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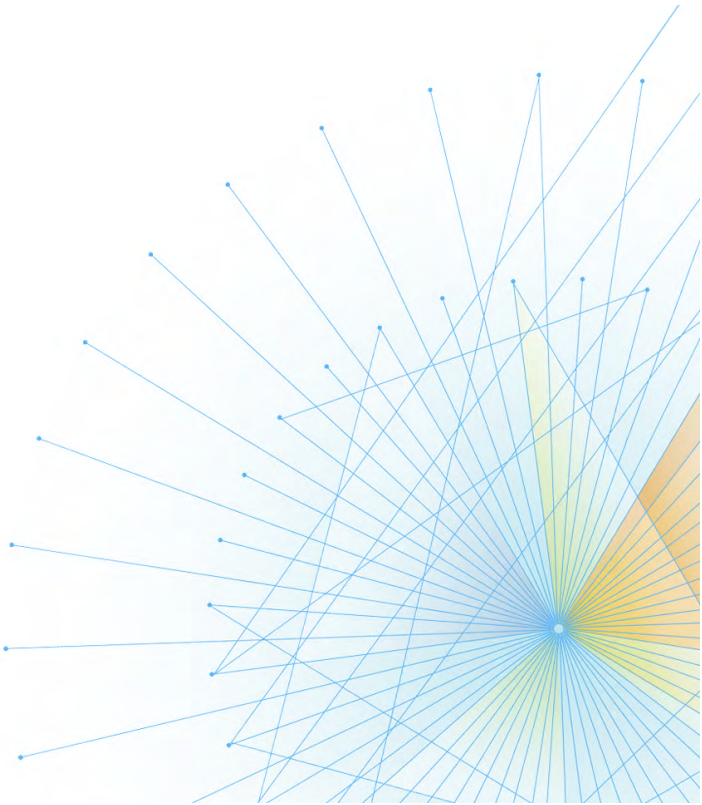
ThruPut Manager Installation Guide

Release 18.02



Please direct questions about ThruPut Manager
or comments on this document to:

ThruPut Manager **Customer Support**

https://go.compuware.com/

Doc. APR2019
March 29, 2019

Introduction

Summary of Changes

V1802-7118 (*April 2019*)	• Added that HEALTHCHECK= can be specified on the JES2 TMPARM statement.
V1802-7117 (*January 2019*)	• References to Version 7 removed or replaced with 18.02.
V1802-7116 (*October 2018*)	• Added information on the TM TCPIP initialization statements required by Automated Capacity Management support for Country Multiplex Pricing.
V1802-7115 (*July 2018*)	• No changes
V1802-7114 (*April 2018*)	• Added additional information regarding TM BERT usage. • Added additional considerations for JES2 Exit Sharing. • Added new verification program that can be run in batch to Step 1A.4.
V1802-7113 (*January 2018*)	• Added LMS requirements. • Moved XCF Notepad from the Release Details to Appendix F in this manual.
V1802-7112 (*October 2017*)	• Increased number of BERTs required.
V1802-7110 (*July 2017*)	• Rebranding of MVS Solutions to Compuware. This includes update of cover style, copyright, and changing version release to 18.02. • Update to product support contact information • Update to include installation steps for CA 7 interface • Announcement of future Compuware LMS enforcement and instruction to install software and obtain license key for ongoing, uninterrupted software functionality. • Added detail regarding 7.5. Implementing the Software Access Control (SAC) Interfaces.
V7R1-7109 *(April 2017)*	• No changes
V7R1-7108 *(February 2017)*	• No changes
V7R1-7107 *(May 2016)*	• No changes
V7R1-7106 *(November 2015)*	• Support for z/OS 2.2. • DTMLINK/ADTMLIB change to PDS/E. • Installation checklist enhancements.

V7R1-7104 *(July 2015)*	• Index has been added.
V7R1-7101 *(July 2014)*	• This is a base manual for ThruPut Manager Version 7 Release 1.0.

About This Manual

This manual addresses the common installation process for the following editions of ThruPut Manager:

- ThruPut Manager AE, the Automation Edition
- ThruPut Manager AE+, the Automation Edition Plus
- ThruPut Manager SE, the Standard Edition

Though the installation process is similar for the three editions, it is not identical and differences are summarized in an initial checklist as well as pointed out throughout the manual.

As much as possible ThruPut Manager is treated as a “black box” for installation purposes with the installer needing little understanding of what ThruPut Manager is and how it works.

Related Material

- The latest *Release Details* contains the summary of changes introduced by each PTF level.
- The installation process for ThruPut Manager AE+ begins in this manual and continues in the *ThruPut Manager AE+ Installation Companion Guide*.

