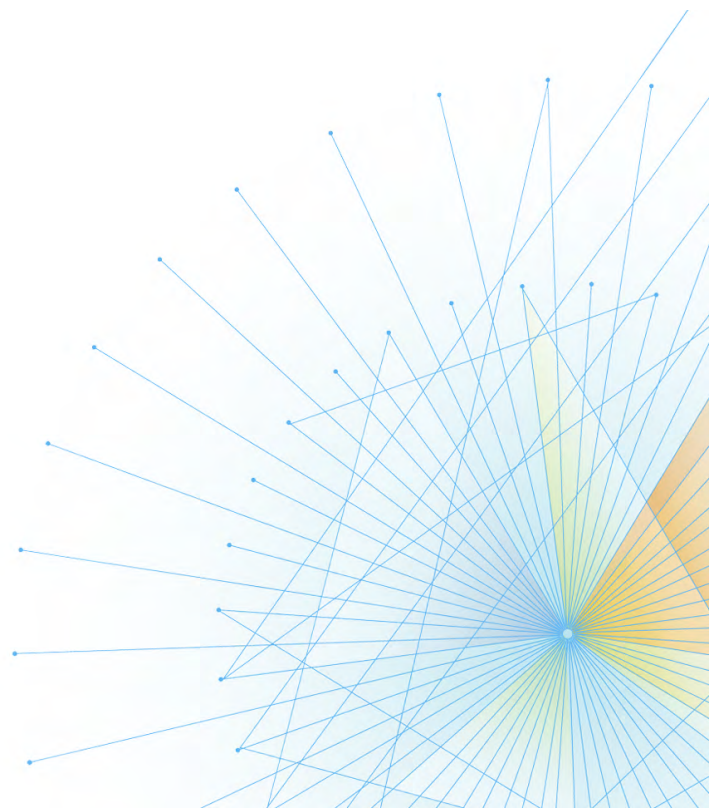




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# ThruPut Manager PCS Installation Companion Guide

**Release 18.02**



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# Introduction

## Summary of Changes

- |  |   |
|--|---|
| <b>V1802-7118</b><br><i>(April 2019)</i>   | <ul style="list-style-type: none"><li>• No changes</li></ul>  |
| <b>V1802-7117</b><br><i>(January 2019)</i> | <ul style="list-style-type: none"><li>• Added information regarding the Experience file purging process described in <a href="#">10.7.2. Monitor Job Experience Collection File Space</a>.</li></ul>  |
| <b>V1802-7116</b><br><i>(October 2018)</i> | <ul style="list-style-type: none"><li>• No changes</li></ul>  |
| <b>V1802-7115</b><br><i>(July 2018)</i>    | <ul style="list-style-type: none"><li>• Rebranding of MVS Solutions to Compuware. This includes update of cover style, copyright, and changing version release to 18.02.</li><li>• Provide additional instructions to support the new functionality introduced.</li></ul> |

## About This Manual

This manual describes the supplementary installation steps for ThruPut Manager AE Production Control Services (PCS). It is of interest to the installation personnel and systems programmers with knowledge of the datacenter environment including CA 7.

Note: CA 7 is an informal name for CA Workload Automation CA 7 Edition; copyrights are the property of its owner.

Once this process is complete, ThruPut Manager AE PCS implementation may commence.



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# Chapter 1

## Post-Installation Checklist

This guide outlines the required steps to install and implement Production Control Services (PCS).

Ref#	Step	Member	Notes
<input type="checkbox"/>	10.0	Implement PCS in SMP/E	TTM7191 in Install Dataset
<input type="checkbox"/>	10.1	Install CA 7 Exits	
<input type="checkbox"/>	10.2	Set Up Authorizations	
<input type="checkbox"/>	10.3	Customize the PCS Control Region	
<input type="checkbox"/>	10.3.1	PCS JCL Sample Procedure	
<input type="checkbox"/>	10.3.2	Initialization Statements	
<input type="checkbox"/>	10.3.3	Allocate and Initialize Files	
<input type="checkbox"/>	10.3.3.1	Job Experience Collection File	
<input type="checkbox"/>	10.3.3.2	Job Experience Files	
<input type="checkbox"/>	10.3.3.3	Battle Plan File	
<input type="checkbox"/>	10.3.3.4	Application Management Database	
<input type="checkbox"/>	10.4	Start the PCS Control Region	
<input type="checkbox"/>	10.5	Define PCS Classes	
<input type="checkbox"/>	10.6	Verify Installation is Complete	
<input type="checkbox"/>	10.7	Set Up the Experience Collection File Utility	
<input type="checkbox"/>	10.8	Set Up the PCS Forecast Collection Utility	

### 10.0 Implement PCS in SMP/E

The TM Automation Edition fully supports Production Control Services but there are a few additional steps required in order that the function can be activated. The Install dataset member (TTM7191) provides an SMP/E stream that will rename TM CA 7 exit points and link a new module. The member contains everything that is necessary. Simply run an SMP/E RECEIVE and APPLY in the SMP/E environment where TM AE was previously installed.

### 10.1 Install CA 7 Exits

PCS uses CA 7 exits 2 or 20, 5, 11, 13 and 17. These exits are included with the ThruPut Manager Base in DTMLINK as DTMC7Xnn modules. When PCS is installed from the apply of TTM7191 above, these modules are automatically renamed to the proper CA 7 exit names, SASSXXnn. As a result, the SASSXXnn exit modules will be located within DTMLINK so they must be the first like named modules encountered in the linklist.

Note: CA 7 Exits 2 and 20 provide the same functionality for different levels of CA 7. Exit 20 was introduced in CA 7 11.1 and should replace Exit 2 for that level and above.

The exits must then be enabled in the CA 7 "UCC7IN" options as illustrated below, and a recycle of CA 7 is required to activate them.

```
APPLCTN,NAME=SASSXX02 (pre CA 7 11.1)
APPLCTN,NAME=SASSXX05
APPLCTN,NAME=SASSXX11
APPLCTN,NAME=SASSXX13
APPLCTN,NAME=SASSXX17,ATTR=PERM
APPLCTN,NAME=SASSXX20 (CA 7 11.1 and above)
```

Consult the *CA 7 Workload Automation* manual for directions to dynamically install CA 7 exits.

### 10.1.1. Conflicts with Existing CA 7 Installation Exits

If your installation currently uses any of the exits previously mentioned, PCS calls these exits before performing PCS processing. Therefore you must do the following to ensure PCS exits gain control at the appropriate point.

1. Rename the installation defined CA 7 exit routines, SASSXXnn, to SASSX\$nn. (After PTF TMT6217, the relink for these exit points is no longer required making job CA7XLINK, found in the INSTALL dataset, obsolete). The INSTALL dataset includes member @UMODCA7, which provides SMP/e USERMODs (UCA7Xnn), to do the rename of each duplicate exit point. It also contains sample JCL to RECEIVE and APPLY the necessary USERMOD(s) to your CA 7 SMP/e environment.
2. Add an "APPLCTN,NAME=SASSX\$nn" statement to the initialization deck for each renamed exit point.

## 10.2. Set Up Authorizations

### 10.2.1. Set Up RACF (or equivalent) Security

Two different types of authorizations are required for PCS. Standard security authorizations to RACF (or equivalent) are required for the PCS Control Region, the PCS Forecast Collection Utility and TSO userids that will be accessing the PCS ISPF Dialog. This authorization will allow access to PCS datasets.

If communication is required across SYSPLEX's, the RACF User ID associated with the TM started task and PCS Control Region must have a RACF OMVS segment, otherwise TCPIP initialization will fail with message.

```
ICH408I USER(TMSS) GROUP(group) NAME(TMSS ADDRESS SPACE)
CL(PROCESS )
OMVS SEGMENT NOT DEFINED
```

or

```
ICH408I USER(TMPCS) GROUP(group) NAME(TM PCS ADDRESS SPACE)
CL(PROCESS )
OMVS SEGMENT NOT DEFINED
```

### 10.2.2 Update CA 7 Security Table

In addition, specific CA 7 authorities are required for the userid associated with PCS Control Region and the Collection Utility along with any TSO userids that will access the dialog. All of the userids mentioned above must be defined to the CA 7 security table. The security table is assembled and



loaded into CA 7. The source resides in the SASSSECI member of the CAISRC library associated with your CA 7 (for example CAS.CAI.CA7.CAISRC (SASSSECI)).

A sample entry for a userid PCSUSER would be:

```
SECURITY TRM=**ALL**,OPID=(PCSUSER),USRID=255,
  APLID=((SFC,04),(SLI,01),(SCM,10))...
```

For more information, refer to the *CA 7 Workload Automation Security Reference Guide*.

The table below shows the CA 7 functions that PCS uses, and the required minimum function authority.

CA 7 Function Name	Application ID	Function Authority Level
FJOB	SFC	04
FRJOB	SFC	04
FSTRUC	SFC	04
LJCL	SLI	04
LJES	SLI	01
LJOB	SLI	01
LLOCK	SLI	01
LQ	SLI	01
LRLOG	SLI	01
SSCAN	SPO	15
/DISPLAY	SCM	00
/EMAIL	SCM	05
/MSG	SCM	05
/WTO	SCM	10

### 10.2.3 CA 7 CCI

Various PCS interfaces retrieve information and use CA 7 functions utilizing CCI facilities. A CCI Session is created for every PCS interface with CA 7. This interface must be active and available on any system that runs these functions. The userid under which the CCI session is running must be authorized in order to communicate with CA 7. The CA CAILIB dataset is a required linklisted dataset. If this library is NOT in the linklist, the library must be allocated via STEPLIB or ISPLLIB.

The PCS Control Region uses these CA 7 functions:

```
LJCL,JOB=...
LJES
LLOCK,JOB=...
LQ,LIST=Q
LQ,JOB=...,LIST=JCL
LRLOG,SPAN=xxx,SEQ=DATE
SSCAN
/DISPLAY,APPL=...
/DISPLAY,CPU=ALL
/DISPLAY,DB=VSAM
/DISPLAY,ST=CA7
/DISPLAY,DB=DATACOM
/DISPLAY,ST=SUB
/EMAIL
/MSG
/WTO
```

The Forecast Collection Utility uses these CA 7 functions:

```
FJOB, FROM=(...,2359), TO=(...,2359), TRIG=N, SEQ=JOB, TYPE=ALL
FJOB, JOB=..., SCHID=..., FROM(...,2359), SPAN=48, TRIG=J, TYPE=ALL
FSTRUC, JOB=..., SCHID=..., TRIG=JD, TYPE=ALL
LJOB, LIST=JOB
LJOB, LIST=RQJOB
LJOB, LIST=SCHD
LJOB, LIST=TRIG
/DISPLAY, DB=VSAM
/DISPLAY, DB=DATACOM
SSCAN FRJOB, JOB=..., SCHID=..., LIST=ALL, TYPE=ALL
```

The PCS Dialog uses these functions:

```
LJOB
LQ, JOB=..., LIST=RQMT
LRLOG, JOB=..., SPAN=48
/DISPLAY, CPU=ALL
/DISPLAY, DB=VSAM
/DISPLAY, ST=CA7
/EMAIL
/MSG
/WTO
```

## 10.3. Customize the PCS Control Region

Production Control Services requires a separate Control Region for each CA 7 Control Region. It must run in the same JESplex member as its corresponding CA 7 **Control Region**. The Control Region module (DTMPCSVn) must reside in a linklisted dataset, and must run as a started task in its own address space.

PCS follows the IBM architecture of JESplex and SYSPLEX. When communicating within a SYSPLEX, PCS uses XCF. Communication across SYSPLEXes uses TCP/ IP.

All systems to which CA 7 submits work to, must communicate information to PCS. Therefore, PCS must be implemented in all systems that execute CA 7 jobs, because this is how information about CA 7 jobs is communicated back to the PCS Control Region.

### 10.3.1. PCS JCL Sample Procedure

This sample procedure below is found in the TMPCS member of the install dataset.

```
//TMPCS PROC P=dname, /* Library for PCS Init.Statements */
// MEM=membername, /* Membername for PCS Init.Statements */
// CA7=CA7instance, /* CA 7 Instance Name */
// COMCHAR=comchar, /* Command Char or Prefix */
// BPF=, /* Battle Plan File Option */
// EXPC=, /* Experience Collection File Option */
// PCSC=, /* SMF Collection File Option */
// XTM=CCIname /* CCI Receiver Application Name */
//*****
//*
/* PCS requires the CA7 CAILIB. If this library is not in *
/* the LINKLIST then a STEPLIB is required. *
//*
//*****
//TMPCS EXEC PGM=DTMPCSVn, TIME=NOLIMIT, REGION=OK,
// PARM=('CA7=&CA7',
```

```
//          'COMCHAR=&COMCHAR',
//          'BPF=&BPF',
//          'EXPC=&EXPC',
//          'PCSC=&PCSC',
//          'XTMNAME=&XTM')
//*
//SYSPARM DD DSN=&P(&MEM),DISP=SHR,FREE=CLOSE
```

The DD statement SYSPARM points to the dataset containing the PCS Initialization Statements. Two of the parameters in the sample proc are used to indicate where PCS can find its Initialization Statements. These are:

P=dsname

Specifies the name of a cataloged partitioned dataset that contains a member specifying the PCS Initialization Statements.

MEM=membername

Specifies the member name within the partitioned dataset that contains the PCS Initialization Statements.

The sample procedure accepts the following options in the EXEC PARM field:

COMCHAR=comchar

Specifies the Command Character sequence to be used to communicate with this address space. This keyword is required.

CA7=CA7instance

Specifies the CA 7 Instance that is to be managed. It's used to uniquely identify PCS and the associated CA 7. **This keyword is required.**

BPF=COLD

Required only if you want to reinitialize the file. The first time the Battle Plan File is initialized automatically. Any Cold-Start of a file must be done with care as all the information is lost.

EXPC=COLD

Required only if you want to reinitialize the file. The first time the PCS Control Region is initiated, the Experience Collection File is initialized automatically. Any Cold-Start of a file must be done with care as all the information is lost.

PCSC=COLD

Required only if you want to reinitialize the file. The first time the PCS Control Region is initiated, the PCS SMF Data Collection File is initialized automatically. Any Cold-Start of a file must be done with care as all the information is lost.

XTM=CCIname

Specifies the name of the CCI receiver with which this PCS Control Region must communicate. **This keyword is required for installations using multiple CCI receivers.**

## Using CCI Receivers

As many installations do not make use of the CCI facility, they may be unaware of the available definitions within CA 7. Consult the CA 7 external interface documentation for full details. The following describes the implications for connecting a particular PCS Control Region and PCS Dialog to its associated Instance.

If you are running multiple Instances of CA 7 in the same LPAR, the CCI receiver must be uniquely identified. The CCI receiver for a given CA 7 Instance is determined by the following:

- If the XTMNAME keyword has a value in the initial SVCNO statement, that is the CCI receiver name for that CA 7 Instance.
- If the XTMNAME keyword is not coded, but the RNAME keyword has a value, then that is the CCI receiver name for that CA 7 Instance.
- If neither the XTMNAME keyword or RNAME keyword are coded, then the CA 7 Instance name is the CCI receiver name.

The CCI Receiver name is used in two distinct places by PCS. It is one of the parameters used to start the PCS Control Region. If nothing is coded, the default is the CA 7 Instance name. If values have been coded in the CA 7 SVCNO initialization statement this will result in an error. So make sure that you determine the actual name and provide it to the PCS PROC.

Unfortunately, there is a further complication. You might have CA 7 Instances in your installation with the same name. In fact, you cannot avoid this if you have CA 7 Instances using NCF for NJE processing since only the CA71 Instance name is supported by CA 7. Consequently, you may be running several CA71 Instances.

If you are not using the CA 7 CCI interface, then there might not be any customized unique naming for the corresponding CCI Receivers.

You could have addressed the RNAME if you used the "hot" backup capability to avoid confusion with ENQs. In that case, use the RNAME specified in the CA 7 SVCNO Initialization Statement.

If you have done nothing, you must create unique names for the CCI receivers using the XTMNAME keyword in each of the CA 7 SVCNO Initialization Statement associated with the CA 7 Instances with the same name. This is a must, not an option.

The PCS PROC includes the parameter substitution of XTM. This covers both situations: the RNAME or the XTMNAME, whichever applies.

The second area where the CCI Receiver name is used is in the dialog panel where you indicate the Instance of CA 7 with which you want to communicate. The same requirements as the ones for the PCS Control Region apply here.

### 10.3.2. Initialization Statements

PCS dynamically allocates the required files as specified in the Initialization Statements pointed to by the SYSPARM DD.

Statements	Required?	Description
FILE BPF	Required	Battle Plan File
FILE EXPERIENCE_COLLECTION	Required	Experience Collection File
FILE EXPERIENCE1	Required	Experience File 1
FILE EXPERIENCE2	Required	Experience File 2
FILE PCS_SMF_COLLECTION	Optional	SMF Data Collection File
TM TCPIP ADD	Required for cross-SYSPLEX communication	Add the TCP/IP address of a TMSS running on a system in another SYSPLEX

The following TMSS Initialization Statements have been changed to support PCS.

Statements	Required?	Description
TM SMF	Optional	Defines SMF data collection parameters

Statements	Required?	Description
TM TCPIP ADD	Optional	Add the TCP/IP address for the PCS Control Region
DCS SET XCF(YES)		Only applicable to users of IBM GRS

## TCPIP Considerations - Communication Across SYSPLEXes

PCS requires TCP/IP connections when supporting a CA 7 that submits jobs for execution on another z/OS SYSPLEX. If CA 7 does not submit jobs to execute on another SYSPLEX, neither PCS nor ThruPut Manager needs TCP/IP connections.

For PCS to function properly when supporting a CA 7 which submits jobs to be executed on another SYSPLEX, TCP/IP connections must be defined to both the PCS Control Region and the ThruPut Manager started task(s). This is necessary to allow PCS data about the job to be communicated to the originating SYSPLEX. The Initialization Statement is used to make the necessary definitions for both PCS and ThruPut Manager Control Region (the syntax is identical).

The Initialization Statement allows the installation to define the necessary TCP/IP connections to other z/OS systems on neighboring SYSPLEX(s). Note that the definitions must be specified for all instances of TMSS in both SYSPLEXes. The syntax is:

```
TM TCPIP ADD IP(nnn.nnn.nnn.nnn) | HOSTNAME(hostname)
```

For the ThruPut Manager started task, HOSTNAME specifies a system on which a PCS Control Region might be running. For PCS, HOSTNAME specifies a system on which TMSS might be running.

For the ThruPut Manager started task, IP specifies a valid TCP/IP address for a system on which a PCS Control Region might be running. For PCS, IP specifies a valid TCP/IP address for a system on which TMSS might be running. ThruPut Manager makes use of TCP/IP ports 9666-9675 inclusively.

You can specify as many TM TCPIP ADD statements as necessary:

- For PCS, include the IPs of all systems in neighboring SYSPLEXes where jobs could potentially execute.
- For TMSS, include the IPs of all systems where PCS might execute.

