Code = AP-V

Level 1



Application Code = AP-D

Level 1

⁶ Application codes used here are examples only. You can substitute your own codes.

Although **Case 2** is similar to **Case 1**, there are some important differences, as follows:

- There is a test level between development and production (User Modification level).
- The Fix library represents fixes sent by the vendor since the last release.
- If an object is in both the Base and Fix level, Synchronizer will use the more recent version in the Fix level for source compare and merge, where appropriate.
- If an object is in both the **New Vendor Changes** library and the **Old Vendor Base**, you will want to delete the object from the Fix level, when you synchronize your changes.⁷ The AP-D application definition is set up for this purpose.

Given that, in this particular illustration, the **From-libraries** are irrelevant, they are not defined in the application definition; but this definition may be used at some other time, to process Fixes sent to you from the vendor, in which case the From-library would contain the new vendor changes.

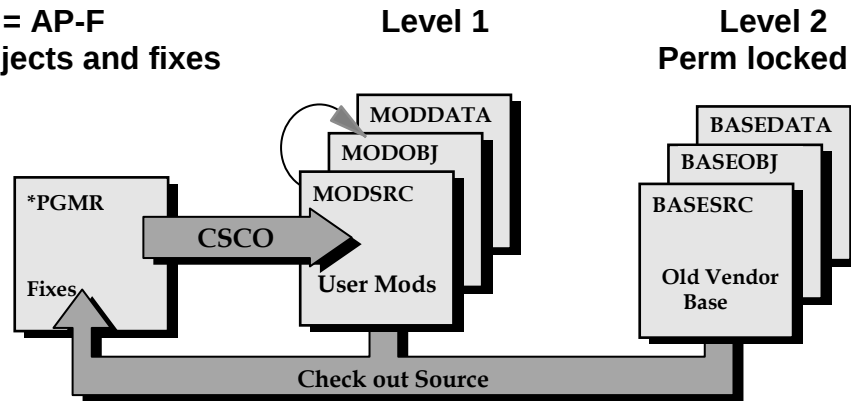
As in the previous example, Synchronizer compares the source in the three sets of libraries (using the Fixes or Old Base, as appropriate), as well as changes that may be **in process** in your development or test libraries. It builds a Synchronizer change impact file, which you use to analyze the impact of the vendor's changes. Synchronizer provides you with tools to analyze and resolve differences, such as source compare and merge utilities.

Synchronizer doesn't just help you identify the scope of the synchronization project. You can go on from there to allocate resources, create project tasks, categorize objects, and assign them to Programmer Worklists.

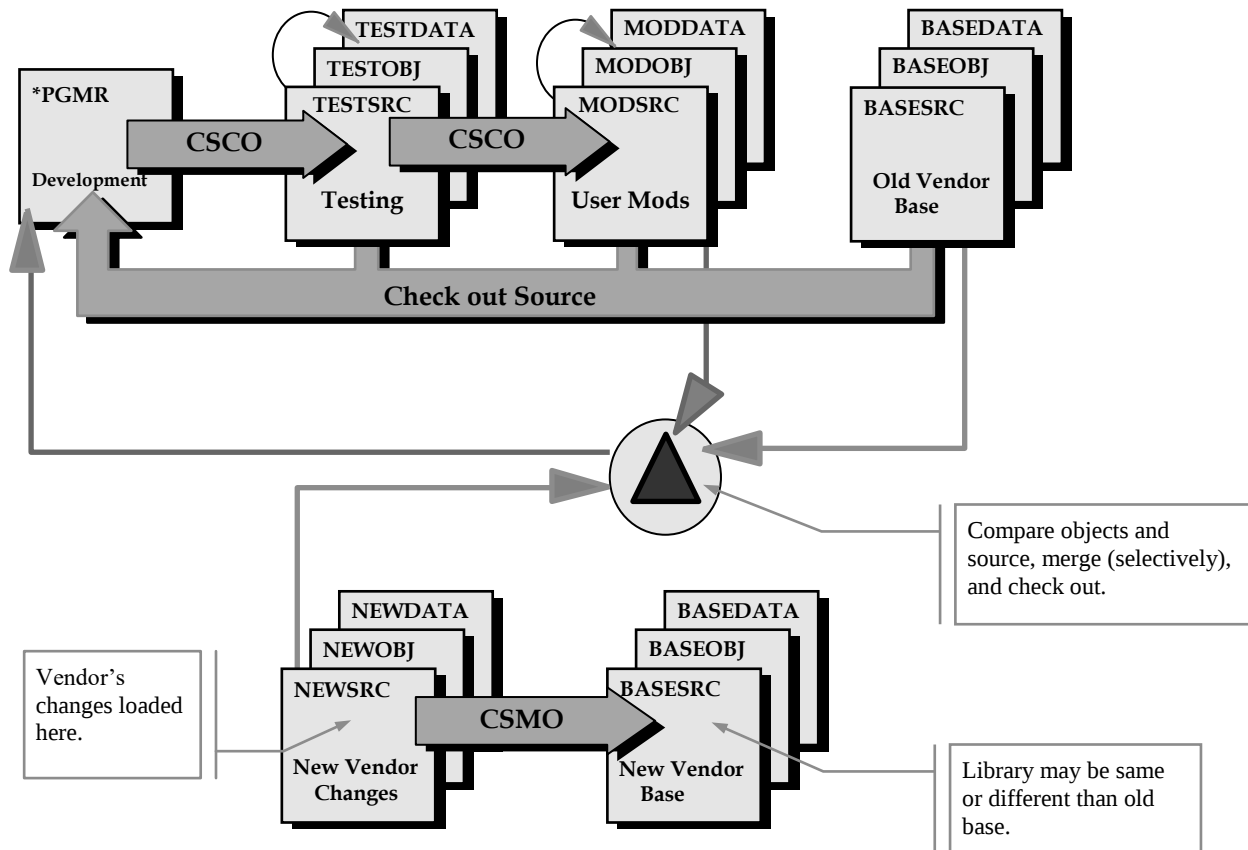
⁷ That is, when all changes are promoted to their respective target libraries.

Case 3: Longer Term Synchronization Project

Application Code = AP-F
for short term projects and fixes



Application Code = AP **Level 1** **Level 2** **Level 3**
Perm locked



Application Code = AP-V

Level 1

Case 3 assumes that your synchronization project may take several weeks or months and your change volume is fairly large. Although you may win agreement from your users to postpone enhancements until after your project is completed, you may still need to apply fixes concurrently.

- The Fix application, to be used for the duration of the synchronization project (or at any time for emergency changes), is intended for short-term fixes.
- The Fix application is set up as an Emergency Change application, allowing you to check out objects that are already in process (checked out) to the synchronization project.
- You can run the source merge function at any time, to merge the fix into the newest version.
- TURNOVER® for iSeries will alert you if an object has been fixed, and provide you with source compare output so you can quickly update the version you are working on. If you have not yet merged old and new source with your user mods, you will use the new version of source when you do.

As in the previous example, Synchronizer compares the source in the three sets of libraries as well as changes that may be **in process** in your development or test libraries. It builds a Synchronizer change impact file, which you use to analyze the impact of the vendor's changes. Synchronizer provides you with tools to analyze and resolve differences, such as source compare and merge utilities.

Synchronizer doesn't just help you identify the scope of the synchronization project. You can go on from there to allocate resources, create project tasks, categorize objects, and assign them to Programmer Worklists.

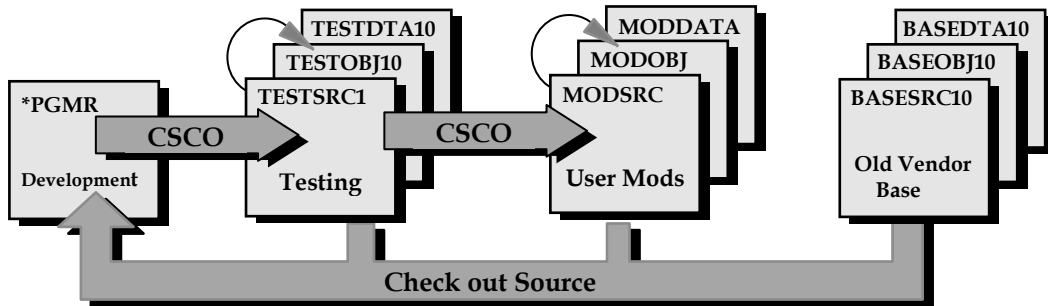
In this example, the Fix application definition may contain one or more test level, as well.

Case 4: Long-term Project to install new release

Application Code = AP10 Level 1
for short term projects and fixes

Level 2

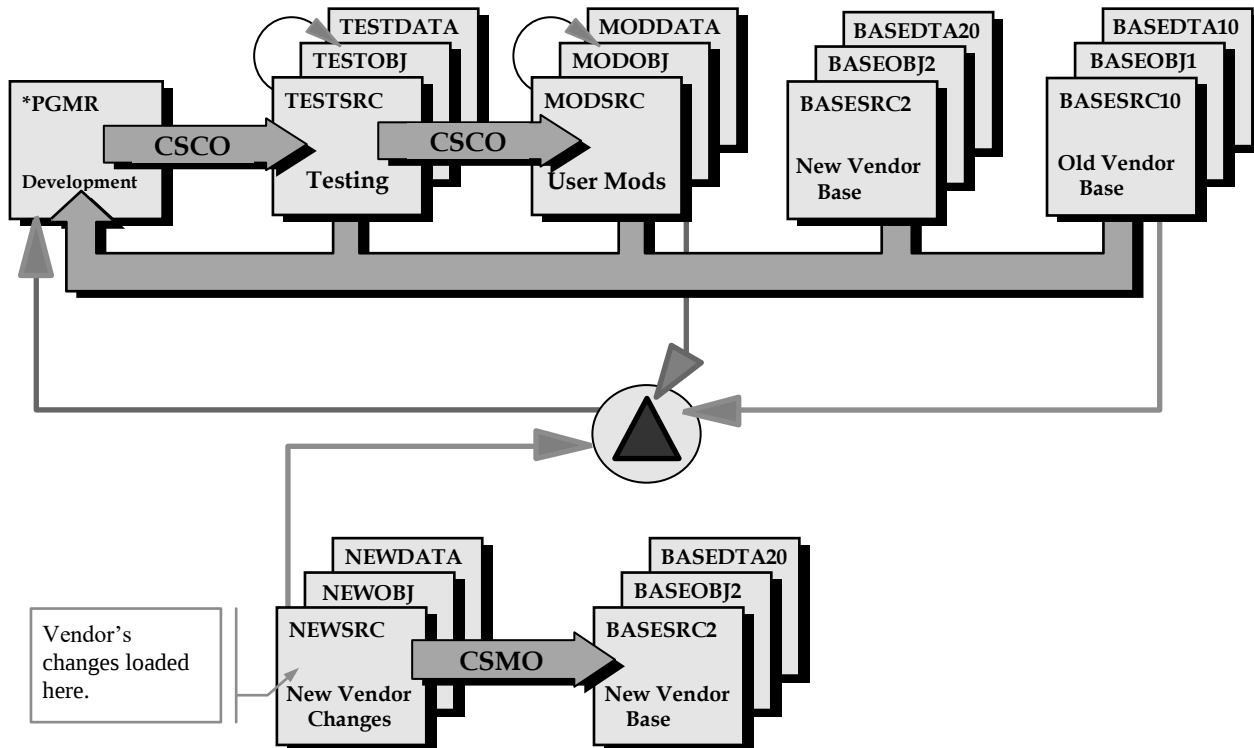
Level 3
Perm locked



Application = AP20 Level 1

Level 2

Level 3
====Perm locked====



Application Code = AP-V

Level 1

As in **Case 3**, **Case 4** assumes that your synchronization project may take several weeks or months and your change volume is fairly large. It also assumes that the installation of a new release or changes should take place in the background; that the press of on-going activity does not permit you to reduce normal change activity.

Additionally, this example assumes that your vendor has delivered a completely new release, and it will reside in a new, differently named set of base libraries (BASESRC20, and so on, in our example).

- Application AP Release 1.0 (AP10) will continue to be used for normal changes, until the completion of the synchronization project. You will need to switch this application to an Emergency Change application,⁸ for the duration of the project, to facilitate checkout of objects already checked out to the synchronizer project. Any objects currently checked out will be annotated appropriately.
- Application AP Release 2.0 will be used for your on-going changes, after you have completed your synchronization project.
- When you start the synchronization project, New Base 2.0 is empty. At the end of the project, it will contain all of the vendor's new objects.
- If no file type objects exist in New Base Changes, and this represents the entire new release, then this can simply be renamed to the new vendor base library names (BASESRC20, and so on, in the diagram). If active files exist in these libraries, you must promote them using TURNOVER® for iSeries.
- If the vendor has supplied file conversion programs, these must be turned over or called on the TURNOVER® for iSeries form as post-run commands.

As in the previous example, Synchronizer compares the source in the three sets of libraries as well as changes that may be *in process* in your development or test libraries. It builds a Synchronizer change impact file, which you use to analyze the impact of the vendor's changes. Synchronizer provides you with tools to analyze and resolve differences, such as source compare and merge utilities.

Synchronizer doesn't just help you identify the scope of the synchronization project. You can go on from there to allocate resources, create project tasks, categorize objects, and assign them to Programmer Worklists.

⁸ Set the application definition parameter *Emergency* to Y.

Working with Synchronizer Application Definitions

Once you have decided how to manage your Synchronizer project, you need to define your applications to Synchronizer.

If you have been using TURNOVER® for iSeries already to manage day-to-day changes to your vendor applications, then very little set up is needed. The only thing left to do is to create an application definition to make changes to your base vendor application. That's what you will do here.

When you select the **Work with Synchronizer Applications**, you see just those applications that have been defined Synchronizer applications. You will see the working application definition with which you have been using TURNOVER® for iSeries to manage your on-going changes, and the application definition that defines the promotion path for the new vendor changes or release.

8/15/18		Work with Synchronizer Applications				Your Company, Inc.			
						SYSTEM: SLS			
Position to . . .		Application:		Rel:		Ver:		Lev:	
Type options (and Application), press Enter.									
1=Create 2=Change 3=Copy 4=Delete 5=View 6=Print 7=Rename 19=Liblist									
20=SbmXRef 21=Lock/unlock 22=Distribute App 24=Set Fix level									
Opt	Appl	Rel	Ver	Lev	Description	Fix lev	Lock	XRef	Fast Turn
—	JFC			1	*PGMR to DEVELOP test	N	N	Y	N
—	JFC			2	DEVELOP to BASE	N	N	Y	N
—	JFC			3	BASE to JFC	N	P	Y	N
—	JFCV			1	JFC Vendor application	N	N	N	N
F3=Exit F5=Refresh F6=Create Synchronizer application F12=Cancel									
F16=User options F21=Command line F23=More options									

Press **F6=Create Synchronizer application** to identify your working vendor application and build the vendor change application.

If you have not yet set up an application definition in TURNOVER® for iSeries to handle routine changes to your vendor application, you will need to do so first using TURNOVER® for iSeries' application definition panel (TURNOVER® for iSeries Main Menu option 1). You may base your definition on one of the models provided for this purpose.⁹

⁹ See *Chapter 10: Planning Your Application Definitions* in the *Getting Started with TURNOVER® for iSeries* guide.

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When you press **F6=Create Synchronizer application**, Synchronizer will prompt you with the following command prompt. You'll identify the application you use to manage day-to-day changes to the vendor's application and the name to be given to update the vendor's base.

```

Create Synchronizer Base Application (CRTSYNAPP)

Type choices, press Enter.

User modifications application      AP          APP1,APP2,ASIX,ASI1,ED2 10
  Release . . . . .                1          Number
  Version . . . . .                1          Number
New Base changes application. . . AP-V        APP1, APP2, ASIX, ASI1, ED2..
  Release . . . . .                2          Number
  Version . . . . .                1          Number
New Base application description  New AP vendor changes
Locked . . . . .                  N           Y, N
Build XRef . . . . .              N           Y, N
New Base data library . . . . .   newdata     Name
New Base object library . . . . . newobj      Name
New Base source library . . . . . newsrc      Name
Library lists . . . . .           *DEFAULT   *DEFAULT, *EDIT

Bottom
F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display
F24=More keys
```

Usually, you only need to define the application definition that points to the new vendor changes or base libraries. That is what this command does. You need to give the application a name and tell Synchronizer which libraries will contain the new vendor source and objects, prior to actually promoting them into production. Once your vendor application is defined to Synchronizer, it is referred to as a Synchronizer application.

If the vendor's base library names are to be changed, you will need to update this new definition after it has been created.

For an explanation of the **Library lists** parameter, see the section entitled About library lists and your Synchronizer project on page 34.

If your vendor change application has more than one permanently locked level, you will see a panel to select which base is to be updated.

¹⁰ The actual applications listed will those defined to your system.

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The **Work with Synchronizer Applications** panel after adding a new application.

8/15/18		Work with Synchronizer Applications				Your Company, Inc.			
						SYSTEM: SLS			
Position to . . .		Application:		Rel:		Ver:		Lev:	
Type options (and Application), press Enter.									
1=Create 2=Change 3=Copy 4=Delete 5=View 6=Print 7=Rename 19=Liblist									
20=Xref 21=Lock/unlock 21=Lock/unlock 22=Distribute App 24=Set Fix level									
Opt	Appl	Rel	Ver	Lev	Description	Fix level	Lock	XRef	Fast Turn
—	ABC	—	—	1	*PGMR to DEVELOP test	N	Y	N	
	ABC			2	DEVELOP to BASE	N	Y	N	
	ABC			3	BASE to JFC	P	Y	N	
	ABCV			1	ABC Vendor application	N	N	N	
	SYN	1	1	1	*PGMR to SYNQA	N	N	N	
	SYN	1	1	2	SYNQA to SYNMODS	N	N	N	
	SYN	1	1	3	SYNLIB Perm Lock	P	N	N	
	SYNV	2	1	1	New SYN vendor changes	N	N	N	
F3=Exit F5=Refresh F6=Create Synchronizer application F12=Cancel									
F16=User options F21=Command line F23=More options									

The **SYN** application definition entries represent a definition you have been using to manage your changes to the vendor's application. **SYNV** represents the application definition to be used to update the vendor's base (or to establish a new base).

If an application level is used exclusively for software fixes (see our example, **Case 2** on page 26), then you should select option **24** to set that application level definition to be defined as a **fix level**. Synchronizer will then compare objects in the vendor's new base and fix libraries, and set up a TURNOVER® for iSeries form to delete items for this fix level library.

About library lists and your Synchronizer project

The library lists used during the promotion of a TURNOVER® for iSeries form for a Synchronizer project must include a reference to the vendor's new change libraries.

Refer to the diagram for **Case 2** on page 26. During the Synchronizer project, the **New Vendor Changes** libraries contain new versions of objects that need to be referenced when creating objects in the **Testing** level. When you promote an object to **Testing**, the library list must include (in this order) the:

1. **Testing** libraries,
2. **New Vendor Changes** libraries,
3. **User Mods** libraries,
4. **Vendor fixes** libraries, and
5. **Old Vendor Base** library.

If additional test levels exist in your environment, a similar library list would be constructed. The explanation for this is that a new file object existing in the **New Vendor Changes** libraries would supersede a same-named file in **Vendor Fixes** or the **Old Vendor Changes** libraries. Therefore, its library must appear higher in the library list.

If you modified a file that also existed in the **New Vendor Changes** libraries, then you would merge your changes into the vendor's version of the file and would promote that new merged version into **Testing**; therefore, that file's library (the **Testing** libraries) would appear first in the list.

When you finally promote your custom changes to production (**Level 2** in the **Case 2** diagram), the new files should be promoted to the new base first, before your custom changes are promoted to production. Therefore, the **New Vendor Changes** libraries no longer need to be in the library list.

When you create the Synchronizer Application definition (as illustrated on page 33), if the **Library Lists** parameter is ***DEFAULT**, the library lists are generated appropriately for each level according to the rules described above. If additional libraries need to be included in the list, then you should set the **Library Lists** parameter to ***EDIT**. You'll be prompted to edit the library list to be used at each unlocked application level. If you have already created your Synchronizer application, you can go back and view or edit the library list by selecting option **19=Liblist** on the **Work with Synchronizer Applications** panel.

THE SYNCHRONIZER PROJECT CHECKLIST

How do I proceed?

Once you have defined or verified that your Synchronizer application definitions are set up correctly, you will need to analyze your vendor's changes. Typically, this is a multi-step process.

Each Synchronizer change impact file has a Synchronizer Checklist associated with it, used to help you keep track of each of the steps you need to perform when analyzing the vendor's changes.

The Synchronizer Checklist, accessible from the **Work with Change Impact File** panel by pressing **F10=Sync checklist**,¹¹ is pre-loaded with recommended steps that we have provided. You can add items to this list as you work with the file, or remove those you consider unnecessary.

Synchronizer Checklist

T
S
O

Select 1=Mark done 2=Change 4=Delete 6=Undo >=Indent <=Outdent
7=Run item 11=Item help

Seq Description

- 2 Review Synchronizer defaults
- 4 Define Synchronizer application
- 6 Load Vendor's changes/release libraries
- 8 Build Synchronizer Change Impact file
- 10 Work with Synchronizer Change Impact file
- 12 Clean up work "in process"

More...

F3=Exit F6=Add F12=Cancel F14=Print checklist
F15=Resequence checklist F16=Reset checklist (Bold=to be done)

Bottom

F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to use this display
F24=More keys

To see a more in-depth explanation about any of these checklist items, select it with option **11**. You'll see additional help text. To get help about how to use the Checklist panel, press **F1**.

Some items suggest TURNOVER® for iSeries or Synchronizer tasks that you can perform by selecting the item with option **7**. When you complete the related task, you will return to this panel. If no function is defined for the item you selected, you will see the message "**No function available.**" As you mark items for completion (option **1**), highlighting will be switched off.

¹¹ You can also access the checklist using the **WRKSYNCHK (Work with Synchronizer Checklist)** command.

More about the Synchronizer Checklist

The complete checklist is printed below to help you better understand the synchronization process as well as how the panel illustrations which follow support this process:

- 2 **Review Synchronizer defaults**
- 4 **Define Synchronizer application**
- 6 **Load Vendor's changes/release libraries**
- 8 **Build Synchronizer Change Impact file**
- 10 **Work with Synchronizer Change Impact file**
- 12 **Clean up work "in process"**
 - 14 Filter list by category 0001
 - 16 Clean up and promote "in process" objects
 - 18 Update Synchronizer Change Impact file
- 20 **Review Vendor Database Changes**
 - 22 Filter by object type = *FILE
 - 24 Compare DDS source to review changes
 - 26 Potential impact? ... If YES,
 - 28 Review XREF of dependent objects not on list
 - 30 Browse dependent object source for conflicts
 - 32 Add items that require changes to list
 - 34 Include comment to remember change impact
- 36 **Review New Vendor Objects**
 - 38 Filter by category 0000
 - 40 Review these objects for possible impact
 - 42 If no impact, set status of these objects to NI
- 44 **Review Unchanged Vendor Objects**
 - 46 Filter by category 1000
 - 48 Set these objects to status of no impact (NI)
- 50 **Review Unmodified Vendor Objects**
 - 52 Filter by category 1010
 - 54 Review these objects for possible impact
 - 56 Select source compare option to see vendor changes
 - 58 XREF option to see dependent user modified objects
 - 60 Add items that require changes to list
 - 62 Set vendor changed item status to no impact (NI)
- 64 **Review Modified Vendor Objects**
 - 66 Filter by category 1110
 - 68 Select source compare option to evaluate impact
- 70 **Add items that require modification to list**
 - 72 Review and Update Item Time Estimates
 - 74 Review/update default estimates for all items
 - 76 Select option to update project estimates
 - 78 Select option to reproduce Change Impact Report
- 80 **Review Assigned Programmers**
 - 82 Filter by assigned programmer
 - 84 Change assigned programmer as appropriate
 - 86 Assign tasks/subtasks to groups of objects by programmer
 - 88 Press F11=Alt. view to see assigned project/task
 - 90 Filter by Task=*NONE to see that all are assigned

92	Build Programmer Worklists
94	Filter by first assigned Project/task code
96	Select all items with 20=Worklist option
98	Repeat for each remaining task code
100	Merge source
102	Set merge sequence using version field
103	Select merge source option, as appropriate
104	Program Changes on Worklist(s)
106	Programmer(s) code changes for each worklist
108	Program and Test Changes on Worklist
110	Programmer to promote to test
112	Test changes (depends on level)
114	Promote New Base and User Mods
116	Run command STRPWM
118	Promote objects from vendor changes to new base
120	Use vendor's installation procedure or
122	CRTBASFORM command
130	Promote modified objects to user mods
132	Build all TURNOVER® for iSeries forms for production level
134	Select TURNOVER® for iSeries form Group processing
136	Run group forms

If you have some additional tasks to add to the checklist, you can do so.

UNICOM Systems, Inc. Recommends

The easiest way of allocating work to your programmers is to review the default programmer assignments made by Synchronizer when it created the change impact file, filter by each programmer's name, assign a unique task or new subtask to each and then create one or more Programmer Worklists (option **20**) for each programmer, each worklist corresponding to the task or subtask you created. You may want to adjust some of the programmer assignments first.

CREATING THE SYNCHRONIZER CHANGE IMPACT FILE

Once you have defined your vendor applications (see previous section), you can submit a job to build the Synchronizer change impact file.

Select option **4** on the Synchronizer Main Menu to **Create Synchronizer Change Impact File**.

You'll be able to identify the project (and possibly task) defined to control this synchronization project. If you have not defined the task yet, or you do not remember the project code, you can type ***SELECT**.

```

Create Synchronizer Change Impact File (CRTSYNCHGF)

Type choices, press Enter.

Project task reference . . . . . > APPR0001      Char, *SELECT
File to receive output . . . . . TSYNCHGF       Name
Library . . . . . *LIBL                        Name, *LIBL, *CURLIB
Replace or add records . . . . . *ADD           *ADD, *REPLACE
User modifications application *PROJECT         Name, *PROJECT
Release . . . . . —                          Number
Version . . . . . —                          Number
Vendor changes application . . . SYN           Name
Release . . . . . —                          Number
Version . . . . . —                          Number
Programmer . . . . . *HISTORY                 Name, *HISTORY
Default programmer . . . . . *USRPRF           Name, *USRPRF
Merge source in test . . . . . > *NO           *YES, *NO, *DFT
Produce report . . . . . > *YES                *YES, *NO, *DFT
Checkout . . . . . > *NO                       *YES, *NO, *DFT
Create TurnOver forms . . . . . > *NO          *YES, *NO, *DFT
Create Programmer Worklists . . > *NO          *YES, *NO, *DFT

F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
    
```

This command will submit a batch job to build the Synchronizer change impact file and, optionally, check out objects, create a programmer worklist and/or create TURNOVER® for iSeries forms to be used later to promote changes. The Synchronizer Change Impact Report can also be generated during this batch process; or it can be generated later (see Synchronizer Main Menu). **Note:** If there are many vendor changes and user modifications, this job could take several hours (see following page).

What happens during the Synchronizer file build process?

1. Compare source of vendor's old base, vendor's changes and, your modifications.
2. Create a *Delta* file (a file of source changes), to be used later if you select the merge option when working with the Synchronizer impact file.
3. Insert time estimates in hours for each item in the list. These estimates are based on the Synchronizer time estimation table, which you can set when working with Synchronizer defaults. You can also modify the estimates when working with the Synchronizer impact file.
4. Create the Synchronizer change impact file. This file contains entries about each object the vendor changed, as well as the previous version of the vendor's objects and changes you may have made to these objects.
5. Create the Vendor Change Impact report.
6. Create the Vendor Object Change Impact report.

The reports can be generated as the file is being created or at any time afterward by selecting the reporting options on the Synchronizer Main Menu.

This file can be updated at any time. For example, after building the file, you may decide that there were too many changes in process and that you want to clear these up prior to starting your synchronization project. In this case, you can rebuild the impact file. If you rebuild this file, you can specify whether or not to retain the assigned task, programmer and programmer worklist fields. To update this file, select the ***Update Synchronizer Impact Change file*** option on the Synchronizer Main Menu.

WORKING WITH THE SYNCHRONIZER CHANGE IMPACT FILE

Once your Synchronizer Change Impact file has been built, you can select option 6, **Work with Synchronizer change impact file**. You'll be prompted to specify your file name.

```

Work w/ Synchronizer Chg File (WRKSYNCHGF)

Type choices, press Enter.

Synchronizer change file . . . . *SELECT      Name, *LAST, *SELECT
Library . . . . . *LIBL      Name, *LIBL, *CURLIB

F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys
Bottom
    
```

You can type a Synchronizer change impact file name, or use ***SELECT** to view and manage a list of file names.

```

8/15/18      Select Synchronizer Impact File to Work With  Your Company, Inc.
14:37:58      SLS

1=Select  4=Delete  5=View

  File      Library  Created by  Date      User  Changes  Vendor Changes
  Created  App  Rel Ver  App  Rel Ver
1  APPLE    ELMSMIKE  ELMSMIKE  06/13/05  SYN   1   1  SYN   2   1
_  ELMSMIKE  ELMSMIKE  ELMSMIKE  06/14/05  SYN   1   1  SYN   2   1

F3=Exit  F12=Cancel  F21=Command line
    
```

Use the **Work with Synchronizer Impact File** panel to analyze the vendor's changes and perform all of the steps needed to fully understand the impact of those changes on your organization.

As the synchronization project analyst, your primary objective is to fully understand the impact of these changes, to make sure the list is complete, to assign each item to a project task or subtask, and to build the programmer worklist. One or more Worklists will be created and assigned to each of the programmers on your project team. If you are synchronizing a major release, this may involve several people; if a small fix, you may do the entire project yourself.

Once all of these steps are complete, you will be able to monitor the progress of your project here as well. You will see objects **In Process** and track the progress of each of the assigned tasks.

When all of your changes have been completed and tested and you are ready to promote them back to production status, Synchronizer will coordinate the promotion of all of your changes and your vendor's changes into production, to ensure successful installation of the new release.

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The *Work with Synchronizer Impact File* panel:

8/15/18 14:39:40 Work with Synchronizer Impact File Your Company, Inc.

User application . . . SYN Release . . . 1 Version . . . 1
Vendor application . . SYN Release . . . 2 Version . . . 1
File name APPLE Position to object _____
Library ELMSMIKE Use filters(Y/N) Y

Type options, press Enter.
2=Change 5=LastTask 6=LastChgs 7=CurTask 8=CurChgs 11=BrowseSrc
12=CmpSrc 13=Merge Src 14=Refresh 15=CmpStats 16=LibDtls 20=Worklist 22=XRef
Version==> 1 2 3 4

Object	Type	Old Base	User Mods	New Base	In Proc	Assigned Programmer	Sts
— TURS115	RPG	347	2/ 356	9/ 354	Y	SMITHJOHN	OK
— TURS116	RPG	33	12/ 45	12/ 45	N	SMITHJOHN	OK
— TURS117	RPG	1044		13/1044	N	SMITHJOHN	OK
— TURS118	RPG	912	21/ 912	28/ 922	N	SMITHJOHN	OK
— TURS119	RPG	522		55/ 532	N	SMITHJOHN	OK
— TURS120	RPG	322	3/ 322	7/ 329	Y	SMITHJOHN	OK

More...

Command==> _____

F3=Exit F4=Prompt F5=Refresh F6=DSPMSG F7=Statuses F17=Filters
F9=Retrieve F10=SyncChecklist F24=More keys

More function keys:
F11=Alt. view F12=Cancel F13=Repeat F14=WRKSBMJOB
F16=User options F19=Submit

The primary view includes a list of objects with columns to indicate the existence and count of source changes of the object in the old base, user modification and new base. It will also let you know if changes are *In Process* (*In Proc* column). By manipulating the filters and views, you can subset the list to focus on conditions you want to analyze (more on this later).

Alternate view

Press **F11=View 2** for an alternate view to display the assigned Project task code and to view or change estimated time.

Sel	Object	Type	Old Base	User Mods	New Base	In Proc	Assigned Proj/task	Est Time
—	TURS115	RPG	Y	99999	99999	Y	TP400021	4.00
	:	:	:	:	:	:	:	:

Estimated time can be accumulated in the assigned project task ***Planned duration*** field. This can be viewed in TURNOVER® for iSeries Projects, or on Project reports, including the ***Synchronizer Source Impact Analysis Report*** and ***Object Impact Analysis Report***, shown later in this guide.

Prompting Options

The following options run commands that can be prompted by pressing **F4** after you select them:

2=Change	Change impact file item
11=BrowseSrc	Browse Source
12=CmpSrc	Compare Source
13=MrgSrc	Merge Source

Work with Impact File Filters

Press **F17=Filters** to set or change filters.¹²

```

8/15/18 14:39:40      Work with Synchronizer Impact File      Your Company, Inc.
.....
:                               Filter Selections                               :
:   Status . . . . . _____ F4=List                                     :
:   Category . . . . . _____ F4=List                                     :
:   Programmer . . . . . _____ F4=List, *NONE                           :
:   Last programmer . . . . . _____ F4=List, *NONE                       :
:   Task . . . . . _____ F4=List, *NONE                               :
:   Last task . . . . . _____ F4=List, *NONE                           :
:   TurnOver type . . . . . _____ F4=List                               :
:   Object type . . . . . _____                                         :
:   F3=Exit F12=Cancel                                         :K
:.....:K
--- TURS117   RPG      Y          99999      99999      Y      SMITHJOHN  OK
--- TURS118   RPG      Y          99999      99999      Y      SMITHJOHN  OK
--- TURS119   RPG      Y          99999      99999      Y      SMITHJOHN  OK
--- TURS120   RPG      Y          99999      99999      Y      SMITHJOHN  OK
--- TURS121   RPG      Y          99999      99999      Y      SMITHJOHN  OK
More..
Command==> _____
F3=Exit F4=Prompt F5=Refresh F6=DSPMSG F13=Repeat F17=Filters F10=SyncChecklist
F24=More keys
    
```

To suspend filters, you can change the *Use filters* field to **N**. When you select **F17** and set a filter, the *Use filters* field is automatically set to **Y**.

Some of the filter fields are not displayed on the primary panel but can be seen when you select the various detail options (illustrated later in this guide).

¹² You can also use the **WRKSYNCHKO (Work with Synchronizer Change File)** command to work with a change file's filters.

More about the *Status* filter

When you position to the status filter field and press **F4**, this window appears.

```

.....
:   Vendor Changes Status Code Selection   :
:                                           :
: 1=Include status                        :
:                                           :
: Sts  Description                        :
: 1    No status assigned                 :
: 1    OBS  Obsolete objects              :
: 1    OK   Already consolidated          :
: 1    PRB  Problem - Needs further review :
: 1    XRF  Added to list by X-Ref        :
:                                           :
:                                           Bottom :
: F3=Exit  F12=Cancel                    :
:                                           :
:.....

```

You can select any combination of item status to be used as a filter. If you select *No status assigned*, the list will be filtered to show items that have a blank status field.

UNICOM Systems, Inc. Note

If you are a Synchronizer administrator, you can maintain status codes using the **WRKSYNSTS (Work with Status Codes)** command.

More about the *Category* filter

When you position to the category field and press **F4**, you can set the categories you want to see.

```

.....
:   Vendor Changes Category Selection   :
:                                           :
: 1=Include  0=Exclude  blank=either    :
:                                           :
:           Old           New           :
:           Base    Custom   Base    In :
:           Exists  Mods    Changed  Proc :
: Category...._      -      -      -   :
:                                           :
: F3=Exit  F12=Cancel                    :
:                                           :
:.....

```

The category filter is a way of controlling what item categories you want to see. For example, if you just want to see objects that are being changed by you now, type a **1** in the **In Proc** column and leave all other fields columns blank. If you want to see items you have changed (*User Changed*) and items representing vendor changes¹³ (*New Base Changed*), set these two columns to **1** and leave the other columns blank.

¹³ Remember that the Vendor may have reshipped an entire library, whether the object was changed in the release or not.

Changing a Synchronizer Impact File item

There are several Synchronizer impact file fields that you may want to set or override during the analysis process.

To do so, select any item with option **2=Change** to change the Synchronizer change impact file item.

To change more than one item, you can type **2** next to more than one item (or use the **F13=Repeat** key) and type the parameter and value on the command line.

```

Change Synchronizer Impact File (CHGSYNCHGF)

Type choices, press Enter.

File . . . . . > APPLE          Name
Library . . . . . > ELMSMIKE     Name, *LIBL, *CURLIB
New vendor source file . . . . . > QRPGRSRC      Name
New vendor source library . . . . . > SINNEW       Name
New vendor source member . . . . . > TESTRPG1     Name
Programmer worklist . . . . . >                Worklist name, *SAME
Project/Task reference . . . . . >                Project/Taskname, *SAME ...
Programmer . . . . . > MORRISTO      Programmer name, *SAME, *Select
Status . . . . . >                Status code, *SAME, *Select
Comment . . . . . >

Bottom
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
  
```

Why would you want to change these fields?

Keeping in mind that, as the Synchronizer Project analyst, your job is to analyze and allocate the work to be done (even if it's to yourself). Consequently, these fields can be changed to help you accomplish this objective.

For example, let's say you have filtered by a previously used project task code and twenty objects were displayed. These objects, all changed earlier and at the same time, are, in all likelihood, functionally related. You decide that they should be assigned to the same programmer and should be assigned to the same (new) subtask. Therefore, you select all of them with option **2** and, on the command line type the parameters and values for the project task and programmer. This entry, REF(APSP003001) PGMR(ELMSMIKE), would be interpreted as assigning this project task code and programmer name to the selected items.

Another example. The programmer assigned to an object is the last programmer that changed the object. Let's say that the last programmer was a junior programmer who made a simple change to a program; but you decide that a more experienced programmer needs to be assigned. You can select that program with a **2**, press **F4** and over-type the new programmer's ID in the Programmer parameter.

In this way, as you work your way through the impact file, you will assign project tasks, reassign programmers (where appropriate) and, eventually, build all of the Programmer Worklists¹⁴ needed to complete the synchronization project. In all likelihood, you will also estimate the time it will take to do each change, and reproduce the impact report to review with your manager and the project team (even if you are its only member).

Then the analysis phase of your project will be complete. See **Figure 1** in the introduction for an illustration of this process.

¹⁴ The Programmer Worklist ID, derived from the project task, will be inserted automatically when you select the item with option **20=Worklist** for the first time.

Viewing information about each object

To support your analysis efforts, there are a variety of views provided that show additional information about each object. These views include:

- ***Last task*** details (about the last time the object was changed)
- ***Last changes*** information
- ***Current task*** information
- ***Current changes*** processing information
- ***Source compare statistics***
- ***Library Details*** about current library, file names and member names
- ***Programmer's Worklist*** to assign and view a Programmer's Worklist
- ***Cross-reference*** information

You can also run ***Compare source*** and ***Merge Source*** commands.

The ***Versions==> n*** fields control the sequence in which the various versions of source will be compared.

Any time you view a field that is used as a display filter, you can position to that field and press **F17=Filter**. The Synchronizer file panel will refresh and use that value as the display filter. (See the ***Last Changes*** panel example below for more.)

Each of the options available on the panel is illustrated on the pages that follow.

Viewing Task details

```

8/15/18 14:39:40   Work with Synchronizer Impact File   SLS testing

User application . . . SYN Release . . . 1 Version . . . 1
Vendor application . . SYN Release . . . 2 Version . . . 1
File name . . . . . APPLE      Position to object . . . . .
Library . . . . . ELMSMIKE     Use filter (Y/N) . . . . . Y

Type options, press Enter.
 2=Change  5=LastTask  6=LastChgs  7=CurTask  8=CurChgs  11=BrowseSrc
12=CmpSrc 13=MergeSrc 14=Refresh 15=CmpStats 16=LibDtls 20=Worklist 22=XRef
Version==>  1          2          3          4
            Old        User        New        In        Assigned
Sel Object  Type      Base        Mods        Base        Proc  Programmer  Sts
---
TURS115    RPG        347          2/ 356      9/ 354      Y     SMITHJOHN  OK
TURS116    RPG         33         12/  45     12/  45      N     SMITHJOHN  OK
TURS117    RPG       1044         13/1044     N     SMITHJOHN  OK
TURS118    RPG         912         21/  912     28/  922     N     SMITHJOHN  OK
TURS119    RPG         522         55/  532     N     SMITHJOHN  OK
TURS120    RPG         322          3/  322      7/  329     Y     SMITHJOHN  OK
More...

Command==>

F3=Exit  F4=Prompt  F5=Refresh  F6=DSPMSG  F17=Filters  F24=More keys
    
```

Select option **5=LastTask** or **7=CurTask** to view task details and description of the last or current assigned task, respectively.

The **Last Task** option displays the task in the project system that documents the reason for the last change of the object. If the object is not associated with a previous task, the message “**Task not found**” will be displayed.

The **Current Task** option displays the currently assigned task associated with the synchronization project on which you are working. If a task has yet to be created or assigned to the object, then the message “**Task not found**” will be displayed. To view the currently assigned **Project task code**, press **F11** or select the **Current Changes** option.

Viewing Last Change Information

Select **6=LastChgs** to see details about the most recent changes applied to a particular object.

```

8/15/18 14:39:40   Work with Synchronizer Impact File       Your Company, Inc.

User application . . . SYN Release . . . 1 Version . . . 1
Vendor application . . SYN Release . . . 2 Version . . . 1
File name . . . . . APPLE      Position to object . . . . .
Library . . . . . ELMSMIKE     Use filter (Y/N) . . . . . Y

Type options, press Enter.
  2=Change  5=LastTask  6=LastChgs  7=CurTask  8=CurChgs  11=BrowseSrc
 12=CmpSrc 13=MergeSrc 14=Refresh 15=CmpStats 16=LibDtls 20=Worklist 22=XRef
Version==>  1          2          3          4
           Old        User        New        In   Assigned
Sel Object  Type      Base        Mods        Base      Proc Programmer Sts
.....
:  TURS115   RPG       347         10/ 356    41/ 354      Y    SMITHJOHN  OK    :
:
:  Last Programmer . . . ELMSMIKE   Mike Elms
:  Last Form . . . . . 0100057    RAN-OK   06/01/05
:  Last Task . . . . . APPR0050    This is the task description which might..
:
:
:  F3=Exit F4=View F10=History details F12=Cancel F17=Apply filter (by cursor :
.....
  
```

Position the cursor on **Last Form** or **Last Task** and press **F17**. This will reset the panel filters to these values.

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Viewing Current Change Details

Select option **8=CurChgs** to view details about current changes in process. As your Synchronizer project proceeds, this information will be updated to reflect progress on each object.

```
8/15/18 14:39:40   Work with Synchronizer Impact File   Your Company, Inc.

User application . . . SYN Release . . . 1 Version . . . 1
Vendor application . . SYN Release . . . 2 Version . . . 1
File name . . . . . APPLE      Position to object . . . . .
Library . . . . . ELMSMIKE     Use filter (Y/N) . . . . . Y

Type options, press Enter.
 2=Change  5=LastTask  6=LastChgs  7=CurTask  8=CurChgs  11=BrowseSrc
12=CmpSrc 13=MergeSrc 14=Refresh 15=CmpStats 16=LibDtls 20=Worklist 22=XRef
Version==>  1          2          3          4
            Old        User        New        In  Assigned
Sel Object  Type      Base        Mods       Base      Proc Programmer Sts
-----
:  TURS115   RPG       347        10/ 356   41/ 354    Y    SMITHJOHN  OK   :
:
:  Current task . . APPR005201 Changes to master pgm      :
:  Work list . . . APPR005201                               :
:  TurnOver Form . 0100010 Ready 00/00/00 TurnOver form description :
:  Checked out . . SMITHJOHN MCCORMACK                      :
:  Comments . . . .                                         :
:
:  F3=Exit  F5=Task/Worklist/Form  F12=Cancel              :
:
:  .....
```

You can position the cursor on any of the first three items and press **F5** to work with a task, worklist or TURNOVER® for iSeries form.