Contents

Chapter 1
Installation Planning

Introduction

This guide contains all the details required to install ThruPut Manager. It describes:

- The distributed materials of the product.
- The machine environment in which the product operates.
- The programming environment in which the product operates.
- The installation procedures.

Product Support

Visit the Compuware Support Center, https://go.compuware.com, to find product documentation, knowledge articles, and other technical resources. You can open a case with the Customer Solutions team, order products, and much more.

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- USA and Canada: 1-800-538-7822 or 1-313-227-5444.
- All other countries: Contact your local Compuware office. Contact information is available at https://go.compuware.com.

Visit Compuware on the web at http://www.compuware.com for additional product information.

Basic Material

ThruPut Manager installation materials are distributed electronically via FTP. The chart on the following page outlines the SMP/E FMIDs and features inherent with each edition.

SMP/E FMID	Feature		TM AE	TM AE+	TM SE
TTM7100	Base functionality	BAS	✓	✓	✓
	Dataset Contention Services	DCS	✓	✓	✓
	Dependent Job Control	DJC	✓	✓	✓
	Job Binding Services	JBS	✓	✓	✓
	Job Chaining Services	JCS	✓	✓	✓
	JES3 Conversion Services	JES3	✓	✓	✓
	Job Limiting Services	JLS	✓	✓	✓
	Job Setup Services	JSS	✓	✓	✓
	Job Timing Services	JTS	✓	✓	✓
	Multi-hold Services	MHS	✓	✓	✓
	Mellon Mods Service	MEL	✓	✓	✓
	Support for JES3 NET	NET	✓	✓	✓
	User Control Services	UCS	✓	✓	✓

SMP/E FMID	Feature		TM AE	TM AE+	TM SE
	User Hold Services	UHS	✓	✓	✓
TTM7105	CA 7 Interface for All Editions		✓	✓	✓
TTM7115	CA 7 Synchronization Usermod		✓	✓	✓
TTM7120	JES2 Synchronization Usermod		✓	✓	✓
TTM7190	Drive Booking Services	DBS	✓	✓	
	Service Level Manager	SLM	✓	✓	
TTM7191	Production Control Services	PCS		✓	

*TTM7115 CA 7 sychronization usermod. Apply this usermod to reassemble the TM CA 7 interface if required.

*TTM7120 JES2/TM synchronization usermod – see Appendix B, “Synchronize JES2 and ThruPut Manager”.

The ThruPut Manager ACF2 FMID is no longer required, as the ACF2 interface is now provided automatically.

Supported Hardware

ThruPut Manager supports currently supported IBM hardware.

Compatibility Considerations

This version of ThruPut Manager is compatible with the following levels of software:

- z/OS: V2.2, 2.3
- JES2 / z/OS: V2.2, 2.3
- CA 7 (TM AE+ only): R11.3 and above

ThruPut Manager is fully downward compatible and can be implemented on a system by system basis unless otherwise stated.

JES2 BERT Increase

ThruPut Manager makes use of JES2 Berts in its processing. Ensure enough are assigned. The following is the recommended guideline for the value of BERTNUM for your environment.

IBM BERTNUM recommendation + #jobs on execution queue x 5 + 1000

Note: If the $ACTIVATE,MODE=Z22 command is issued, TM will calculate whether there are enough JES2 BERTs and, if not, will fail the request with message “DTM2356I $ACTIVATE rejected. ThruPut Manager requires nnnnnnn free BERTs, vvvvvvv available.”

Sharing JES2 Exit Points

For installations that are using JES2 exit points required by ThruPut Manager, see Appendix C, “Share JES2 Exit Points”.

The user-defined fields, $USER3, $USER4, and $USER5 are used by ThruPut Manager and are unavailable for use by any JES2 exit routine.

JES2 exit routines can establish addressability to user control blocks using the optional user-defined fields $USER1 and $USER2 found in the JES2 HCT.

In order to ensure ThruPut Manager functions correctly, all of the TM JES2 exits must always be called. If the installation makes use of the JES2 exit mask (JCTXMASK) to prevent certain exits from getting control on a job basis, care must be taken to ensure that this DOES NOT affect any of the TM JES2 exit points. If TM detects that a Job exit mask is present, then a diagnostic message DTM1118I will be issued in the SYSMSG dataset for the job.

Chapter 2
ThruPut Manager Installation Checklist

The following lists the phases of the installation process, and provides an overview of the steps within a phase that are applicable to each edition of ThruPut Manager. The phases are:

- Phase 1: Install the ThruPut Manager Software: In this phase you download the software from the ftp website identified in your order and establish it in your environment.
- Phase 2: Configure ThruPut Manager: This phase establishes the JES2 parms, sets up the ThruPut Manager Started Task, and allocates files. If you are an existing customer these may already be completed and sufficient based on your previous installations and upgrades.
- