



**Program Directory for
IBM COBOL and CICS Command Level
Conversion Aid for OS/390 & MVS & VM**

V2.1.0

Program Number 5648-B05

FMID H09F210

for Use with
z/OS V02.01.00 or later

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G110-5080-07

Note

Before using this information and the product it supports, be sure to read the general information under 7.0, "Notices" on page 42.

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1.0 Introduction

This program directory is intended for system programmers who are responsible for program installation and maintenance. It contains information about the material and procedures associated with the installation of IBM COBOL and CICS Command Level Conversion Aid for OS/390 & MVS & VM. This publication refers to IBM COBOL and CICS Command Level Conversion Aid for OS/390 & MVS & VM as CCCA.

The Program Directory contains the following sections:

- 2.0, "Program Materials" on page 4 identifies the basic program materials and documentation for CCCA.
- 3.0, "Program Support" on page 7 describes the IBM support available for CCCA.
- 4.0, "Program and Service Level Information" on page 9 lists the APARs (program level) and PTFs (service level) that have been incorporated into CCCA.
- 5.0, "Installation Requirements and Considerations" on page 10 identifies the resources and considerations that are required for installing and using CCCA.
- 6.0, "Installation Instructions" on page 20 provides detailed installation instructions for CCCA. It also describes the procedures for activating the functions of CCCA, or refers to appropriate publications.

The rest of this section only applies when CCCA is ordered via Shopz. It does not apply when you downloaded it from the web.

Select this link to go to the next section: 1.1, "CCCA Description" on page 2

Before installing CCCA, read the *CBPDO Memo To Users* and the *CBPDO Memo To Users Extension* that are supplied with this program in softcopy format and this program directory; then keep them for future reference. Section 3.2, "Preventive Service Planning" on page 7 tells you how to find any updates to the information and procedures in this program directory.

CCCA is supplied in a Custom-Built Product Delivery Offering (CBPDO, 5751-CS3). The program directory that is provided in softcopy format on the CBPDO tape is identical to the hardcopy format if one was included with your order. All service and HOLDDATA for CCCA are included on the CBPDO tape.

Do not use this program directory if you install CCCA with a SystemPac or ServerPac. When you use one of those offerings, use the jobs and documentation supplied with the offering. The offering will point you to specific sections of this program directory as needed.

1.1 CCCA Description

As supplied, CCCA helps you convert COBOL source:

- From one level of COBOL to another.
- To include the Millennium Language Extensions (MLE).

1.1.1 Converting from one level of COBOL to another

CCCA helps you convert COBOL source from:

Source language	Version	Release	Program number
DOS/VS COBOL	1	3	5746-CB1
OS/VS COBOL	1	2	5740-CB1
VS COBOL II	1	1, 2, or 3	5668-958
Any COBOL with CMPR2 compiler option			

to:

ANSI 85 target language	Version	Release	Program number
VS COBOL II	1	4	5668-958
COBOL for VSE/ESA ¹	1	1	5686-068
COBOL for MVS & VM ¹	1	2	5688-197
COBOL for OS/390 & VM ¹	2	1	5648-A25
COBOL for OS/390 & VM ¹	2	2	5648-A25
Enterprise COBOL for z/OS and OS/390 ¹	3	1	5655-G53
Enterprise COBOL for z/OS and OS/390 ¹	3	2	5655-G53

Note:

1. MLE conversion option can be used.
-

Figure 1. COBOL source and target levels that CCCA can convert.

CCCA identifies COBOL language elements and CICS statements in the input source programs that are:

- Not supported by the target language
- or
- Supported in a different manner

then:

- Converts them to the equivalent in the target language
- or
- Removes them
- or
- Flags them

1.1.2 Including Millennium Language Extensions (MLE)

You can select an option within CCCA so that your COBOL programs are converted to include MLE.

If you do choose this option, CCCA will perform the MLE conversion *in addition to* any other conversion required for converting to a different level of COBOL. The level of COBOL to which you are converting must support MLE.

If your program has been written using a level of COBOL that *supports* MLE but the program source does not *include* MLE, you can use CCCA to perform the MLE conversion only. This applies to the following levels of COBOL:

- COBOL for VSE/ESA
- COBOL for MVS & VM
- COBOL for OS/390 & VM
- Enterprise COBOL for z/OS and OS/390

(In this case, you specify the same level of COBOL for both the source and target languages and select the MLE conversion option.)

1.2 CCCA FMIDs

CCCA consists of the following FMIDs:

H09F210

2.0 Program Materials

An IBM program is identified by a program number. The program number for CCCA is 5648-B05.

Basic Machine-Readable Materials are materials that are supplied under the base license and are required for the use of the product.

The program announcement material describes the features supported by CCCA. Ask your IBM representative for this information if you have not already received a copy.

2.1 Basic Machine-Readable Material

The distribution medium for this program is physical media or downloadable files. This program is in SMP/E RELFILE format and is installed by using SMP/E. See 6.0, "Installation Instructions" on page 20 for more information about how to install the program.

The rest of this section only applies when CCCA is ordered via Shopz. It does not apply when you downloaded it from the web.

Select this link to go to the next section: 2.2, "Optional Machine-Readable Material" on page 5

You can find information about the physical media for the basic machine-readable materials for CCCA in the *CBPDO Memo To Users Extension*.

Figure 2 describes the program file content for CCCA. You can refer to the *CBPDO Memo To Users Extension* to see where the files reside on the tape.

Notes:

1. The data set attributes in this table must be used in the JCL of jobs that read the data sets. However, because the data sets are in IEBCOPY unloaded format, their actual attributes might be different.
2. If any RELFILEs are identified as PDSEs, ensure that SMPTLIB data sets are allocated as PDSEs.

Figure 2 (Page 1 of 2). Program File Content

Name	ORG	RECFM	RECL	BLK SIZE
SMPMCS	SEQ	FB	80	6400
IBM.H09F210.F1	PDS	FB	80	8800
IBM.H09F210.F2	PDS	VB	1028	8800
IBM.H09F210.F3	PDS	U	0	6144

Figure 2 (Page 2 of 2). Program File Content

Name	O R G	R E C F M	L R E C L	BLK SIZE
IBM.H09F210.F4	PDS	FB	80	8800
IBM.H09F210.F5	PDS	FB	80	8800
IBM.H09F210.F6	PDS	FB	80	8800
IBM.H09F210.F7	PDS	FB	80	8800
IBM.H09F210.F8	PDS	FB	80	8800
IBM.H09F210.F9	PDS	FB	80	8800
IBM.H09F210.F10	PDS	FB	80	8800

2.2 Optional Machine-Readable Material

No optional machine-readable materials are provided for CCCA.

2.3 Program Publications

The following sections identify the basic publications for CCCA.

Figure 3 identifies the basic unlicensed program publications for CCCA. Those that are in softcopy format publications can be obtained from the IBM Publications Center website at <http://www.ibm.com/shop/publications/order/>.

Figure 3. Basic Material: Unlicensed

Publication Title	Form Number	Media Format
<i>IBM COBOL and CICS Command Level Conversion Aid for OS/390 & MVS & VM User's Guide</i>	SC16-9400	See note ¹
<i>IBM COBOL and CICS Command Level Conversion Aid for OS/390 & MVS & VM Licensed Program Specifications</i>	GC26-9407	See note ¹
Note:		
1. These, and other, publications can be obtained from the CCCA online library, http://www-01.ibm.com/support/docview.wss?uid=swg27048563 .		

2.3.1 Optional Program Publications

No optional publications are provided for CCCA.

2.4 Program Source Materials

No program source materials or viewable program listings are provided for CCCA.

2.5 Publications Useful During Installation

You might want to use the publications listed in Figure 4 during the installation of CCCA.

<i>Figure 4. Publications Useful During Installation</i>	
Publication Title	Form Number
<i>IBM SMP/E for z/OS User's Guide</i>	SA22-7773
<i>IBM SMP/E for z/OS Commands</i>	SA22-7771
<i>IBM SMP/E for z/OS Reference</i>	SA22-7772
<i>IBM SMP/E for z/OS Messages, Codes, and Diagnosis</i>	GA22-7770

Note:

- IBM Publications Center: <https://www.ibm.com/shop/publications/order>
- IBM Knowledge Center: <https://www.ibm.com/support/knowledgecenter>

3.0 Program Support

This section describes the IBM support available for CCCA.

3.1 Program Services

Contact your IBM representative for specific information about available program services.

3.2 Preventive Service Planning

Before you install CCCA, make sure that you have reviewed the current Preventive Service Planning (PSP) information. Review the PSP Bucket for General Information, Installation Documentation, and the Cross Product Dependencies sections. For the Recommended Service section, instead of reviewing the PSP Bucket, it is recommended you use the IBM.ProductInstall-RequiredService fix category in SMP/E to ensure you have all the recommended service installed. Use the **FIXCAT(IBM.PRODUCTINSTALL-REQUIRESERVICE)** operand on the **APPLY CHECK** command. See 6.1.13, "Perform SMP/E APPLY" on page 28 for a sample APPLY command

If you obtained CCCA as part of a CBPDO, HOLDDATA is included.

If the CBPDO for CCCA is older than two weeks by the time you install the product materials, you can obtain the latest PSP Bucket information by going to the following website:

<http://www14.software.ibm.com/webapp/set2/psearch/search?domain=psp>

You can also use S/390 SoftwareXcel or contact the IBM Support Center to obtain the latest PSP Bucket information.

For program support, access the Software Support Website at <http://www-01.ibm.com/software/support/>.

PSP Buckets are identified by UPGRADEs, which specify product levels; and SUBSETs, which specify the FMIDs for a product level. The UPGRADE and SUBSET values for CCCA are included in Figure 5.

UPGRADE	SUBSET	Description
CCCA210	H09F210/0321	CCCA

3.3 Statement of Support Procedures

Report any problems which you feel might be an error in the product materials to your IBM Support Center. You may be asked to gather and submit additional diagnostics to assist the IBM Support Center in their analysis.

Figure 6 on page 8 identifies the component IDs (COMPID) for CCCA.

<i>Figure 6. Component IDs</i>			
FMID	COMPID	Component Name	RETAIN Release
H09F210	5648B0500	CCCA	210

4.0 Program and Service Level Information

This section identifies the program and relevant service levels of CCCA. The program level refers to the APAR fixes that have been incorporated into the program. The service level refers to the PTFs that have been incorporated into the program.

This program is at Service level 0321.

4.1 Program Level Information

No APARs have been incorporated into CCCA.

4.2 Service Level Information

PTFs containing APAR fixes against this release of CCCA have been incorporated into this product package. For a list of included PTFs, examine the ++VER statement in the product's SMPMCS.

Frequently check the CCCA PSP Bucket for HIPER and SPECIAL attention PTFs against all FMIDs that you must install. You can also receive the latest HOLDDATA, then add the **FIXCAT(IBM.PRODUCTINSTALL-REQUIRESERVICE)** operand on your **APPLY CHECK** command. This will allow you to review the recommended and critical service that should be installed with your FMIDs.

5.0 Installation Requirements and Considerations

The following sections identify the system requirements for installing and activating CCCA. The following terminology is used:

- *Driving system*: the system on which SMP/E is executed to install the program.
The program might have specific operating system or product level requirements for using processes, such as binder or assembly utilities during the installation.
- *Target system*: the system on which the program is configured and run.
The program might have specific product level requirements, such as needing access to the library of another product for link-edits. These requirements, either mandatory or optional, might directly affect the element during the installation or in its basic or enhanced operation.

In many cases, you can use a system as both a driving system and a target system. However, you can make a separate IPL-able clone of the running system to use as a target system. The clone must include copies of all system libraries that SMP/E updates, copies of the SMP/E CSI data sets that describe the system libraries, and your PARMLIB and PROCLIB.

Use separate driving and target systems in the following situations:

- When you install a new level of a product that is already installed, the new level of the product will replace the old one. By installing the new level onto a separate target system, you can test the new level and keep the old one in production at the same time.
- When you install a product that shares libraries or load modules with other products, the installation can disrupt the other products. By installing the product onto a separate target system, you can assess these impacts without disrupting your production system.

5.1 Driving System Requirements

This section describes the environment of the driving system required to install CCCA.

5.1.1 Machine Requirements

The driving system can run in any hardware environment that supports the required software.

5.1.2 Programming Requirements

Figure 7. Driving System Software Requirements

Program Number	Product Name	Minimum VRM	Minimum Service Level will satisfy these APARs	Included in the shipped product?
5650-ZOS	z/OS	V02.01.00 or higher	N/A	No
Note: The minimum z/OS level is either what is listed in the table, or the currently minimum supported OS level, whichever is the most recent.				

Note: SMP/E is a requirement for Installation and is an element of z/OS.

Note: Installation might require migration to new z/OS releases to be service supported. See http://www-03.ibm.com/systems/z/os/zos/support/zos_eos_dates.html.

5.2 Target System Requirements

This section describes the environment of the target system required to install and use CCCA.

CCCA installs in the z/OS (Z038) SREL.

5.2.1 Machine Requirements

The target system can run in any hardware environment that supports the required software.

5.2.2 Programming Requirements

5.2.2.1 Installation Requisites

Installation requisites identify products that are required and *must* be present on the system or products that are not required but *should* be present on the system for the successful installation of this product.

Mandatory installation requisites identify products that are required on the system for the successful installation of this product. These products are specified as PREs or REQs.

CCCA has no mandatory installation requisites.

Conditional installation requisites identify products that are *not* required for successful installation of this product but can resolve such things as certain warning messages at installation time. These products are specified as IF REQs.

CCCA has no conditional installation requisites.

5.2.2.2 Operational Requisites

Operational requisites are products that are required and *must* be present on the system or products that are not required but *should* be present on the system for this product to operate all or part of its functions.

Mandatory operational requisites identify products that are required for this product to operate its basic functions. These products are specified as PREs or REQs.

<i>Figure 8. Target System Mandatory Operational Requisites</i>	
Program Number	Product Name and Minimum VRM/Service Level
	A SORT program capable of being used in conjunction with the SORT verb of VS COBOL II Release 4 for making the conversion management reports.

CCCA is capable of working with select older COBOL and operating system levels that are out of support.

<i>Figure 9. Target System Out-of-support Operational Requisites</i>	
Program Number	Product Name and Minimum VRM/Service Level
5655-042	ISPF Version 4.2 or higher
Any one of the following:	
5688-022	VS COBOL II Library V1R4 or higher
5688-198	Language Environment/370 V1 or higher
5647-A01	Language Environment for OS/390 Version 2 or higher
5694-A01	Language Environment for z/OS Version 1 or higher

Conditional operational requisites identify products that are *not* required for this product to operate its basic functions but are required at run time for this product to operate specific functions. These products are specified as IF REQs.

<i>Figure 10. Target System Conditional Operational Requisites</i>		
Program Number	Product Name and Minimum VRM/Service Level	Function
5740-CB1	OS/VS COBOL Compiler Release 2.3 or higher	Converting EXEC CICS statements
5688-023	VS COBOL II Compiler V1R4 or higher	Converting EXEC CICS statements
5688-197	COBOL/370 R1 or higher	Converting EXEC CICS statements

5.2.2.3 Toleration/Coexistence Requisites

Toleration/coexistence requisites identify products that must be present on sharing systems. These systems can be other systems in a multisystem environment (not necessarily sysplex), a shared DASD environment (such as test and production), or systems that reuse the same DASD environment at different time intervals.

CCCA has no toleration/coexistence requisites.

5.2.2.4 Incompatibility (Negative) Requisites

Negative requisites identify products that must *not* be installed on the same system as this product.

CCCA has no negative requisites.

5.2.3 DASD Storage Requirements

CCCA libraries can reside on all supported DASD types.

Figure 11 lists the total space that is required for each type of library.

<i>Figure 11. Total DASD Space Required by CCCA</i>		
Library Type	Total Space Required in 3390 Trks	Description
Target	254 Tracks	
Distribution	254 Tracks	
Web Download	280 Tracks	This row only applies when CCCA is downloaded from the web. It does not apply when you ordered it via Shopz. These are temporary data sets, which can be removed after the SMP/E install.

Notes:

1. For non-RECFM U data sets, IBM recommends using system-determined block sizes for efficient DASD utilization. For RECFM U data sets, IBM recommends using a block size of 32760, which is most efficient from the performance and DASD utilization perspective.
2. Abbreviations used for data set types are shown as follows.
 - U** Unique data set, allocated by this product and used by only this product. This table provides all the required information to determine the correct storage for this data set. You do not need to refer to other tables or program directories for the data set size.

- S** Shared data set, allocated by this product and used by this product and other products. To determine the correct storage needed for this data set, add the storage size given in this table to those given in other tables (perhaps in other program directories). If the data set already exists, it must have enough free space to accommodate the storage size given in this table.
- E** Existing shared data set, used by this product and other products. This data set is *not* allocated by this product. To determine the correct storage for this data set, add the storage size given in this table to those given in other tables (perhaps in other program directories). If the data set already exists, it must have enough free space to accommodate the storage size given in this table.

If you currently have a previous release of this product installed in these libraries, the installation of this release will delete the old release and reclaim the space that was used by the old release and any service that had been installed. You can determine whether these libraries have enough space by deleting the old release with a dummy function, compressing the libraries, and comparing the space requirements with the free space in the libraries.

For more information about the names and sizes of the required data sets, see 6.1.11, "Allocate SMP/E Target and Distribution Libraries" on page 27.

3. All target and distribution libraries listed have the following attributes:

- The default name of the data set can be changed.
- The default block size of the data set can be changed.
- The data set can be merged with another data set that has equivalent characteristics.
- The data set can be either a PDS or a PDSE.

4. All target libraries listed have the following attributes:

- These data sets can be SMS-managed, but they are not required to be SMS-managed.
- These data sets are not required to reside on the IPL volume.
- The values in the "Member Type" column are not necessarily the actual SMP/E element types that are identified in the SMPMCS.

5. All target libraries that are listed and contain load modules have the following attributes:

- These data sets can be in the LPA, but they are not required to be in the LPA.
- These data sets can be in the LNKLST.
- These data sets are not required to be APF-authorized.

The following figures describe the target and distribution libraries required to install CCCA. The storage requirements of CCCA must be added to the storage required by other programs that have data in the same library.

Note: Use the data in these tables to determine which libraries can be merged into common data sets. In addition, since some ALIAS names may not be unique, ensure that no naming conflicts will be introduced before merging libraries.

Figure 12. Storage Requirements for CCCA Target Libraries

Library DDNAME	Member Type	Target Volume	T Y P E	O R G	R E C F M	L R E C L	No. of 3390 Trks	No. of DIR Blks
SABJCLST	CLIST	ANY	S	PDS	FB	80	10	2
SABJLCP	Source	ANY	S	PDS	FB	80	101	20
SABJMLIB	Messages	ANY	S	PDS	FB	80	2	2
SABJMOD1	Load Modules	ANY	S	PDS	U	0	67	16
SABJPLIB	Panels	ANY	S	PDS	FB	80	17	6
SABJSAM1	Samples	ANY	S	PDS	FB	80	9	20
SABJSAM2	Data	ANY	S	PDS	FB	80	43	20
SABJSLIB	Skeletons	ANY	S	PDS	FB	80	4	2
SABJTLIB	Tables	ANY	S	PDS	FB	80	1	1

Figure 13. Storage Requirements for CCCA Distribution Libraries

Library DDNAME	T Y P E	O R G	R E C F M	L R E C L	No. of 3390 Trks	No. of DIR Blks
AABJCLST	S	PDS	FB	80	10	2
AABJLCP	S	PDS	FB	80	101	20
AABJMLIB	S	PDS	FB	80	2	2
AABJMOD1	S	PDS	U	0	67	16
AABJPLIB	S	PDS	FB	80	17	6
AABJSAM1	S	PDS	FB	80	9	20
AABJSAM2	S	PDS	FB	80	43	20
AABJSLIB	S	PDS	FB	80	4	2
AABJTLIB	S	PDS	FB	80	1	1

The following figures list data sets that are not used by SMP/E, but are required for CCCA to run.

Figure 14. Shared VSAM data sets

Data Set Name	T Y P E	O R G A N I Z A T I O N	R E C O R D S	L R E C O R D S	No. of 3390 Trks	No. of DIR Blks
<tarprfx>.MESSAGE.ABJ	S	VSAM			30	
<tarprfx>.DRIVEN.ABJ	S	VSAM			75	
<tarprfx>.TABLE.ABJ	S	VSAM			15	
<tarprfx>.LCPWORDS.ABJ	S	VSAM			15	
Note: <tarprfx> is the prefix to the shared VSAM data sets.						

Figure 15. Private VSAM data sets

Data Set Name	T Y P E	O R G A N I Z A T I O N	R E C O R D S	L R E C O R D S	No. of 3390 Trks	No. of DIR Blks
<hlq>.TOKEN.ABJ	U	VSAM			2	
<hlq>.CONTROL.ABJ	U	VSAM			30	
<hlq>.CHANGE.ABJ	U	VSAM			15	
<hlq>.DRWORK.ABJ	U	VSAM			15	
<hlq>.LCPWORK.ABJ	U	VSAM			15	
Note: <hlq> is the prefix to the private VSAM data sets.						

Before starting the installation process, check with your system programmer to verify the following assumptions for VSAM and ISPF files:

- All data set names (VSAM and non-VSAM, work or permanent) use ISPF standard naming conventions (three-level names). In the CCCA Environment Options panel, you may specify a multi-level prefix.
- Any programmer may convert COBOL programs, and accordingly each programmer has a set of private VSAM and non-VSAM files for that purpose.

These files are prefixed by the userid and are not to be shared; they are used for each conversion in read and write mode. Multiple simultaneous uses could give unpredictable results.

The conversions are to be run one at a time for each userid, but conversions prefixed by different userids may run simultaneously.

- One group of files is created with the reference shared files; the prefix of this group is <hlq> and may be overridden.

This group contains, for example, the LCP source, the LCP intermediate text (the DRIVEN file), the MESSAGE file, the reserved word table. These files should be protected against unauthorized use.

- If other programmers will be using CCCA, private files will be allocated for each new userid via the environmental setup panel within CCCA.

These files are:

<hlq>.TOKEN.ABJ
<hlq>.CONTROL.ABJ
<hlq>.CHANGE.ABJ
<hlq>.DRWORK.ABJ
<hlq>.LCPWORK.ABJ

Each user of this product require their own private copy of the following non-shared VSAM datasets. The <hlq> will need to be changed to be unique to each user of this product.

TOKEN

This file contains the program tokens and should be tailored for the largest conversion (including the expansion of copy modules).

You can assume that the average number of tokens on a COBOL program line is 10. However, if there is a large number of REMARKS and NOTES, the size of the token file should be increased. For example, if the largest program in the installation contains 20,000 lines of COBOL statements, including the expansion of the COPY statements, the token file should be at least 200,000 records (52 bytes). The dataset name is <hlq>.TOKEN.ABJ

CONTROL

This file contains the options used to run the conversion. It also contains statistics about programs, files, copy, and calls in the programs.

The size of this file is dependent on a number of variable factors. The size is approximately the total of:

- The number of programs to be converted
- The number of files in these programs
- The number of COPY statements in these programs
- The number of CALLs in these programs
- An additional 20%.

The dataset name is <hlq>.CONTROL.ABJ

CHANGE

This file contains the changes to be performed to the source program. During phase 3 of conversion, it is merged with the old source code of the program. The dataset name is <hlq>.CHANGE.ABJ

DRWORK

The work file used during conversion.

The dataset name is <hlq>.DRWORK.ABJ

The DRWORK file is used to hold tokens (qualifiers) from the Date Identification File (DIF) for the program currently being converted. The size of this file is specified in the target library SABJSLIB(ABJSETS).

The initial allocation limits the number of qualifiers in the DIF for this program to 3000 (where, for example, A OF B OF C is three records). You can increase this value to cater for a greater number of qualifiers.

The DRWORK file definition is held in the skeleton ABJSETS in the target library SABJSLIB. To increase the size of this file:

1. Edit the skeleton ABJSETS in the target library SABJSLIB
2. Locate the string **(name(&ABJVSPR..DRWORK.ABJ) +**
3. Following this string change the value in the RECORDS parameter to a larger value.

LCPWORK

The work file for the LCP Compiler. The dataset name is <hlq>.LCPWORK.ABJ

The sizes of the following shared VSAM files do not need to be changed.

ABJRPDRV

Intermediate text produced by the LCP Compiler. The dataset name is <hlq>.DRIVEN.ABJ

ABJRPTBL

The reserved word table formed by the merging of OS/VS-DOS/VS COBOL and VS COBOL II reserved word tables. The dataset name is <hlq>.TABLE.ABJ

ABJRPLWD

The table of LCP Compiler reserved words. The dataset name is <hlq>.LCPWORDS.ABJ

ABJRPMSG

The diagnostic messages. The dataset name is <hlq>.MESSAGE.ABJ

The following figure lists the storage requirements for the work files required for each user. These are temporary files created during conversion and are deleted at the end of the job.

<i>Figure 16. Private work data sets</i>						
Data Set Name	T Y P E	O R G	R E C O R D S M	L R E C O R D S L	No. of 3390 Trks	No. of DIR Blks
<tmphlq>.TMPSRC	U	SEQ	FB	96	15	
<tmphlq>.POINTER	U	SEQ	FB	20	15	
Note: <tmphlq> is the prefix to the private work data sets.						

The rest of this section only applies when CCCA is downloaded from the web. It does not apply when you ordered it via Shopz.

Select this link to go to the next section: 5.3, "FMIDs Deleted" on page 19

The following figures list data sets that are not used by CCCA, but are required as input for SMP/E.

Figure 17. Storage Requirements for CCCA Web Download Data Sets

Data Set Name	T Y P E	O R G	R E C F M	L R E C L	No. of 3390 Trks	No. of DIR Blks
hlq.IBM.H09F210.F1	U	PDS	FB	80	12	7
hlq.IBM.H09F210.F2	U	PDS	FB	80	43	6
hlq.IBM.H09F210.F3	U	PDS	VB	8796	14	13
hlq.IBM.H09F210.F4	U	PDS	U	0	8	7
hlq.IBM.H09F210.F5	U	PDS	FB	80	13	10
hlq.IBM.H09F210.F6	U	PDS	FB	80	2	6
hlq.IBM.H09F210.F7	U	PDS	VB	8796	65	23
hlq.IBM.H09F210.F8	U	PDS	U	0	4	6
hlq.IBM.H09F210.F9	U	PDS	VB	8796	2	6
hlq.IBM.H09F210.F10	U	PDS	U	0	2	6
hlq.IBM.H09F210.SMPMCS	U	SEQ	FB	80	2	N/A
z/OS UNIX file system	U	zFS	N/A	N/A	54	N/A
Note: These are temporary data sets, which can be removed after the SMP/E install.						

5.3 FMIDs Deleted

Installing CCCA might result in the deletion of other FMIDs. To see which FMIDs will be deleted, examine the ++VER statement in the SMPMCS of the product.

If you do not want to delete these FMIDs at this time, install CCCA into separate SMP/E target and distribution zones.

Note: These FMIDs are not automatically deleted from the Global Zone. If you want to delete these FMIDs from the Global Zone, use the SMP/E REJECT NOFMID DELETEFMID command. See the SMP/E Commands book for details.

5.4 Special Considerations

CCCA has no special considerations for the target system.

6.0 Installation Instructions

This chapter describes the installation method and the step-by-step procedures to install and to activate the functions of CCCA.

Please note the following points:

- If you want to install CCCA into its own SMP/E environment, consult the SMP/E manuals for instructions on creating and initializing the SMP/CSI and the SMP/E control data sets.
- You can use the sample jobs that are provided to perform part or all of the installation tasks. The SMP/E jobs assume that all DDDEF entries that are required for SMP/E execution have been defined in appropriate zones.
- You can use the SMP/E dialogs instead of the sample jobs to accomplish the SMP/E installation steps.

6.1 Installing CCCA

6.1.1 SMP/E Considerations for Installing CCCA

Use the SMP/E RECEIVE, APPLY, and ACCEPT commands to install this release of CCCA.

6.1.2 SMP/E Options Subentry Values

The recommended values for certain SMP/E CSI subentries are shown in Figure 18. Using values lower than the recommended values can result in failures in the installation. DSSPACE is a subentry in the GLOBAL options entry. PEMAX is a subentry of the GENERAL entry in the GLOBAL options entry. See the SMP/E manuals for instructions on updating the global zone.

Figure 18. SMP/E Options Subentry Values

Subentry	Value	Comment
DSSPACE	(1200,1200,1400)	Space allocation
PEMAX	SMP/E Default	IBM recommends using the SMP/E default for PEMAX.

6.1.3 SMP/E CALLLIBS Processing

CCCA uses the CALLLIBS function provided in SMP/E to resolve external references during installation. When CCCA is installed, ensure that DDDEFs exist for the following libraries:

- SISPLOAD
- SCEELKED

Note: CALLLIBS uses the previous DDDEFs only to resolve the link-edit for CCCA. These data sets are not updated during the installation of CCCA.

6.1.4 Overview of the installation steps

Overview of steps required to install IBM COBOL and CICS Command Level Conversion Aid for OS/390 & MVS & VM.

1. Allocate file system to hold web download package
(only applicable for web download, not Shopz orders)
2. Upload the web download package to the host
(only applicable for web download, not Shopz orders)
3. Extract and expand the compressed SMPMCS and RELFILES
(only applicable for web download, not Shopz orders)

Select this link to skip the web download specific steps: 6.1.8, “Sample Jobs” on page 25

4. Create SMP/E environment (optional)
5. Perform SMP/E RECEIVE
6. Allocate SMP/E target and distribution libraries
7. Allocate and mount z/OS UNIX file system (optional)
8. Allocate z/OS UNIX paths
9. Create DDDEF entries
10. Perform SMP/E APPLY
11. Perform SMP/E ACCEPT
12. Run REPORT CROSSZONE

6.1.5 Allocate file system to hold web download package

This section only applies when CCCA is downloaded from the web. It does not apply when it is ordered via Shopz.

Select this link to skip the web download specific steps: 6.1.8, “Sample Jobs” on page 25

The SMP/E input data sets to install IBM COBOL and CICS Command Level Conversion Aid for OS/390 & MVS & VM are provided as compressed files in H09F210.pax.Z, which must be uploaded to z/OS as a z/OS UNIX file. You can either create a new z/OS UNIX file system (zFS) or create a new directory in an existing file system to place H09F210.pax.Z.

You can use the following sample JCL to create a new file system, and directory, for the download package.

```

//FILESYS JOB <job information>
//*
//* - Provide valid job card information
//* - Change:
//* @zfs_path@
//* -----1-----2-----3-----4-----5
//*          - To the absolute z/OS UNIX path for the download
//*            package (starting with /)
//*          - Maximum length is 50 characters
//*          - Do not include a trailing /
//* @zfs_dsn@
//*          - To your file system data set name
//*
//* Your userid MUST be defined as a SUPERUSER to successfully
//* run this job
//*
//CREATE EXEC PGM=IDCAMS,REGION=0M,COND=(0,LT)
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
  DEFINE CLUSTER ( -
    NAME(@zfs_dsn@) -
    TRK(54 10) -
    LINEAR -
    SHAREOPTIONS(3) -
  )
//*
//          SET ZFSDSN=@zfs_dsn@
//FORMAT EXEC PGM=IOEAGFMT,REGION=0M,COND=(0,LT),
//          PARM='-aggregate &ZFSDSN -compat'
//*STEPLIB DD DISP=SHR,DSN=IOE.SIOELMOD before z/OS 1.13
//*STEPLIB DD DISP=SHR,DSN=SYS1.SIEALNKE from z/OS 1.13
//SYSPRINT DD SYSOUT=*
//*
//MOUNT EXEC PGM=IKJEFT01,REGION=0M,COND=(0,LT)
//SYSEXEC DD DISP=SHR,DSN=SYS1.SBPXEXEC
//SYSTSPRT DD SYSOUT=*
//SYSTSIN DD *
  PROFILE MSGID WTPMSG
  oshell umask 0022; +
  mkdir -p @zfs_path@
  MOUNT +
  FILESYSTEM('@zfs_dsn@') +
  MOUNTPOINT('@zfs_path@') +
  MODE(RDWR) TYPE(ZFS) PARM('AGGRGROW')
//*

```

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.1.6 Upload the web download package to the host

This section only applies when CCCA is downloaded from the web. It does not apply when it is ordered via Shopz.

Select this link to skip the web download specific steps: 6.1.8, "Sample Jobs" on page 25

Upload the H09F210.readme.txt file in text format and the H09F210.pax.Z file in binary format from your workstation to the z/OS UNIX file system.

In the following sample dialog, we use FTP from a Microsoft Windows command line to do the transfer. Commands or other information entered by the user are in bold, and the following values are assumed:

<i>Figure 19. User Entered Values</i>	
User enters:	Values
mvsaddr	TCP/IP address or hostname of the z/OS system
tsouid	Your TSO user ID
tsopw	Your TSO password
d:	Location of the downloaded files
@zfs_path@	z/OS UNIX path where to store the files. This matches the @zfs_path@ variable you specified in the previous step.

```
C:\>ftp mvsaddr
Connected to mvsaddr.
220-FTPDI IBM FTP CS %version% at mvsaddr, %time% on %date%.
220 Connection will close if idle for more than 5 minutes.
User (mvsaddr:(none)): tsouid
331 Send password please.
Password: tsopw
230 tsouid is logged on. Working directory is "tsouid.".
ftp> cd @zfs_path@
250 HFS directory @zfs_path@ is the current working directory
ftp> ascii
200 Representation type is Ascii NonPrint
ftp> put d:\H09F210.readme.txt
200 Port request OK.
125 Storing data set @zfs_path@/H09F210.readme.txt
250 Transfer completed successfully.
ftp: 20412 bytes sent in 0.01 sec. (1366.67 Kb/s)
ftp> binary
200 Representation type is Image
ftp> put d:\H09F210.pax.Z
200 Port request OK.
125 Storing data set @zfs_path@/H09F210.pax.Z
250 Transfer completed successfully.
ftp: 1483776 bytes sent in 1.26 sec. (1040.52 Kb/s)
```

```
ftp> quit
221 Quit command received. Goodbye.
```

6.1.7 Extract and expand the compressed SMPMCS and RELFILES

This section only applies when CCCA is downloaded from the web. It does not apply when it is ordered via Shopz.

Select this link to skip the web download specific steps: [6.1.8, "Sample Jobs" on page 25](#)

The H09F210.readme.txt file uploaded in the previous step holds a sample JCL to expand the compressed SMPMCS and RELFILES from the uploaded H09F210.pax.Z file into data sets for use by the SMP/E RECEIVE job. The JCL is repeated here for your convenience.

- @zfs_path@ matches the variable you specified in the previous step.
- If the 'oshell' command gets a RC=256 and message "pax: checksum error on tape (got ee2e, expected 0)", then the archive file was not uploaded to the host in binary format.
- GIMUNZIP allocates data sets to match the definitions of the original data sets. You may encounter errors if your SMS ACS routines alter the attributes used by GIMUNZIP.
If this occurs, specify a non-SMS managed volume for the GIMUNZIP allocation of the data sets. For example:

```
<ARCHDEF archid="..."
    storclas="storage_class" volume="data_set_volume"
    newname="..."/>
```

```
//EXTRACT JOB <job information>
//*
//* - Provide valid job card information
//* - Change:
//*   @PREFIX@
//*   ----+-----1-----+-----2-----+
//*           - To your desired data set name prefix
//*           - Maximum length is 25 characters
//*           - This value is used for the names of the
//*             data sets extracted from the download-package
//*   @zfs_path@
//*   ----+-----1-----+-----2-----+-----3-----+-----4-----+-----5
//*           - To the absolute z/OS UNIX path for the
//*             download-package (starting with /)
//*           - Maximum length is 50 characters
//*           - Do not include a trailing /
//*
//UNPAX EXEC PGM=IKJEFT01,REGION=0M,COND=(0,LT)
//SYSEXEC DD DISP=SHR,DSN=SYS1.SBPXEXEC
//SYSTSPRT DD SYSOUT=*
//SYSTSIN DD *
```

```

oshell cd @zfs_path@/ ; +
pax -rvf H09F210.pax.Z
//*
//GIMUNZIP EXEC PGM=GIMUNZIP,REGION=0M,COND=(0,LT)
//*STEPLIB DD DISP=SHR,DSN=SYS1.MIGLIB
//SYSUT3 DD UNIT=SYSALLDA,SPACE=(CYL,(50,10))
//SYSUT4 DD UNIT=SYSALLDA,SPACE=(CYL,(25,5))
//SMPOUT DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
//SMPDIR DD PATHDISP=KEEP,
// PATH=@zfs_path@/'
//SYSIN DD *

<GIMUNZIP>
<ARCHDEF archid="IBM.H09F210.SMPMCS"
newname="@PREFIX@.IBM.H09F210.SMPMCS"/>
<ARCHDEF archid="IBM.H09F210.F1"
newname="@PREFIX@.IBM.H09F210.F1"/>
<ARCHDEF archid="IBM.H09F210.F2"
newname="@PREFIX@.IBM.H09F210.F2"/>
<ARCHDEF archid="IBM.H09F210.F3"
newname="@PREFIX@.IBM.H09F210.F3"/>
<ARCHDEF archid="IBM.H09F210.F4"
newname="@PREFIX@.IBM.H09F210.F4"/>
<ARCHDEF archid="IBM.H09F210.F5"
newname="@PREFIX@.IBM.H09F210.F5"/>
<ARCHDEF archid="IBM.H09F210.F6"
newname="@PREFIX@.IBM.H09F210.F6"/>
<ARCHDEF archid="IBM.H09F210.F7"
newname="@PREFIX@.IBM.H09F210.F7"/>
<ARCHDEF archid="IBM.H09F210.F8"
newname="@PREFIX@.IBM.H09F210.F8"/>
<ARCHDEF archid="IBM.H09F210.F9"
newname="@PREFIX@.IBM.H09F210.F9"/>
<ARCHDEF archid="IBM.H09F210.F10"
newname="@PREFIX@.IBM.H09F210.F10"/>
</GIMUNZIP>
//*
```

6.1.8 Sample Jobs

The following sample installation jobs are provided as part of the product to help you install CCCA:

<i>Figure 20 (Page 1 of 2). Sample Installation Jobs</i>			
Job Name	Job Type	Description	RELFILE
ABJSMPE	SMP/E	Sample job to create an SMP/E environment (optional)	IBM.H09F210.F1

Figure 20 (Page 2 of 2). Sample Installation Jobs

Job Name	Job Type	Description	RELFILE
ABJRECV	RECEIVE	Sample SMP/E RECEIVE job	IBM.H09F210.F1
ABJALLOC	ALLOCATE	Sample job to allocate target and distribution libraries	IBM.H09F210.F1
ABJDDDF	DDDEF	Sample job to define SMP/E DDDEFs	IBM.H09F210.F1
ABJAPLY	APPLY	Sample SMP/E APPLY job	IBM.H09F210.F1
ABJACPT	ACCEPT	Sample SMP/E ACCEPT job	IBM.H09F210.F1
<p>Note: When CCCA is downloaded from the web, the RELFILE data set name will be prefixed by your chosen high level qualifier, as documented in section 6.1.7, “Extract and expand the compressed SMPMCS and RELFILES” on page 24.</p>			

The rest of this section only applies when CCCA is ordered via Shopz. It does not apply when you downloaded it from the web.

Select this link to go to the next section: [6.1.9, “Create SMP/E environment \(optional\)” on page 27](#)

You can access the sample installation jobs by performing an SMP/E RECEIVE (refer to 6.1.10, “Perform SMP/E RECEIVE” on page 27) then copy the jobs from the RELFILES to a work data set for editing and submission. See Figure 20 on page 25 to find the appropriate relfile data set.

You can also copy the sample installation jobs from the tape or product files by submitting the following job. Depending on your distribution medium, use either the //TAPEIN or the //FILEIN DD statement and comment out or delete the other statement. Before you submit the job, add a job card and change the lowercase parameters to uppercase values to meet the requirements of your site.

```
//STEP1 EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//TAPEIN DD DSN=IBM.H09F210.F1,
// DISP=(OLD,KEEP),
// LABEL=(X,SL),
// VOL=SER=09F210,
// UNIT=tunit
//FILEIN DD DSN=IBM.H09F210.F1,
// DISP=SHR,
//* VOL=SER=filevol,
// UNIT=SYSALLDA
//OUT DD DSNAME=jc1-library-name,
// DISP=(NEW,CATLG,DELETE),
// SPACE=(TRK,(5,5,5)),
//* VOL=SER=dasdvol,
// UNIT=SYSALLDA
//SYSUT3 DD UNIT=SYSALLDA,SPACE=(CYL,(1,1))
//SYSIN DD *
COPY INDD=xxxxIN,OUTDD=OUT
/*
```


See the following information to update the statements in the previous sample:

TAPEIN:

tunit is the unit value that matches the product package.

x is the tape file number that indicates the location of the data set name on the tape.

See the documentation that is provided by CBPDO for the location of IBM.H09F210.F1 on the tape.

FILEIN:

filevol is the volume serial of the DASD device where the downloaded files reside.

OUT:

jcl-library-name is the name of the output data set where the sample jobs are stored.

dasdvol is the volume serial of the DASD device where the output data set resides. Uncomment the statement if a volume serial must be provided.

SYSIN:

xxxxIN is either TAPEIN or FILEIN depending on your input DD statement.

6.1.9 Create SMP/E environment (optional)

If you are using an existing CSI, do not run the sample job ABJSMPE.

If you choose to create a new SMP/E environment for this install, a sample job is provided or you may choose to use your own JCL. If you choose to use the sample job provided, edit and submit ABJSMPE. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.1.10 Perform SMP/E RECEIVE

If you have obtained CCCA as part of a CBPDO, use the RCVPDO job in the CBPDO RIMLIB data set to receive the CCCA FMIDs, service, and HOLDDATA that are included on the CBPDO package. For more information, see the documentation that is included in the CBPDO.

You can also choose to edit and submit sample job ABJRECV to perform the SMP/E RECEIVE for CCCA. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.1.11 Allocate SMP/E Target and Distribution Libraries

Edit and submit sample job ABJALLOC to allocate the SMP/E target and distribution libraries for CCCA. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.1.12 Create DDDEF Entries

Edit and submit sample job ABJDDDF to create DDDEF entries for the SMP/E target and distribution libraries for CCCA. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.1.13 Perform SMP/E APPLY

1. Ensure that you have the latest HOLDDATA; then edit and submit sample job ABJAPLY to perform an SMP/E APPLY CHECK for CCCA. Consult the instructions in the sample job for more information.

The latest HOLDDATA is available through several different portals, including <http://service.software.ibm.com/holdata/390holddata.html>. The latest HOLDDATA may identify HIPER and FIXCAT APARs for the FMIDs you will be installing. An APPLY CHECK will help you determine if any HIPER or FIXCAT APARs are applicable to the FMIDs you are installing. If there are any applicable HIPER or FIXCAT APARs, the APPLY CHECK will also identify fixing PTFs that will resolve the APARs, if a fixing PTF is available.

You should install the FMIDs regardless of the status of unresolved HIPER or FIXCAT APARs. However, do not deploy the software until the unresolved HIPER and FIXCAT APARs have been analyzed to determine their applicability. That is, before deploying the software either ensure fixing PTFs are applied to resolve all HIPER or FIXCAT APARs, or ensure the problems reported by all HIPER or FIXCAT APARs are not applicable to your environment.

To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do *not* bypass the PRE, ID, REQ, and IFREQ on the APPLY CHECK. The SMP/E root cause analysis identifies the cause only of *errors* and not of *warnings* (SMP/E treats bypassed PRE, ID, REQ, and IFREQ conditions as warnings, instead of errors).

Here are sample APPLY commands:

- a. To ensure that all recommended and critical service is installed with the FMIDs, receive the latest HOLDDATA and use the APPLY CHECK command as follows

```
APPLY S(fmid,fmid,...) CHECK
FORFMID(fmid,fmid,...)
SOURCEID(RSU*)
FIXCAT(IBM.ProductInstall-RequiredService)
GROUPEXTEND .
```

Some HIPER APARs might not have fixing PTFs available yet. You should analyze the symptom flags for the unresolved HIPER APARs to determine if the reported problem is applicable to your environment and if you should bypass the specific ERROR HOLDS in order to continue the installation of the FMIDs.

This method requires more initial research, but can provide resolution for all HIPERs that have fixing PTFs available and are not in a PE chain. Unresolved PEs or HIPERs might still exist and require the use of BYPASS.

- b. To install the FMIDs without regard for unresolved HIPER APARs, you can add the BYPASS(HOLDCLASS(HIPER)) operand to the APPLY CHECK command. This will allow you to install FMIDs even though one or more unresolved HIPER APARs exist. After the FMIDs are installed, use the SMP/E REPORT ERRSYSMODS command to identify unresolved HIPER APARs and any fixing PTFs.

```
APPLY S(fmid,fmid,...) CHECK
FORFMID(fmid,fmid,...)
SOURCEID(RSU*)
FIXCAT(IBM.ProductInstall-RequiredService)
GROUPEXTEND
BYPASS(HOLDCLASS(HIPER)) .
..any other parameters documented in the program directory
```

This method is quicker, but requires subsequent review of the Exception SYSMOD report produced by the REPORT ERRSYSMODS command to investigate any unresolved HIPERs. If you have received the latest HOLDDATA, you can also choose to use the REPORT MISSINGFIX command and specify Fix Category IBM.ProductInstall-RequiredService to investigate missing recommended service.

If you bypass HOLDs during the installation of the FMIDs because fixing PTFs are not yet available, you can be notified when the fixing PTFs are available by using the APAR Status Tracking (AST) function of ServiceLink or the APAR Tracking function of ResourceLink.

2. After you take actions that are indicated by the APPLY CHECK, remove the CHECK operand and run the job again to perform the APPLY.

Note: The GROUPEXTEND operand indicates that SMP/E applies all requisite SYSMODs. The requisite SYSMODS might be applicable to other functions.

Expected Return Codes and Messages from APPLY CHECK: You will receive a return code of 0 if this job runs correctly.

Expected Return Codes and Messages from APPLY: You will receive a return code of 0 if this job runs correctly.

6.1.14 Perform SMP/E ACCEPT

Edit and submit sample job ABJACPT to perform an SMP/E ACCEPT CHECK for CCCA. Consult the instructions in the sample job for more information.

To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do *not* bypass the PRE, ID, REQ, and IFREQ on the ACCEPT CHECK. The SMP/E root cause analysis identifies the cause of *errors* but not *warnings* (SMP/E treats bypassed PRE, ID, REQ, and IFREQ conditions as warnings rather than errors).

Before you use SMP/E to load new distribution libraries, it is recommended that you set the ACCJCLIN indicator in the distribution zone. In this way, you can save the entries that are produced from JCLIN in the distribution zone whenever a SYSMOD that contains inline JCLIN is accepted. For more information about the ACCJCLIN indicator, see the description of inline JCLIN in the SMP/E Commands book for details.

After you take actions that are indicated by the ACCEPT CHECK, remove the CHECK operand and run the job again to perform the ACCEPT.

Note: The GROUPEXTEND operand indicates that SMP/E accepts all requisite SYSMODs. The requisite SYSMODS might be applicable to other functions.

Expected Return Codes and Messages from ACCEPT CHECK: You will receive a return code of 0 if this job runs correctly.

If PTFs that contain replacement modules are accepted, SMP/E ACCEPT processing will link-edit or bind the modules into the distribution libraries. During this processing, the Linkage Editor or Binder might issue messages that indicate unresolved external references, which will result in a return code of 4 during the ACCEPT phase. You can ignore these messages, because the distribution libraries are not executable and the unresolved external references do not affect the executable system libraries.

Expected Return Codes and Messages from ACCEPT: You will receive a return code of 0 if this job runs correctly.

6.1.15 Run REPORT CROSSZONE

The SMP/E REPORT CROSSZONE command identifies requisites for products that are installed in separate zones. This command also creates APPLY and ACCEPT commands in the SMPPUNCH data set. You can use the APPLY and ACCEPT commands to install those cross-zone requisites that the SMP/E REPORT CROSSZONE command identifies.

After you install CCCA, it is recommended that you run REPORT CROSSZONE against the new or updated target and distribution zones. REPORT CROSSZONE requires a global zone with ZONEINDEX entries that describe all the target and distribution libraries to be reported on.

For more information about REPORT CROSSZONE, see the SMP/E manuals.

6.1.16 Cleaning Up Obsolete Data Sets, Paths, and DDDEFs

The web download data sets listed in Figure 17 on page 18 (section 5.2.3, “DASD Storage Requirements” on page 13) are temporary data sets. You can delete these data sets after you complete the SMP/E install.

6.2 Activating CCCA

The following sections detail customization steps that may be required.

Customization consists of:

- Creating shared VSAM Data Sets (required).
- Making CCCA libraries available for use under ISPF/PDF.

- Making CCCA libraries available for use under ISPF/PDF.
- Making CCCA available through an ISPF/PDF option menu.
- Making run-time library and COBOL compiler available.
- Making DB2* Libraries available if required.
- Informing all CCCA users of required details.
- Verifying storage requirements for "Private" data sets.

Note: In this section *<tarprfx>* refers to the value for Non-VSAM Shared Data sets.

6.2.1 Create Shared VSAM Data Sets

Edit and submit sample job *<tarprfx>.SABJSAM1(ABJFILES)* to define shared VSAM data sets for CCCA. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: This should issue a return code of zero and no error messages.

6.2.2 Make CCCA libraries available for use under ISPF/PDF

The member *<tarprfx>.SABJCLST(ABJSPF)* contains the names of libraries that are required to run the application under ISPF/PDF. Include the identified libraries in your current TSO Library concatenation for ISPF applications or have them allocated using ISPF LIBDEFS.

```

/*****/
/*  TABLE LIBRARY ALLOCATION          DD(ISPTLIB) */
/*****/

      '<tarprfx>.SABJTLIB'

/*****/
/*  PANEL LIBRARY ALLOCATION          DD(ISPLIB) */
/*****/

      '<tarprfx>.SABJPLIB'

/*****/
/*  MESSAGE LIBRARY ALLOCATION        DD(ISPMLIB) */
/*****/

      '<tarprfx>.SABJMLIB'

/*****/
/*  SKELETON LIBRARY ALLOCATION        DD(ISPSLIB) */
/*****/

      '<tarprfx>.SABJSLIB'

/*****/
/*  LOAD MODULE LIBRARY ALLOCATION     DD(ISPLLIB) */
/*****/

```

'<tarprfx>.SABJMOD1'

```
/******  
/* CLIST LIBRARY ALLOCATION --- CHECK IF THE */  
/* INSTALLATION IS FORMAT FB OR VB DD(SYSPROC) */  
/******
```

'<tarprfx>.SABJCLST'

Notes:

1. The data set <tarprfx>.SABJCLST is distributed in fixed block format. If this is incompatible with your systems CLISTS, you may have to change it to variable blocked to concatenate it with your systems CLISTS.
2. If the Run-time Library and COBOL compilers to be used are not currently available in your standard MVS search sequence, they will need to be included in the STEPLIB concatenation of the TSO LOGON procedure. The run-time libraries and compilers are:
 - The VS COBOL II Release 4.0 Library or LE/370
 - If programs to be converted contain CICS/VS Command Level statements and use the BLL Linkage Mechanism, the following compiler must be made available:
 - OS/VS COBOL Compiler

6.2.3 Make CCCA available through an ISPF option menu.

Either the ISPF/PDF Foreground Selection panel or an alternative selection panel must be modified to include the CCCA option. Using an editor modify panel ISRFPA (or other) which is in your site's PDF panel library. Figure 21 on page 33 is an example of an ISRFPA panel modified in two identified locations to include the CCCA option. If you add (or change) an option in the upper portion of the panel definition, you must also add (or change) the corresponding line in the lower portion of the panel.

```

:
)ATTR
 ! TYPE(TEXT) INTENS(LOW)
  " TYPE(TEXT) INTENS(HIGH)
  $ TYPE(INPUT) INTENS(HIGH)
)BODY
%----- FOREGROUND SELECTION PANEL -----
%OPTION ==>_ZCMD          +
%
% 1 +- Assembler H           %*10 +- VS COBOL II interactive debug
% 1A+- Assembler XF         %*10A+- COBOL interactive debug
% 2 +- VS COBOL II compiler %*11 +- FORTRAN interactive debug
% 2A+- OS/VS COBOL compiler %12 +- Member parts list
% 3 +- VS FORTRAN compiler  %*13 +- C/370* compiler
% 4 +- PL/I checkout compiler %14 +- PL/I PLITEST
% 5 +- PL/I optimizing compiler %15 +- INSPECT for C and PL/I
% 6 +- VS PASCAL compiler    %16 +- REXX compiler
% *7 +- Linkage editor       %17 +- CCCA 1
% 9 +- SCRIPT/VS
+
+          %*+- No packed data support
+
+SOURCE DATA PACKED          %==>_ZFPKED+ (YES or NO)
!ENTER SESSION MANAGER MODE"==>$ZSMG ! (YES or NO)
+
)INIT
VGET (ZSESS) PROFILE
IF (&ZSESS = 'Y')
  &ZSMG = TRANS(TRUNC(&ZSMODE,1),Y,YES,*,NO)
IF (&ZSESS = 'N')
  .ATTRCHAR(!) = 'INTENS(NON)'
  .ATTRCHAR($) = 'TYPE(OUTPUT),INTENS(NON)'
  .ATTRCHAR(") = 'INTENS(NON)'
  &ZSMG = NO
  .HELP = ISR40000
  &ZFPKED = TRANS(TRUNC(&ZFPKED,1),Y,YES,*,NO) /* DATA FORMAT CHECK */
)PROC
&DSN = ' ' /*INITIALIZE DATA SET NAME FIELD */
&ZORG = ' ' /*INITIALIZE DATA SET ORGANIZATION VARIABLE */
&ZSMG = TRUNC(&ZSMG,1)
VER (&ZSMG,NB,LIST,Y,N)
&ZSM = TRANS(TRUNC(&ZSMG,1),Y,YES,N,NO)
&ZSMODE = TRANS(TRUNC(&ZSM,1),Y,Y,N,N)
&ZFPKED = TRUNC(&ZFPKED,1)
VER (&ZFPKED,NB,LIST,Y,N) /* Y = EXPAND PACKED DATA */
&ZFPKED = TRANS(TRUNC(&ZFPKED,1),Y,YES,N,NO)
&ZFPACK = TRANS(TRUNC(&ZFPKED,1),Y,YES,N,NO)

```

Figure 21 (Part 1 of 2). Example of an ISPF/PDF Foreground Selection Panel Definition (ISRFPFA)

```

VPUT (ZSM,ZSMG,ZSMODE,ZFPACK,ZFPKED) PROFILE
IF (.RESP = END )
  &ZSMG = NO
  &ZSM = NO
  &ZSEL = TRANS( TRUNC (&ZCMD, '.' )
    1, 'PGM(ISRFPR) PARM((ISRFP01) 1) NEWPOOL '
    1A, 'PGM(ISRFPR) PARM((ISRFP01A) 1A) NEWPOOL '
    2, 'PGM(ISRFPR) PARM((ISRFP02) 2) NEWPOOL '
    2A, 'PGM(ISRFPR) PARM((ISRFP02A) 2A) NEWPOOL '
    3, 'PGM(ISRFPR) PARM((ISRFP03) 3) NEWPOOL '
    4, 'PGM(ISRFPR) PARM((ISRFP04) 4) NEWPOOL '
    5, 'PGM(ISRFPR) PARM((ISRFP05) 5) NEWPOOL '
    6, 'PGM(ISRFPR) PARM((ISRFP06) 6) NEWPOOL '
    7, 'PGM(ISRFPR) PARM((ISRFP07) 7) NEWPOOL '
    9, 'PGM(ISRFPR) PARM((ISRFP09) 9) NEWPOOL '
    10, 'PGM(ISRFPR) PARM((IGZTPIN2,ISRFP10) 10) NEWPOOL '
    10A, 'PGM(ISRFPR) PARM((ISRFP10A) 10A) NEWPOOL '
    11, 'PGM(ISRFPR) PARM((AFFFP11,DDBFP11,ISRFP11) 11) NEWPOOL '
    12, 'PGM(ISRFPR) PARM((ISRFP12) 12) NEWPOOL '
    13, 'PGM(ISRFPR) PARM((EDCFP13,ISRFP13) 13) NEWPOOL '
    14, 'PGM(ISRFPR) PARM((AQAINM3A) 14) NEWAPPL(AQA) '
    15, 'PGM(ISRFPR) PARM((EQAINM3A) 15) NEWAPPL(EQA) '
    16, 'PGM(ISRFPR) PARM((FANFP14) 14) NEWPOOL '
    17, 'PANEL(ABJ@M2) NEWAPPL(ABJ) ' 2

      ' ' ' '
      * , '?' )
)END
:
```

Figure 21 (Part 2 of 2). Example of an ISPF/PDF Foreground Selection Panel Definition (ISRFPFA)

Figure 21 on page 33 indicates the modifications made to the selection panel. The statements are identified as follows:

- 1** The CCCA option is added to the upper portion of the panel by entering:

```
%17 +- CCCA
```

- 2** The corresponding line in the)PROC portion of the panel is added by entering:

```
17, 'PANEL(ABJ@M2) NEWAPPL(ABJ) '
```

where ABJ@M2 is the name of the CCCA invocation panel. ABJ@M2 is included in the ABJPLIB panel library, which contains the ISPF panel definitions for CCCA.