### 10.3.3 Allocate and Initialize Files

Allocate the following files for the PCS Control Region:

- Job Experience Collection File
- Job Experience Files
- Battle Plan File

#### Job Experience Collection File

The Job Experience Collection File is used to collect execution time job information data generated by the TM running in the JESplex member where the job executed, and passed to PCS. The data is in the form of transactions that are used to update the Experience Files via a batch utility program.

To identify the Job Experience Collection File to PCS, you must use the PCS Initialization Statement:

```
FILE EXPERIENCE_COLLECTION datasetname
```

Allocate the Job Experience Collection File with a DSORG of PS (Physical Sequential). PCS forces the file attributes RECFM=F and BLKSIZE=4096.

Here is a typical DD statement allocating the Job Experience Collection File:

```
//DD1 DD DSN=dsname,DISP=(,CATLG),
// UNIT=unitname,VOL=SER=volume,
// SPACE=(CYL,(nn))
```

The approximate size of the file can be estimated with the formula:

$$X(504 + 200Y)$$

where:

X = number of Job Instances for which data is collected before the file wraps.

Y = average number of steps per Job Instance.

For example:

X = 10000 Job Instances

Y = 5 steps per Job Instance

Job Experience Collection File size in bytes:

$$10000 (504 + 200(5)) = 15,040,000$$

$$15,040,000 / 56,754 = 256 \text{ tracks}$$

$$256 / 15 = 18 \text{ cylinders}$$

The first time the PCS Control Region procedure is started the empty Job Experience Collection File is initialized automatically. The file can be reinitialized using the EXPC=COLD keyword on the TMPCS STC procedure.

## Job Experience Files

Identify two Job Experience Files to PCS using the PCS Initialization Statements:

```
FILE EXPERIENCE1 datasetname1
```

```
FILE EXPERIENCE2 datasetname2
```

The Job Experience Files are VSAM linear datasets, and can be created with the following IDCAMS JCL:

```
//CRTEXPF JOB (account), 'pgmr_name',MSGCLASS=X,NOTIFY=&SYSUID
//IDCAMS EXEC PGM=IDCAMS,REGION=4096K,TIME=1440
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
  DEFINE CLUSTER (NAME(TMPCS.CA7instance.EXP1) -
    VOLUMES(volume) -
    CYLINDERS(nnn,nn) -
    SHAREOPTIONS(1,3) -
    LINEAR)
  DEFINE CLUSTER (NAME(TMPCS.CA7instance.EXP2) -
    VOLUMES(volume) -
    CYLINDERS(nnn,nn) -
    SHAREOPTIONS(1,3) -
    LINEAR)
/*
```

The Job Experience File size in bytes is estimated by this formula:

$$X * (168 + Y * (400 + Z * 104))$$

where:

X = # of Jobname / ScheduleID combinations that are to be tracked by PCS.

Y = average # of job executions that will be recorded for each Jobname/ScheduleID combination (maximum kept is 15).

Z = average # of steps per job.

For example:

X = 10000 Jobname / ScheduleID combinations

Y = 15 executions recorded

Z = 5 steps per job

The Job Experience File size in bytes:

$10000 * ( 168 + 15 * (400 + 5 * 104) ) = 139,680,000$  bytes

$139,680,000 / 56,754 = 2,462$  tracks

$2,462 / 15 = 165$  cylinders

Both Job Experience Files should be the same size.

Initialize both Job Experience Files with the utility program DTMPEFCn, which initializes the files with zero jobs. Here is an example of the JCL:

```
//jobname JOB (account), 'pgmr_name',MSGCLASS=X,NOTIFY=&SYSUID
// EXEC PGM=DTMPEFCn
//SYSPRINT DD SYSOUT=*
//PEFFILE DD DSN=TMPCS.CA7instance.EXP1,DISP=OLD
// EXEC PGM=DTMPEFCn
//SYSPRINT DD SYSOUT=*
//PEFFILE DD DSN=TMPCS.CA7instance.EXP2,DISP=OLD
```

### Battle Plan File

The Battle Plan File is a VSAM linear file that is used to maintain the Active Battle Plan. Identify the Battle Plan File to PCS using the PCS Initialization Statement:

```
FILE BPF datasetname
```

Allocate the Battle Plan File using the following IDCAMS JCL:

```
//CRTBPF JOB (account), 'pgmr_name',MSGCLASS=X
//IDCAMS EXEC PGM=IDCAMS,REGION=4096K
//SYSPRINT DD SYOUT=*
//SYSIN DD *
DEFINE CLUSTER (NAME(TMPCS.CA71.BPF) -
VOL(volume) -
CYLINDER(nnn,nn) -
SHAREOPTIONS(1,3) -
LINEAR)
/*
```

To estimate the size of the Battle Plan File, refer to the following table.

Estimate of Battle Plan File Size			
Maximum # of Job Instances in a Battle Plan	Battle Plan File Size (on 3390)		
	Mbytes	Tracks	Cylinders
5,000	15	315	21
10,000	30	630	42
20,000	60	1260	84
50,000	151	3150	210
100,000	302	6300	420
200,000	805	12600	840
400,000	1210	25200	1680

Once you have created the Battle Plan File, the first time the PCS Control Region is started this file is initialized automatically. The file can be initialized using the BPF=COLD keyword on the TMPCS STC procedure.

## Application Management Database (AMD)

The AMD is allocated using the TMISPF dialog for PCS and no action is required at this time. Details are described in the *ThruPut Manager AE PCS Usage Guide*.

## 10.4. Start the PCS Control Region

Use the MVS START command to start the PCS Control Region.

```
S TMPCS
```

Once the PCS Control Region has started, messages are issued regarding the initialization of the PCS files. Message "DTM0023I TM/PCS (CAnn) Initialization Complete" is issued to signify that the Control Region has started successfully.

## 10.5. Define PCS Class

When in Managed Mode, ThruPut Manager AE uses a single JES2 JOB class to manage the Production Batch. Use the TM CLASS command to define this class to the ThruPut Manager started task.

```
TM CLASS ADD PCS(x)
```

## 10.6. Verify Installation is Complete

The PCS D Level and PCS D PARMS commands may be used to verify that the task is responding normally.

PCS is now installed and active.

## 10.7. Set Up the Collection File Utility

This step is not required to bring up the Control Region, but is required to collect experience data.

### 10.7.1. Job Experience File Housekeeping

PCS creates transaction records that are written to the Job Experience Collection File. These records are used to maintain the Job Experience File, using the DTMWDXn Extract and DTMPEFUUn Update utilities. This task should be scheduled regularly, at least once daily. A sample job (PCSEXPUn) is included in the TM Install dataset. The job consists of three steps as follows:

- Step 1: DTMWDXTn Extract utility selects records from the Job Experience Collection File - The Extract utility DTMWDXTn is used to extract some or all of the records from the Job Experience Collection File and copy them as variable length records (RECFM=VB) to one of two Job Experience Files (sequential files). Records maintain their original length and the data is an exact replica of the original data that was written to the Job Experience Collection File.
- Step 2: Sort the records by jobname/CA 7 schid - The extracted Job Experience Collection File records must be sorted before being used as input to the Job Experience File Update utility DTMPEFUUn. These sorted records are then used to update the appropriate Job Experience File.
- Step 3: DTMPEFUUn Update Utility - As input, the Update utility combines the extracted records with records from the most recently updated (active) Job Experience File. The oldest (inactive)



Job Experience File is automatically selected as output. Because the Update utility only reads from the active Job Experience File, it can run while PCS is active.

The Job Experience Collection File is a wrap-around file, so it can never run out of space, however data (transactions) are eventually overwritten. To avoid data loss, you must use the Extract utility to copy the records to the oldest of two rotating Job Experience Files, essentially emptying the Job Experience Collection File. The records are then sorted and used as input to update the appropriate Job Experience File.

## 10.7.2. Monitor Job Experience Collection File Space

The PCS Control Region issues warning messages when the Job Experience Collection File reaches 80%, 90%, and 100% full since the last data transfer:

```
DTM8203W EXPERIENCE COLLECTION : nn PERCENT USED SINCE THE LAST DATA EXTRACTION
```

When the usage exceeds 100%, the oldest transactions are overwritten with the newest transactions. It is therefore important to extract the data before this occurs. The warning messages can serve as triggers for automated commands to accomplish this.

## Sample Extract and Update Utility JCL

The Extract utility DTMWDXTn is used to extract some or all of the records from the Job Experience Collection File and copy them as variable length records (RECFM=VB) to one of two Job Experience Files (sequential files). Records maintain their original length and the data is an exact replica of the original data that was written to the Job Experience Collection File.

The extracted Job Experience Collection File records must be sorted before being used as input to the Job Experience File Update utility DTMPEFUn. These sorted records are then used to update the appropriate Job Experience File.

As input, the Update utility combines the extracted records with records from the most recently updated (active) Job Experience File. The oldest (inactive) Job Experience File is automatically selected as output. Because the Update utility only reads from the active Job Experience File, it can run while PCS is active.

The following sample JCL (member PCSEXPUn in the install dataset) extracts transaction records from the Job Experience Collection File, sorts them, and then updates the appropriate Job Experience File. The sample JCL includes the extraction, sort, and update steps.

```
//*****
//**EXTRACT DATA FROM THE PCS EXPERIENCE COLLECTION FILE
//*****
//EXTRACT EXEC PGM=DTMWDXTn,PARMS='FROMLAST',REGION=5000K
//INPUT      DD DSN=experience_collection.file,DISP=SHR
//OUTPUT     DD DSN=&&COLLECT,DISP=(,PASS),UNIT=SYSDA,
//           SPACE=(CYL,(10,1),RLSE)
//SYSPRINT   DD SYSOUT=*
//SYSUDUMP   DD SYSOUT=*
```

where:

```
PARMS=' FROMLAST'
```

Requests that the utility extract the transactions beginning with the first transaction that was not previously extracted.

```
INPUT
```

Is the Job Experience Collection File. The dataset name should match the dataset name specified in the PCS Initialization Statement FILE EXPERIENCE\_ COLLECTION.

## OUTPUT

Is the temporary sequential file to which the extracted records are written using BSAM. This file is used as input to the SORT step.

```

/*****
/****SORT PCS EXPERIENCE TRANSACTION RECORDS
/*****
//SORT EXEC PGM=SORT,PARM='SIZE(MAX)'
//SORTIN DD DSN=&&COLLECT,DISP=(OLD,DELETE)
//SORTOUT DD DSN=&&SORTED,DISP=(,PASS),SPACE=(CYL,(10,1)),
// UNIT=SYSDA,DCB=(RECFM=VB,LRECL=512,BLKSIZE=27998)
//SYSOUT DD SYSOUT=*
//SORTWK01 DD UNIT=SYSALLDA,SPACE=(CYL,(5))
//SORTWK02 DD UNIT=SYSALLDA,SPACE=(CYL,(5))
//SORTWK03 DD UNIT=SYSALLDA,SPACE=(CYL,(5))
/* SORT OFFSET NAME LENGTH ORDER
/* 13,11,CH,A 0 PEFTRKEY 11 BYTES ASCENDING
/* 25,4,BI,A 14 PEFTR_JOBNUM 4 BYTES ASCENDING
/* 29,8,BI,A 18 PEFTR_JOBSTART 8 BYTES ASCENDING
/* 24,1,CH,A B PEFTR_TYPE 1 BYTE ASCENDING
/* 12,1,BI,A C PEFTR_STEP_NUMBER 1 BYTE ASCENDING
//SYSIN DD *
SORT FIELDS=(13,11,CH,A,25,4,BI,A,29,8,BI,A,24,1,CH,A,12,1,BI,A)
/*

```

where:

## SORTIN

Is the output file from the EXTRACT step.

## SORTOUT

Is the temporary output file used as input to the UPDATE step.

```

/*****
/****UPDATE THE PCS EXPERIENCE FILES
/*****
//UPDTE EXEC PGM=DTMPEFUn
//SYSPRINT DD SYSOUT=*
//EXPFILE DD DSN=experience.filea,DISP=SHR
//EXPFILB DD DSN=experience.fileb,DISP=SHR
//PEFTRAN DD DSN=&&SORTED,DISP=(OLD,DELETE)
//PEFWORK DD DSN=&&WORK,UNIT=SYSDA,SPACE=(CYL,5),
// DCB=(RECFM=VB,DSORG=PS,LRECL=12000,BLKSIZE=27998)

```

where:

## EXPFILE

Is one of the PCS Job Experience Files defined in the PCS Initialization Statements.

## EXPFILB

Is the other PCS Job Experience File defined in the PCS Initialization Statements.

## PEFTRAN

Is the output file from the SORT step.

## PEFWORK

Is a temporary work file.

Once the update has completed successfully, issue the PCS SELECT EXP operator command to activate the updated Job Experience File in PCS. Alternatively, automate this task as a fourth step in the Experience Update Utility JCL.

Note: To prevent the Experience files from filling, data for jobs that are older than 400 days will be eliminated. Additionally job step data that is less than one minute elapsed time is not maintained in the experience files. This value is customizable if required.

## 10.8 PCS Forecast Collection Utility

The PCS Forecast Utility (DTM4CSTn) communicates with CA 7 to populate the AMD with upcoming scheduled jobs and their relationships to one another. The utility should be scheduled to run after CA 7 changes are complete and prior to the start of the next PCS production cycle.

The utility requires the name of the name of the AMD to be updated is provided through the PARM field and it must execute where the CA 7 scheduler the PCS task is to support, is also executing.

The utility uses the CA 7 API CAL2X2WP to request the relevant data. If this is not in a linklist library then a STEPLIB pointing to it must also be included.

Sample JCL is as follows (see member PCSGDATA in the TM Install dataset):

```
//AMDUPDTE EXEC PGM=DTM4CSTn,REGION=0M,TIME=NOLIMIT,
// PARM='AMD=AMDdsname' /* AMD DATA SET NAME */
//SYSPRINT DD SYSOUT=*
//DTMCA7R DD SYSOUT=*
```

where:

AMD=AMDdsname

Specifies the name of the AMD to be updated. This keyword is mandatory.

DTMCA7R DD

Provides information on the Forecast process and is useful in the event there is a problem. The DD is mandatory unless the NOLOG.

Note: A complete description of this utility and all available parameters are described in the PCS Usage Guide Appendices

Installations running CA 7 R12 can see improved run times for this process if they activate RUN-DBSQLDR option and add required DD statements to the forecast JCL. PCSGDATA in the INSTALL dataset provides a sample. See the *PCS Usage Guide* appendices for detailed information.



# Appendix A.

## PCS Initialization Statements

Appendix A provides detail regarding the PCS Control Region initialization statements for ThruPut Manager AE PCS. See the following pages for details regarding each of these statements.

### FILE BPF

#### Battle Plan File Initialization Statement

This PCS Initialization Statement specifies the Battle Plan File. This is a mandatory file.

FILE BPF	dsname
----------	--------

dsname

A required positional parameter which specifies the name of a dataset to be used for the Battle Plan File. It is dynamically allocated and must be cataloged.

#### Notes:

There is no default for this statement.

The Battle Plan File is a required file. Failure to specify a Battle Plan File results in a non-deletable WTO being issued and the PCS Control Region will not initialize.

The Battle Plan File is automatically formatted upon its first use. The file can be reformatted by specifying BPF=COLD when starting the PCS Control Region.

If FILE BPF is specified more than once, the last statement encountered is used.

### FILE EXPERIENCEn

#### Job Experience File Initialization Statements

These PCS Initialization Statements specify the Job Experience Files.

FILE EXPERIENCEn.	dsname
-------------------	--------

n

This must have a value of 1 or 2.

dsname

A required positional parameter which specifies the name of a dataset to be used for the particular Job Experience File. It is dynamically allocated and must be cataloged.

#### Notes:

There are no default for these statements.

Two Job Experience Files are required. Each Job Experience File requires its own Initialization Statement. Only the first two FILE EXPERIENCE statements encountered are accepted, and any subsequent FILE EXPERIENCE statements are ignored.

Before its first use, each Job Experience File must be formatted by the utility DTMPEFC7.

## FILE EXPERIENCE\_COLLECTION

### Job Experience Collection File Initialization Statement

This PCS Initialization Statement specifies the Job Experience Collection File.

FILE EXPERIENCE_COLLECTION	dsname
----------------------------	--------

dsname

A required positional parameter which specifies the name of a dataset to be used for the Job Experience Collection File. It is dynamically allocated and must be cataloged.

#### Notes:

There is no default for this statement.

The Job Experience Collection File is automatically formatted upon its first use. The file can be reformatted by specifying EXPC=COLD when starting the PCS Control Region.

If FILE EXPERIENCE\_COLLECTION is specified more than once, the last statement encountered is used.

## FILE PCS\_SMF\_COLLECTION

### PCS SMF Data Collection File Initialization Statement

This PCS Initialization Statement specifies the PCS SMF Data Collection File.

FILE PCS_SMF_COLLECTION	dsname
-------------------------	--------

dsname

A required positional parameter which specifies the name of a dataset to be used for the PCS SMF Data Collection File. It is dynamically allocated and must be cataloged.

#### Notes:

There is no default for this statement.

The PCS SMF Data Collection File is automatically formatted upon its first use. The file can be reformatted by specifying PCSC=COLD when starting the PCS Control Region.

If FILE PCS\_SMF\_COLLECTION is specified more than once, the last statement encountered is used.

## TM SMF

### TMSS Initialization Statement Defines SMF Data Collection Parameters

This statement specifies which SMF user record is used to write SMF data, as well as which data are to be collected. For a description of how to implement SMF data collection, see "SMF Data Collection for Job Analysis" in the *System Programming Guide: Base Product*.

*Only the keyword that has been added to support PCS is documented here. For the complete syntax of the TM SMF statement, refer to the Base Product: System Programming Guide.*

TM SMF	PCS
--------	-----

PCS

Indicates that PCS is to collect SMF data.

Notes:

The DTMSMFPL mapping macro is provided for the collected SMF data. For details of the SMF record, refer to this macro.

## TM TCPIP ADD

### Add TCP/IP Address for Another TMSS

This statement provides the TCP/IP address of a system which is running a TMSS but is not part of the same SYSPLEX. The address is required because SYSPLEX communications are performed using XCF.

TM TCPIP ADD	HOSTNAME(hostname)   IP(nnn.nnn.nnn.nnn)
--------------	--

HOSTNAME(hostname)

Specifies the HOSTNAME of the system on which a TMSS might be running.

hostname

Is a valid hostname from the local host file.

IP(nnn.nnn.nnn.nnn)

Specifies the IP address of the system on which a TMSS might be running.

nnn.nnn.nnn.nnn

Is a valid IP address.

Notes:

TM TCPIP ADD statements are cumulative.

This statement must be specified for every instance of TMSS running in both SYSPLEXes.

For more information about the need and use of TCP/IP in communication across SYSPLEXs refer to [TCPIP Considerations - Communication Across SYSPLEXes](#).