Viewing Source Compare Statistics

Select an item with option **15=CmpStats** to view change statistics accumulated during the compare process and build of the Synchronizer Impact file.

```

8/15/18 14:39:40   Work with Synchronizer Impact File           Your Company, Inc.

User application . . . SYN  Release . . . 1 Version . . . 1
Vendor application . . SYN  Release . . . 2 Version . . . 1
File name . . . . . APPLE      Position to object . . . . .
Library . . . . . ELMSMIKE     Use filter (Y/N) . . . . . Y

Type options, press Enter.
 2=Change  5=LastTask  6=LastChgs  7=CurTask  8=CurChgs 11=BrowseSrc
12=CmpSrc 13=MergeSrc 14=Refresh 15=CmpStats 16=LibDtIs 20=Worklist 22=XRef
Version==>  1          2          3          4
Sel Object  Type      Old      User      New      In  Assigned
                Base      Mods      Base      Proc Programmer Sts
:-----:
:  TURS115   RPG       347      10/ 356   41/ 354   Y   SMITHJOHN OK   :
:
:  Changed(Paired) . . . . .      5      15
:  Inserts . . . . .      4      25
:  Deletes . . . . .      1      1
:  Total Changes . . . . .     10     41
:
:  F3=Exit          F12=Cancel
:-----:

```

Viewing Source Library Details

Select option **16=LibDtls** to see the current location of source in the old base library, user modification library, new base library and, possibly, the source in the process of being changed (**In Proc**) when the impact file was created.

```

8/15/18 14:39:40   Work with Synchronizer Impact File           Your Company, Inc.

User application . . . SYN  Release . . . 1 Version . . . 1
Vendor application . . SYN  Release . . . 2 Version . . . 1
File name . . . . . APPLE      Position to object . . . . .
Library . . . . . ELMSMIKE     Use filter (Y/N) . . . . . Y

Type options, press Enter.
 2=Change  5=LastTask  6=LastChgs  7=CurTask  8=CurChgs  11=BrowseSrc
12=CmpSrc 13=MergeSrc 14=Refresh 15=CmpStats 16=LibDtls 20=Worklist 22=XRef
Version==>  1          2          3          4
             Old       User       New       In   Assigned
Sel Object   Type     Base      Mods      Base      Proc Programmer Sts
.....
:  TURS115    RPG      347      10/ 356   41/ 354    Y    SMITHJOHN  OK    :
:  Source file . . QRPGRSRC  QRPGRSRC  QRPGRSRC  QRPGRSRC :
:    Library . . . APREL10  APUSRMOD  APREL20   SMITHJOHN :
:  Member name . . TURS115   TURS115   TURS115   TURS115   :
:  Comment . . . . Joan needs to look at this one. :
:  Category . . . . 1111 - Category description :
:  Checked out . . SMITHJOHN MCCORMACK :
:  F3=Exit      F12=Cancel :
:.....

```

Changing the Impact File Item Record

Select option **2=Change** to change one or more impact file records.

```

Change Synchronizer Change Impact File (CHGSYNCHGF)

Type choices, press Enter.

File . . . . . > APPLE           Name
Library . . . . . > ELMSMIKE      Name, *LIBL, *CURLIB
New vendor source file . . . . . > QRPGRSRC      Name
New vendor source library . . . . . > SYNNEW       Name
New vendor source member . . . . . > TESTRPG2     Name
Category . . . . . > 1101         Category code, *SAME
Programmer worklist . . . . . > _____ Worklist name, *SAME
Project/Task reference . . . . . > _____ Project/Task name, *SAME
Programmer . . . . . > ELMSMIKE    Programmer name, *SAME
Status . . . . . > _____      Status code, *SAME
Comment . . . . . > _____

F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display
F24=More keys
    
```

To change more than one item at a time, select each item with option **2** and type the appropriate parameter and value on the command line. The parameters you can change are:

PWL	Assigned Programmer's Worklist
REF	Assigned project task
PGMR	Assigned programmer
STS	Item Status
COMMENT	Comments

For example, to assign a programmer to one or more items, select each one with option **2** and type
===> PGMR (SMITHJOE)

THE SOURCE COMPARE COMMAND

TURNOVER® for iSeries' source compare is a very efficient, fast command program written in ILE-C.¹⁵ This command produces a very readable compare report and can also present the compare results to your screen. It also can produce an output file of differences, frequently referred to as a *Delta file*.

```

Compare Source Members (CMPSRCMBR)

Type choices, press Enter.

Reference file . . . . . _____ Name
Library . . . . . _____ Name, *LIBL
Reference member . . . . . _____ Name
Compare file . . . . . _____ Name
Library . . . . . _____ Name, *LIBL
Compare member . . . . . _____ Name, *REFMBR
Lines of context . . . . . 0 Number
Include comments . . . . . *YES *YES, *NO
Display output . . . . . *NO *YES, *NO
Print output . . . . . *YES *YES, *NO
Produce outfile . . . . . *NO *YES, *NO
Print cover page . . . . . *YES *YES, *NO
Print statistics . . . . . *YES *YES, *NO
File to receive output . . . . . _____ Name
Library . . . . . *LIBL Name, *LIBL

Bottom
F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to use this display
F24=More keys
    
```

The *Reference member* is the member against which the *Compare member* is to be compared.

Press **Help/F1** for a definition of the remaining command parameters.

You can have the command display the differences, print a report and/or produce an output file. Sample report output is shown below.

8/15/18	TURNOVER® Source Compare Listing	Your Company, Inc.
15:31:41		Page: 1
Selection parameters:		
Reference source file . . .	QRPGSRC	
library . . .	MORRISTO	
member . . .	SLSRFAXS	
Compare source file . . .	QRPGSRC	
library . . .	MORRISTO	
member . . .	SLSRFAXS2	
Number of context lines . .	5	
Include comments	*YES	
Print statistics	*YES	

Continued ...

¹⁵ Synchronizer and the Source Compare command requires IBM i V6.1 or higher to run.

TURNOVER® for iSeries Synchronizer User Guide

Sample Source Compare Listing output

8/15/18 15:31:41		TURNOVER® Source Compare Listing					Your Company, Inc. Page: 2	
Reference file: MORRISTO/QRPGSRC(SLSRFAXS)				Compare file: MORRISTO/QRPGSRC(SLSRFAXS2)				
Action	RefSeq	CmpSeq	Statement				Date	
***** BEGIN BLOCK *****								
	1.00		FFAXHISTFUF	E	K	DISK	92/10/26	
Inserted		2.00	FCONTACTFUF	E	K	DISK	94/05/24	
	2.00		FSLSSFAXSCF	E		WORKSTN	92/10/15	
	3.00		F			RRN KSFILE SCNDTA	92/09/17	
	4.00		C*				92/09/16	
	5.00		C	*ENTRY	PLIST		92/10/15	
	6.00		C		PARM	FXCUST	92/10/15	
	8.00		C		PARM	SFNAME	92/10/15	
	9.00		C		PARM	SLNAME	92/10/15	
	10.00		C		PARM	SACNAM	92/10/15	
	11.00		C*				92/09/16	
Deleted	12.00		C	CUSKEY	KLIST		92/10/15	
Deleted	13.00		C		KFLD	FXCUST	92/10/15	
Deleted	14.00		C		KFLD	FXCONT	92/10/15	
Deleted	15.00		C*				92/10/26	
	16.00		C	FAXKEY	KLIST		92/10/26	
	17.00		C		KFLD	SCUST	92/10/26	
	18.00		C		KFLD	SCONT	92/10/26	
	19.00		C		KFLD	SDATE	92/10/26	
	20.00		C		KFLD	STIME	92/10/26	
Inserted		19.00	C	CUSKEY	KLIST		94/05/24	
Inserted		20.00	C		KFLD	FXCUST	94/05/24	
Inserted		21.00	C		KFLD	FXCONT	94/05/24	
Inserted		22.00	C*				92/10/15	
	22.00		C		Z-ADD1	SFLRCD	92/10/15	
	23.00		C		EXSR CLEAR		92/10/15	
	24.00		C		EXSR LOAD		92/09/16	
	25.00		C	START	TAG		92/09/16	
	26.00		C		WRITECMDPMT		92/09/16	
***** END BLOCK *****								
***** BEGIN BLOCK *****								
	46.00		C		ELSE		92/10/15	
	47.00		C		SETON 40		92/10/15	
	48.00		C		END		92/10/15	
	49.00		C		END		92/10/15	
	50.00		C*				92/10/26	
Inserted		52.00	C	SLT	IFEQ '1'		94/05/24	
Inserted		53.00	C		CALL 'SLSRCONM'		94/05/24	
Inserted		54.00	C		PARM	CUST#	94/05/24	
Inserted		55.00	C		PARM	CONT#	94/05/24	
Inserted		56.00	C		END		94/05/24	
Inserted		57.00	C*				92/10/26	
	51.00		C	SLT	IFEQ '4'		92/10/26	
	52.00		C	FAXKEY	CHAINFAXHIST	50	92/10/26	
	53.00		C	*IN50	IFEQ '0'		92/10/26	
	54.00		C		DELETFAXHIST		92/10/26	
Deleted	55.00		C		EXSR CLEAR		92/10/26	
Deleted	56.00		C		EXSR LOAD		92/10/26	
Deleted	57.00		C		GOTO START		92/10/26	
	58.00		C		ELSE		92/10/26	
	59.00		C		UPDATFAXHIST		92/10/26	
	60.00		C		END		92/10/26	
	61.00		C		END		92/10/26	
	62.00		C*				92/10/26	
***** END BLOCK *****								
***** BEGIN BLOCK *****								
	119.00		C		SETOF	3436	92/10/15	
	120.00		C		WRITESCNCTL		92/10/15	
	121.00		C		SETON		92/10/15	
	122.00		C		SETOF		92/10/15	
	123.00		C		MOVE *BLANK	SLT	92/10/26	
Chg. from	124.00		C		Z-ADD0	RRN 4	92/10/15	
Chg. to	128.00	128.00	C		Z-ADD1	RRN 4	92/10/24	
	125.00		C		ENDSR		92/10/15	
	126.00		C*				92/10/15	
	127.00		C	LOAD	BEGSR		92/09/16	
	128.00		C	CUSKEY	SETLLFAXHIST		92/10/15	
	129.00		C	*IN99	DOUEQ '1'		92/10/15	
***** END BLOCK *****								

Compare statistics included on Source Compare report:

```
15:31:41
Compare_statistics
Reference source file . . . . . QRPGRSRC
      library . . . . . MORRISTO
      member . . . . . SLRFRFAXS
  Compare source file . . . . . QRPGRSRC
      library . . . . . MORRISTO
      member . . . . . SLRFRFAXS2
Lines in reference member . . . . . 148
Lines in compare member . . . . . 152
Inserted lines . . . . . 11
Deleted lines . . . . . 7
Changed blocks . . . . . 2
Total number of differences . . . 22
```


THE SOURCE MERGE COMMAND

TURNOVER® for iSeries' source merge is a very efficient, fast command program written in ILE-C.¹⁶ This command merges two or more source members, in an order you specify, into a new source member.

```

Merge Source Members (MRGSRRCMBR)

Type choices, press Enter.

Reference file . . . . . _____ Name
Library . . . . . _____ Name, *LIBL
Reference member . . . . . _____ Name
Primary compare file . . . . . _____ Name, *REFFILE
Library . . . . . _____ Name, *LIBL, *REFLIB
Primary compare member . . . . . _____ Name, *REFMBR
Secondary compare file . . . . . _____ Name, *REFFILE
Library . . . . . _____ Name, *LIBL, *REFLIB
Secondary compare member . . . . . _____ Name, *REFMBR
Merge file . . . . . _____ Name, *REFFILE
Library . . . . . _____ Name, *LIBL, *REFLIB
Merge member . . . . . _____ Name, *REFMBR
Merge file option . . . . . *REPLACE *REPLACE, *ADD
Include merge comments . . . . . *YES *YES, *NO

More...
F3=Exit F4=Prompt F5=Refresh F10=Additional parameters F12=Cancel
F13=How to use this display F24=More keys

```

Press **F10**=Additional parameters:

```

Merge Source Members (MRGSRRCMBR)

Type choices, press Enter.

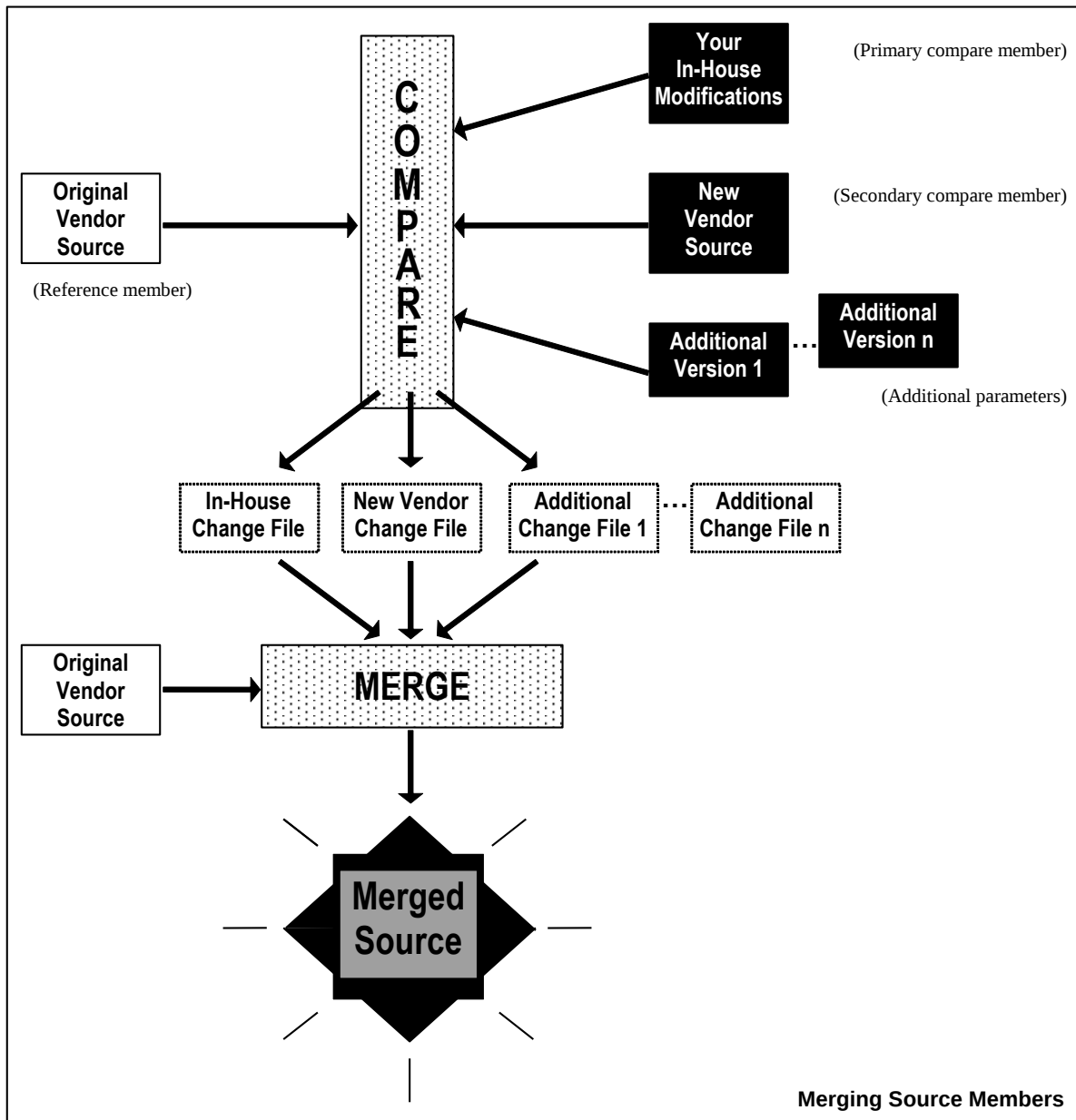
Additional Parameters

Additional files to compare . . _____ Name, *REFFILE
Library . . . . . _____ Name, *LIBL, *REFLIB
Member . . . . . _____ Name, *REFMBR
+ for more values _____
_____
_____

Bottom
F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to use this display
F24=More keys

```

¹⁶ Synchronizer and the Source Compare command requires IBM i V6.1 or higher to run.



To merge your source files, Synchronizer first compares the **primary compare member** to the **reference member** and puts the results in a temporary change file. Then the same thing happens with the **secondary compare member**. The process is repeated for any **Additional members** you specified (these are processed in the order you entered them). Then the change files are merged with the reference member, with the primary member changes considered most needed, followed by the secondary member changes, and the additional changes in order from first to last. The results are stored in the **Merge member** you specified.

UNICOM Systems, Inc. Recommends

1. Thoroughly inspect and test the merge member before putting it into production.
 2. What you get from the merge is a direct result of the order in which you specify your compare members. We suggest running the merge once for each possible combination of compare members, specifying a new merge member name each time, so you can choose the most optimum merged version from the results.
-

An example of a source merge

Following is a simple example of a source merge. Assume that we use a vendor's software package. Our production level contains a modified version of the original vendor source. We have just received a new release of the product from the vendor, and the new release includes changes to the program we modified. We will merge the new version with our modified version, using the original vendor source as a reference.

We start with a base version, called the *Reference member*. This figure shows the original vendor source code for the program, which resides in our SDBASE library. We will specify this program as our *Reference member*:

```
5716PW1 V7R2M0 180815          SEU SOURCE LISTING
SOURCE FILE . . . . . SDBASE/QCLSRC
MEMBER . . . . . SDCCLEAR
SEQNBR*...+... 1 ...+... 2 ...+... 3 ...+... 4 ...+... 5 ...+... 6 ...+...
 100 PGM
 200 DCL VAR(&MSG) TYPE(*CHAR) LEN(80)
 300 CLRPFM SDLOGF
 400 MONMSG MSGID(CPF0000)
 500 RCV: CHGVAR VAR(&MSG) VALUE(' ')
 600          RCVMSG      MSG(&MSG)
 700          IF COND(&MSG *NE ' ') THEN(DO)
 800          SNDPGMMSG MSG(&MSG)
 900          GOTO RCV
1000          ENDDO
1100 ENDPGM
```

This is the version against which other versions of the program are compared to build the change files used for the actual merge step.

Next, let's look at our modified source member.

We must decide which of the versions that we are comparing to the base has changes that are the most vital to our production activity. Because we have modified the original vendor source to suit our processing needs, we want those changes to carry more weight during the merge than the vendor's newest version. That's why we will specify our modified version as the *Primary compare member*.

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Our modified version resides in our SDMODS library:

```
5716PW1 V7R2M0 180815          SEU SOURCE LISTING
SOURCE FILE . . . . . SDMODS/QCLSRC
MEMBER . . . . . SDCCLLEAR
SEQNBR*...+... 1 ...+... 2 ...+... 3 ...+... 4 ...+... 5 ...+... 6 ...+...
100 PGM
200 DCL VAR(&MSG) TYPE(*CHAR) LEN(80)
300 /*-----*/
400 /*          OUR MODIFICATION WOULD BE CLEARLY DOCUMENTED!          */
500 /*-----*/
600 CLEAR:
700 CLRPFM SDLOGF
800 MONMSG MSGID(CPF0000) EXEC(DO)
900     IF COND(&MSG *NE 'TRIED ONCE') THEN(DO)
1000         DLYJOB      DLY(30)
1100         CHGVAR VAR(&MSG) VALUE('TRIED ONCE')
1200         RMVMSG      CLEAR(*ALL)
1300         GOTO CLEAR
1400     ENDDO
1500 ENDDO
1600 RCV:  CHGVAR VAR(&MSG) VALUE(' ')
1700         RCVMSG      MSG(&MSG)
1800         IF COND(&MSG *NE ' ') THEN(DO)
1900             SNDPGMMSG MSG(&MSG)
2000             GOTO RCV
2100         ENDDO
2200 ENDPGM
```

In our modified program, we added processing to the MONMSG statement.

Finally, we have to make sure that the merged member also has the changes the vendor added to the new release, so we will specify the vendor's new program as the **Secondary compare member**. The new vendor source is stored in our SDNEW library:

```
5716PW1 V7R2M0 180815          SEU SOURCE LISTING
SOURCE FILE . . . . . SDNEW/QCLSRC
MEMBER . . . . . SDCCLLEAR
SEQNBR*...+... 1 ...+... 2 ...+... 3 ...+... 4 ...+... 5 ...+... 6 ...+...
100 PGM
200 DCL VAR(&MSG) TYPE(*CHAR) LEN(80)
300 CLRPFM SDLOGF
400 /*-----*/
500 /* THE VENDOR ADDED A COMMENT TO DOCUMENT THEIR CHANGE:          */
600 /* ADDED WRKSPLF CMD; DELETED GOTO AFTER SNDPGMMSG.          */
700 /*-----*/
800 WRKSPLF
900 MONMSG MSGID(CPF0000)
100 RCV:  CHGVAR VAR(&MSG) VALUE(' ')
1100         RCVMSG      MSG(&MSG)
1200         IF COND(&MSG *NE ' ') THEN(DO)
1300             SNDPGMMSG MSG(&MSG)
1400         ENDDO
1500 ENDPGM
```

Now let's take a look at the results stored in our *Merge member*:

```

5716PW1 V7R2M0 180815          SEU SOURCE LISTING
SOURCE FILE . . . . . SDDEV/QCLSRC
MEMBER . . . . . SDCCLEAR
SEQNBR*...+... 1 ...+... 2 ...+... 3 ...+... 4 ...+... 5 ...+... 6 ...+...
100 /*-----*/
200 /* This file was created by the UNICOM Systems, Inc. File Compare */
300 /* and N-Way merge system. The files that dictated the contents of */
400 /* this file were as follows. */
500 /* */
600 /* REFERENCE FILE: SDBASE/QCLSRC (SDCCLEAR) */
700 /* PRIMARY FILE: SDMODS/QCLSRC (SDCCLEAR) */
800 /* SECONDARY FILE: SDNEW/QCLSRC (SDCCLEAR) */
900 /*-----*/
1000 PGM
1100 DCL VAR(&MSG) TYPE(*CHAR) LEN(80)
1200 /*---Begin Insert: SDMODS/QCLSRC (SDCCLEAR) SLSMRG*/
1300 /*-----*/
1400 /* OUR MODIFICATION WOULD BE CLEARLY DOCUMENTED! */
1500 /*-----*/
1600 CLEAR:
1700 /*---End Insert SLSMRG*/
1800 CLRPFM SDLOGF
1900 /*---Line Deleted: SDMODS/QCLSRC (SDCCLEAR) SLSMRG*/
2000 /*---Begin Insert: SDNEW/QCLSRC (SDCCLEAR) SLSMRG*/
2100 /*-----*/
2200 /* THE VENDOR ADDED A COMMENT TO DOCUMENT THEIR CHANGE: */
2300 /* ADDED WRKSPLF CMD; DELETED GOTO AFTER SNDPGMSG. */
2400 /*-----*/
2500 WRKSPLF
2600 /*---End Insert SLSMRG*/
2700 /*---Begin Insert: SDMODS/QCLSRC (SDCCLEAR) SLSMRG*/
2800 MONMSG MSGID(CPF0000) EXEC(DO)
2900 IF COND(&MSG *NE 'TRIED ONCE') THEN(DO)
3000 DLYJOB DLY(30)
3100 CHGVAR VAR(&MSG) VALUE('TRIED ONCE')
3200 RMVMSG CLEAR(*ALL)
3300 GOTO CLEAR
3400 ENDDO
3500 ENDDO
3600 /*---End Insert SLSMRG*/
3700 RCV: CHGVAR VAR(&MSG) VALUE(' ')
3800 RCVMSG MSG(&MSG)
3900 IF COND(&MSG *NE ' ') THEN(DO)
4000 SNDPGMSG MSG(&MSG)
4100 /*---Line Deleted: SDNEW/QCLSRC (SDCCLEAR) SLSMRG*/
4200 ENDDO
4300 ENDPGM

```

1 Notice the merge comments. These help you keep track of where this member came from, as well as what code came from which members. These are optional; you can exclude them using the *Include merge comments* parameter on the *Merge Source Member* panel.

2 At first glance, the “Line Deleted” comment here can be misleading. From this comment, it appears that the changed MONMSG clause in the primary member was overlooked in favor of the secondary member. The secondary member took priority here because it inserted lines *between* the unchanged CLRPFM SDLOGF statement and the changed MONMSG clause from the primary member.

UNICOM Systems, Inc. Caution

When you receive changes or a new release of your software, you need to perform several steps in order to retrofit your modifications to the new vendor base (or the vendor's changes to your version of a program). It follows that the more careful you have been making changes to the vendor's source, the easier this job will be.

There are two rules you can follow to make this job easier:

- 1) Make as few changes as possible to the vendor's source.
 - If you have a significant change to make, contact the vendor first to see if they will make the change to the base for you. If not, can they suggest an exit point to use? Even if the vendor cannot identify a pre-existing exit, they should be able to help you identify where to code an exit and the parameters you may need. Then, instead of inserting your changes directly into the vendor's source, code a simple exit to call your new program to fulfill your special requirements. As a last resort, if you do need to imbed your code into the vendor's program, isolate your changes in subroutines and document them very carefully. Remember, you may need to make this change again several times, whenever you get updates from your vendor.
- 2) Make sure your expectations are reasonable.
 - The quality of output you can reasonably expect from the source compare and merge programs contained in the **Synchronizer** product – or any similar product – depends completely on the extent and nature of the changes made to a piece of code. ***You must rigorously inspect and test the results.***

We think that our compare and merge utilities are among the best available, and you can reasonably expect Synchronizer to merge source correctly most of the time. However, there are limits beyond which any program will produce unsatisfactory results. After all, weaving a strand of spaghetti code into a ball of spaghetti code still gets you spaghetti!

SOURCE CHANGE IMPACT ANALYSIS REPORT

This report, available in several sequence options, provides you with a list of all the source changed, with summary information about the impact on your organization.

8/15/18 15:31:41	Source Change Impact Analysis Report	Your Company, Inc. Page: 1
Customer Modification Application . . . AP10 OUR changes to SoftSystems AP		
Vendor Base Application APV SoftSystem updates for AP		
Synchronizer Change Impact file SSR20		
Library MYLIB		
Selections:		
Status	*ALL	
Category	*ALL	
Programmer	ELMSMIKE	Last programmer *ALL
Task	*ALL	Last Task *ALL
TURNOVER type	*ALL	Object type *ALL
Include last changes details	*NO	
Include Source compare stats	*NO	
Include library details	*NO	
Include comments	*NO	

Page 2:

8/15/18 15:31:41		Source Change Impact Analysis Report										Your Company, Inc. Page: 2		
Object	Turn Type	Old Base	User Mods	New Base	In Proc	Assigned Pgm	Itm Current Sts	Current Checkout	Assigned Proj/Task	Assigned Worklist	Turn Form	Form Sts	Time Est.	
APCLP001	CLP	543	41/ 543	12/ 566	Y	ELMSMIKE	XRE	LEMSMIKE	+ APPR000101	APPR000101	0100212	READY	8:00	
APCLP072	CLP	25	1/ 26	2/ 22	N		NEW		APPR000101	APPR000101			2:00	
APCLP073	CLP	54	2/ 55	22/ 77	N	ELMSMIKE	OK		APPR000101	APPR000101			6:00	
APRPG921	CLP	543	41/ 543	102/ 566	N	ELMSMIKE	PRB	PHILLIPTOM	APPR000103	APPR000103	0100217	RAN-OK	22:00	
:	:	:	:	:	:	:	:	:	:	:	:	:	:	
:	:	:	:	:	:	:	:	:	:	:	:	:	:	
:	:	:	:	:	:	:	:	:	:	:	:	:	:	
Etc.														

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Page 2 (Continued):

8/15/18 15:31:41		Source Change Impact Analysis Report Summaries and Counts		Your Company, Inc. Page: 2	
Low impact category counts:					
Cat.	Description		Count	Time Est.	
0000	Not in old base, not changed in user mod, not changed in new base, not in process		3	.00	
1000	In old base, not changed in user mod, not changed in new base, not in process		3	.00	
1001	In old base, not changed in user mod, not changed in new base, in process		0	.00	
1010	In old base, not changed in user mod, changed in new base, not in process		1	6.00	
1100	In old base, changed in user mod, not chagned in new base, not in process		3	3.00	
	Totals:		0	.00	
High impact category counts:					
Cat.	Description		Count	Time Est.	
1011	In old base, not changed in user mod, changed in new base, in process		0	.00	
1110	In old base, changed in user mod, changed in new base, not in process		2	12.00	
1111	In old base, changed in user mod, changed in new base, in process		2	12.00	
	Totals:		0	.00	
Conflict category counts:					
Cat.	Description		Count	Time Est.	
0001	Not in old base, not in user mod, in new base, in process		0	.00	
0100	Not in old base, in user mod, in new based, not in process		0	.00	
0101	Not in old base, in user mod, in new base, in process		0	.00	
	Totals:		0	.00	
Counts by Assigned Programmer					
Programmer: ELMSMIKE Mike Elms					
Type	Description		Count	Time Est.	
CLP	CL Program		2	3:00	
LF	Command		5	2:00	
PF	IBM i Physical file		3	1:00	
RPG	RPG program		8	92:00	
	Totals:		18	98:00	
Programmer: KLINE Steve Kline					
Type	Description		Count	Time Est.	
CLP	CL Program		1	3:00	
LF	Command		2	5:00	
PF	IBM i Physical file		6	5:00	
RPG	RPG program		2	12:00	
	Total		11	25:00	
Counts by Assigned Tasks					
Task APPR000101					
Type	Description		Count	Time Est.	
CLP	CL Program		2	3:00	
LF	Logical File		5	2:00	
PF	Physical File		3	1:00	
RPG	RPG Program		8	92:00	
	Total		18	98:00	
Task APPR000102					
Type	Description		Count	Time Est.	
CLP			3	3:00	
RPG			12	122:00	
	Total		15	125:00	
Counts by Status					
Count	Status	Desc.			
27	DTA	Data object			
2	OBS	Obsolete object			
3	OK	Already consolidated			
21	PRB	Problem - Needs further review			
12	XRE	Add to list by X-Ref			
0	*BLANK	No item status assigned			
Totals	65	ALL			
Counts by TurnOver type (overall)					
TurnOver	Object	Total			
Type	Counts	Time Est.			
CLP	51	120:00			
LF	19	10:00			
PF	3	1:00			
RPG	33	222:00			
:	:	:			
:	:	:			
Total	123 Objs	514:00 hrs			

OBJECT CHANGE IMPACT ANALYSIS REPORT

This report provides a complete list of object parameter changes. For example, for display type files, fields like **Restore display**, and for programs, fields like **Use adopted authority**. You can change the list of parameters that Synchronizer checks by reviewing and changing the **Object Change Reporting** table. For more information, see **Work with Synchronizer defaults**.

8/15/18 15:31:41	Object Change Impact Analysis Report	Your Company, Inc. Page: 1
Customer Modification Application . . . AP10 OUR changes to SoftSystems AP		
Vendor Base Application APV SoftSystem updates for AP		
Synchronizer Change Impact file SSR20		
Library MYLIB		
Selections:		
Status	*ALL	
Category	1111	
Programmer	ELMSMIKE	Last programmer . . . *ALL
Task	*ALL	Last Task *ALL
TurnOver type	*ALL	Object type *ALL

The command parameters allow you to select and filter the Object list by the variety parameters that are similar to the ones available on the **Change Impact file** panel.

8/15/18 15:31:41	Object Change Impact Analysis Report							Your Company, Inc. Page: 2	
Object	TurnOver	Old	New	Assigned	Project				
	Type	Library	Library	Pgmr	Task	Differences			
APCLP001	CLP	BASE10	BASE20	ELMSMIKE	APPR004301	USEADPAUT	RMVOBV		
APLF0001A	LF	BASE10D	BASE20D	ELMSMIKE	APPR004302	FRCRATIO	SHARE		
APLF0001B	LF	BASE10D	BASE20D	ELMSMIKE	APPR004302	LVLCHK			
APPF0001	PF	BASE10D	BASE20D	ELMSMIKE	APPR004302	SIZE	REUSEDLT	DLTPCT	
APRPG001	RPG	BASE10	BASE20	ELMSMIKE	APPR004301	SIZE	USRPRF	USEADPAUT	
:	:	:	:	:	:	:			
:	:	:	:	:	:	:			
:	:	:	:	:	:	:			
Object Changes:									
	Type	Objects	Parms						
	CLP	43	60						
	LF	14	16						
	PF	2	3						
	RPG	54	67						

Each object parameter found to be different between the old base objects and the new base is reported. If you want to eliminate some from the test, you can do so by updating the **Object Compare** Table.¹⁷

The sequence of the report is object name.

Counts of number of objects found to be different and total number of parameter differences are provided by TURNOVER® for iSeries type code.

¹⁷ See Setting Synchronizer Global Defaults (beginning on page 17) in this guide.

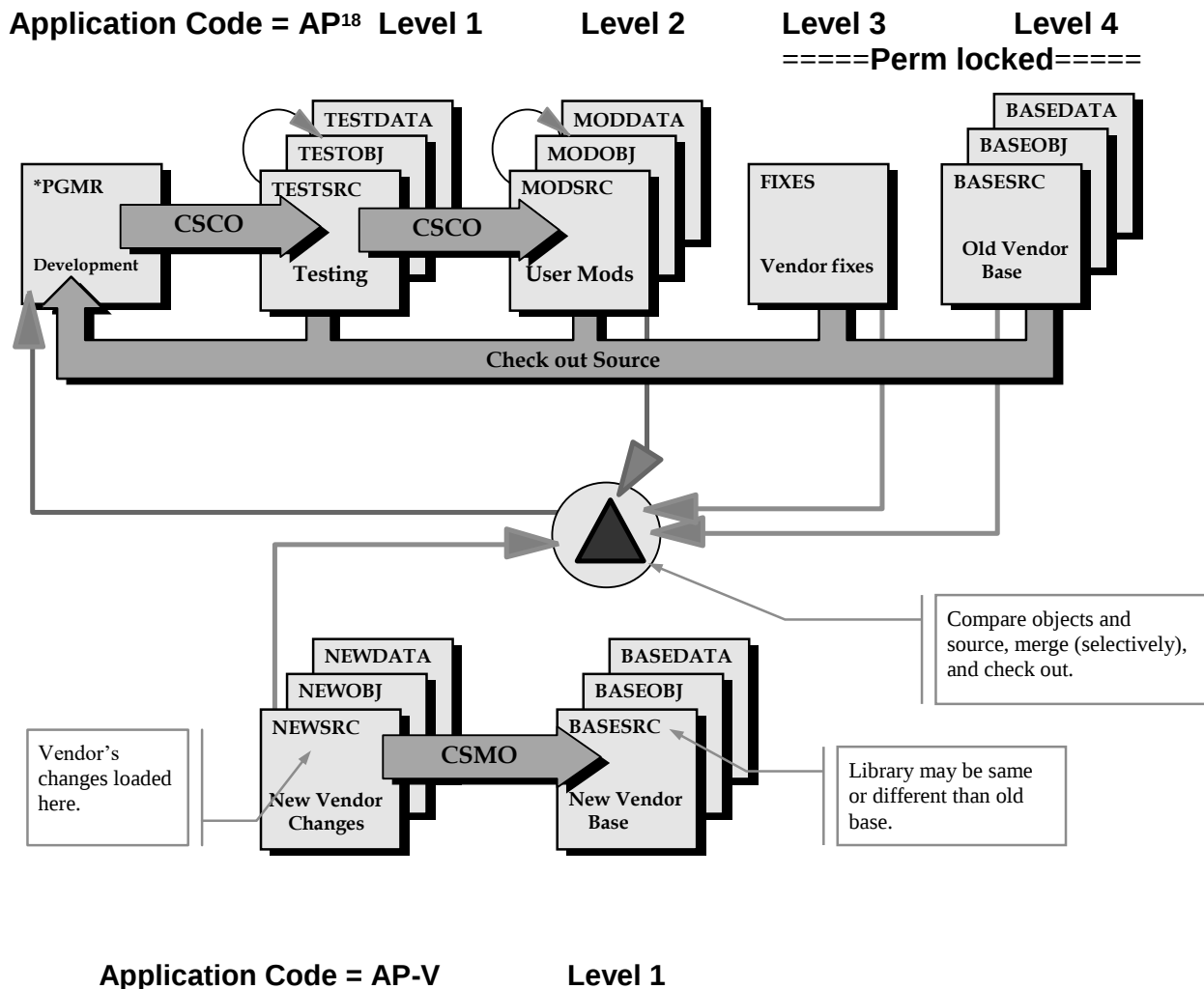
PROMOTION PROCESSING

This section describes issues related to promoting your custom modifications to testing levels and, ultimately, to a production level, and also describes how to promote the vendor's new changes or release into production.

When you are ready to promote your changes and the vendor's objects and source into production, follow the procedures described here to ensure the compatibility of all of the objects related to your application.

Refer to the diagram for **Case 2** (reproduced below).

Case 2: Two Working levels, Two Vendor levels (Perm locked)



¹⁸ Application codes used here are examples only. You can substitute your own codes.

Promoting Your Changes to Test

You have been working to revise programs and other objects in Development libraries. They are now synchronized with new vendor objects in the New Vendor Change libraries (refer to the example on the preceding page). Another programmer has retrofitted your custom modifications to several program objects and is now ready to promote these to **Testing**.

That programmer creates and submits a TURNOVER® for iSeries form, as with any other change intended for promotion to testing. However, there is one difference. When the form is submitted, this is how it would look on the **Submit TURNOVER® for iSeries Form** panel:

8/15/18 11:56:16		Submit Form		Your Company, Inc. SYSTEM: YOURSYS	
Form	1000131	Fix a program problem			
Application	AP	Release:	Version:	Level: 1	
Status	READY				
Type options, press Enter.					
Form schedule date	*CURRENT	*CURRENT, date			
Form schedule time	*CURRENT	*CURRENT, hhmmss			
Submit on hold	*NO	*YES, *NO			
1=Select					
Opt	Form Submit Option				
1	Error-check in batch				
1	Error-check interactively				
1	Submit form				
1	Check for checked-out objects not on form				
1	Work with form				
1	Work with form distribution defaults				
There is a Synchronizer change impact file associated with this form.					
F3=Exit F5=Refresh F10=Form approval F12=Cancel F15=Scheduling					

The **Use Synchronizer form library list** parameter only appears for Synchronizer project forms and indicates that TURNOVER® for iSeries will use the special library list generated for your application when you created your Synchronizer application definition.¹⁹ If you're promoting a change that is not related to the Synchronizer project, you should blank out the 1 next to this parameter. Otherwise, when you press **Enter**, TURNOVER® for iSeries will include the appropriate Synchronizer library list in the TURNOVER® for iSeries form header and use this library list instead of the one you usually use for your application changes.

¹⁹ See page 33 for an explanation of special library list considerations for Synchronizer projects.

Promoting Objects to Production

All of the programmers involved in the project have promoted their changes to **Level 1** for **Testing**. You have completed testing and are now ready to promote all of your changes (now in the **Testing** libraries) and the vendor's changes (in the **New Vendor Changes** libraries) into production. You must promote the Vendor's Changes first, before you promote your custom modifications, so that when you do, they will reference the new objects in the New Vendor's base, not the old version of the vendor's objects.

Promoting or Installing Vendor's Base Changes

You have a choice:

1. You may prefer to run a vendor's supplied installation procedure to install the vendor's changes in the New Vendor's Base (**New Vendor Base** in the diagram). In that case, you would run that procedure and, then promote all of your objects from **Testing** into production (**User Mods** libraries in the diagram) or;
2. You can have TURNOVER® for iSeries promote the vendor's source and objects from the **New Vendor Change** libraries into the **New Vendor Base** libraries.

If you chose the second alternative, the Synchronizer **CRTBASFORM** command, can be used to create the TURNOVER® for iSeries forms for promoting the vendor objects into production.

```
                                Create Base Forms (CRTBASFORM)

Type choices, press Enter.

Synchronizer change impact file .  *LAST          Name, *LAST, *SELECT
Library . . . . .                  *LIBL          Name, *LIBL, *CURLIB
Lines per form . . . . .           200            10-900
Include non-changed objects . .   *NO             *NO, *YES

F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

This command uses the selected change impact file to determine the application, release, version, and level to use when creating the form(s).

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Lines per form determines the maximum number of objects to be placed on each form. To preserve database relations, no form can START with a logical file. This means that the actual number of lines on a form may be slightly greater than the number selected. The maximum number of objects on any TURNOVER® for iSeries form is 999.

If ***NO** is selected for “Include non-changed objects”, then the form(s) will only include those objects that have actually been changed by the vendor. (This includes new vendor objects that are not in the Old Vendor Base). ***YES** should be specified if you want to recompile ALL source that was sent by the vendor, whether or not it was actually changed.

Each form you create is dependent upon the preceding form (objects are added in type code sequence order). All other form parameters are determined by the application definition.

Promoting your Custom Modifications

This procedure applies whether or not you use TURNOVER® for iSeries to promote the vendor’s new objects (as described in the preceding section).

Once you promote the vendor’s new objects into production (the **New Vendor base**), you must also promote all of your changes to production (into the **User Mods** libraries).

Keeping in mind that all of your changes have been tested thoroughly and they are ready to be promoted, you can view each of the TURNOVER® for iSeries forms used to promote your changed objects into the **Testing** libraries, copy them to the next level (**level 2** in our diagram) and then run these forms after you promote the vendor’s changes into the New Vendor Base libraries.

To view these forms, you can go to **Synchronizer Checklist (F10** on the **Work with Change Impact file** panel), select the item to **Build all TURNOVER® for iSeries forms for production level** on the checklist with option **7=Run item**.

```
8/15/18                      Work with Forms                      Your Company, Inc.
11:48:46
To reposition screen, enter form:_____

Filter by Programmer:_____      Appl/Rel/Ver/Lev:_____
      Status code:_____          Reference:APPR1143

2=Update form      3=Copy to new form      4=Cancel form      5=Display form
6=Print form      7=Run turnover      8=Display job      9=Release job

      Form      Description      Appl Rl/Vr Lev Run      Programmer Status
  3  200010      Sync Project chg grp1      A/P      1      8/15/18      DELANEY      RAN-OK
  3  200008      Sync Project chg grp2      A/P      1      8/15/18      ELSINOE      RAN-OK

F3=Exit  F4=List  F5=Refresh  F6=Add form      F23=More options  F24=More keys
```

You will then see the ***Work with TURNOVER® for iSeries Forms*** panel, filtered by your project task code.

Select each of the level one forms with option 3 and copy²⁰ them to the next level.

When you are ready, submit the TURNOVER® for iSeries forms to run with option 7.

UNICOM Systems, Inc. Caution

Because synchronization projects often involve many objects and a significant effort, we recommend that you schedule your promotions to run after you have completely saved all of your own production libraries and the vendor old libraries.

²⁰ For more about copying TURNOVER® for iSeries forms, see the section entitled ***Copying Forms*** in ***Chapter 6*** of the ***TURNOVER® for iSeries User Guide***.

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