6.2.4 Modifying an ISPF/PDF Tutorial Panel

The tutorial panel for the selection panel modified to include the CCCA option must also be modified to include the CCCA tutorial. Using an editor, modify panel ISR40000 (or other) which is in your site's PDF panel library. Figure 22 on page 36 is an example of the ISR40000 panel, modified in two identified locations to include the CCCA tutorial. If you add (or change) an option on the upper portion of the selection panel definition, as shown in Figure 21 on page 33 you must change the corresponding tutorial panel definition in the same way. Similarly, if you add (or change) the corresponding numbered entry on the lower half of the selection panel definition, you must also add (or change) the corresponding numbered entry on the tutorial panel definition.

```

:
%TUTORIAL ----- FOREGROUND PROCESSING ----- TUTORIAL
%OPTION ==>_ZCMD
+
%
      -----
      | FOREGROUND PROCESSING |
      -----
+
  The foreground processing option allows certain processing programs to
  be executed in the foreground under ISPF. The foreground selection panel
  which is displayed when option%4+is entered on the primary option panel
  allows the selection of one of these processing programs.

  The following topics are presented in sequence, or may be selected by number:

%0 +- Foreground general information
%1 +- Assembler H      % 5 +- PL/I optimizing      % 11 +- FORTRAN debug
%1A+- Assembler XF     % 6 +- VS PASCAL            % 12 +- Member parts list
%2 +- VS COBOL II      % 7 +- Linkage editor          % 13 +- C/370
%2A+- OS/VS COBOL      % 9 +- SCRIPT/VS              % 14 +- REXX/370
%3 +- VS FORTRAN       % 10 +- VS COBOL II debug     % 15 +- ADA/370
%4 +- PL/I checkout    % 10A+- OS/VS COBOL debug      % 16 +- AD/Cycle C/370
                                     % 17 +- CCCA 1
)PROC
  &ZSEL = TRANS(&ZCMD
    0,ISR40010
    1,ISR41A00          /*          @01A*/
    1A,ISR41000         /*          @01A*/
    2,ISR42A00          /*          @02A*/
    2A,ISR42000         /*          @02A*/
    3,ISR43000
    4,ISR44000
    5,ISR45000
    6,ISR46000
    7,ISR47000
    9,ISR49000
    10,ISR4AA00         /*
    10A,ISR4A000        /*
    11,ISR4B000
    12,ISR4C000
    13,ISR4D000         /*
    14,ISR4E000         /*
    15,ISR4F000         /*
    16,ISR4G000         /*
    17,ABJTUT 2
  )
  &ZUP = ISR00003
)END
:

```

Figure 22. Example of an ISPF/PDF Foreground Tutorial Panel Definition (ISR40000)

Figure 22 indicates the modifications made to the tutorial panel to reflect the changes made in the selection panel. The statements are identified as follows:

1 The CCCA option is added to the upper portion of the panel by entering:

```
% 17 +- CCCA
```

2 The corresponding line in the)PROC portion of the panel is entered by entering:

```
17,ABJTUT
```

where ABJTUT is the name of the primary panel of the CCCA tutorial. ABJTUT is included in the ABJPLIB, which contains the ISPF panel definitions for CCCA

6.2.5 Make run-time library and COBOL compiler available

If the run-time library and COBOL compiler to be used are not currently available in your standard MVS search sequence, then they will need to be included.

You will need to check the names of the COBOL, CICS, LE/370, and DB2 libraries, in `<tarprfx>.SABJCLST(ABJNMES)`, to ensure that they match the names in use at your installation.

6.2.6 Inform all CCCA users of required details

All users of CCCA will need to be provided with the following information:

- The two high level qualifiers used for target libraries
- The option panel from which to select the CCCA master menu
- The procedure used to make the required libraries available from their TSO session

The two high level qualifiers required by users are:

Non-VSAM Shared data sets The installation Common Parameter `<tarprfx>`

VSAM Shared data sets The installation Common Parameter `<tarprfx>`

The two high level qualifier can be provided as defaults by modifying the ISPF panel `<tarprfx>.SABJPLIB(ABJSETP)`. Replace the current default value `ABJ.COBCONV` with the values used during the installation.

6.3 Verifying a Successful Installation

This section steps you through the use of the Conversion Aid converter and use of the LCP Development Aid. You are strongly recommended to run the installation verification procedure to set up the ISPF environment.

Note: In this section `<hlq>` is the value defined for Non-VSAM Private Data sets on the Dialog Variable Maintenance and Data set Creation panel. `<tarprfx>` is the Common Parameter used during the installation procedure for shared non VSAM data sets.

To begin verification, you must:

- Log on to TSO
- Access CCCA via the menu option provided as a result of the Installation Customization. If you have not been made aware of the option, contact the systems programmer who installed the product.

6.3.1 Options and Environment Setup.

The first step in the Installation Verification process is to create the required Dialog Variables and Private data sets.

1. The Dialog Variables and required data sets are created by using the Environment Options menu which is available from the Options panel:
 - a. Select option **O** (Options) from the Master menu to bring up the Options menu.
 - b. Select option **1** (Environment) from the Options menu to bring up the Environment Options panel.
2. Enter values in each of the fields or accept the defaults.
3. Press the Enter key to update the options. Press PF3 to see the generated JCL.
4. You will now be presented with generated JCL that will create the Private VSAM data sets (see Figure 15 on page 16). Edit the JCL to provide the required substitutions and then SUBMIT the job.
5. Press Enter to exit the panel.

6.3.1.1.1 Setting options: Select option **3** from the Options menu to display the Conversion Options panel 1.

1. Initialize the parameters as follows:

Lines per report page	Set according to your site's installation standards.
Resequencing source lines	Y
Sequence number increment	0010
Reserved word suffix	Any 2-digit field. The default is 74.
Generate new program	Y
Generate new copy members	Y
Replace like-named copy members	N
Print old source lines	Y
Print copy members	Y
Print diagnostics of level >=	00
Report heading	SAMPLE RUN
Generate tokenization listing	N

2. Press Enter to update the options. Press PF3 to return to the main menu.

6.3.2 Running the converter

When running the converter for the first time, avoid using a split screen, because this may prevent you from viewing the bottom lines of the screen.

6.3.2.1.1 Batch conversion

1. Select option **2** from the Options menu.

CCCA displays the Language level panel.

2. Enter a value of 3 for the Source language level.
3. Enter a value (1, 2, 3, or 4) for the Target language level.
4. Press Enter.

CCCA updates the options.

5. Press PF3 twice to return to the CCCA Master menu.
6. Select option **1** (CONVERT).

CCCA displays the Converter menu.

7. Select option **2** (CONVERT PROGRAM).

CCCA displays the Conversion job statement information panel.

8. Enter your job statement information.
9. Enter the output class in the **SYSOUT class** field.
10. Press Enter.

CCCA displays the Conversion selection panel.

11. Enter your data set names and options in the following fields:

CICS	N
Program source	<tarprfx>.SABJSAM1
Member	ABJIVP01
Copy libraries	<tarprfx>.SABJSAM1
Output source (program)	<hlq>.NEWVS.ABJ
Output source (copy)	<hlq>.NEWCPY.ABJ

Leave the options set to their default values (*, N, N, N)

Note: You must create NEWVS.ABJ and NEWCPY.ABJ before running the verification batch conversion.

12. Press Enter.

CCCA generates JCL to convert the ABJIVP01 sample COBOL program, and then displays the Conversion submission panel.

13. Press Enter.

CCCA redisplay the Conversion selection panel.

14. Enter the following value:

Member ABJIVP02

Leave all the other fields on the screen the same.

15. Press Enter.

CCCA generates JCL to convert the ABJIVP02 sample COBOL program, and then displays the Conversion submission panel.

16. Press Enter.

CCCA redisplay the Conversion selection panel.

17. Press PF3.

CCCA submits the conversion jobs and exits from the panel.

18. Check the list output from the conversion jobs by selecting any one of the options **3** through **8** from the Converter menu.

6.3.3 Testing the LCP Development Aid

Select option **2** from the Master menu to display the LCP Development Aid menu.

6.3.3.1.1 Compile one LCP: Select option **2** to display the Batch LCP Compilation panels that allow you to submit a compile job for an LCP. The first of these panels is the CCCA LCP Compiler job statement information panel.

1. Update the Job statement information.

2. Press Enter.

CCCA displays the LCP Compiler selection panel.

3. Enter DELETE in the **Member** field.

4. Press Enter.

CCCA generates JCL to compile the DELETE LCP, and then displays the LCP Compiler submission panel.

5. Press PF3.

CCCA submits the job, exits from the panel, and returns to the LCP Development Aid menu.

6. This job should end with a return code of zero.

6.3.3.1.2 Test *DEBUG/DELETE* option

1. Select option **3** from the LCP Development Aid menu that allows you to:

- Delete LCPs from the LCP library
- Activate or deactivate debugging for each LCP

2. Scroll the table forward to OBJECT-COMPUTER.

3. Enter DEL in front of OBJECT-COMPUTER and press PF3 to delete the LCP.

6.3.3.1.3 Generate an LCP directory

1. Select option **4** from the LCP Development Aid menu to generate a directory of the LCP library.

6.3.3.1.4 Display message

1. Select option **5** from the LCP Development Aid menu to display the Messages panel.
2. Enter ABJ6115 in the **Message ID** field and press Enter.

The return code is 00 and the message text is SYSTEM NAME CHANGED TO IBM-370.

Note: ABJ6115 is the message for the OBJECT-COMPUTER LCP. It may be deleted because the OBJECT-COMPUTER conversion is no longer mandatory.

3. Press PF3.

CCCA returns to the LCP Development Aid menu.

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October 2021**

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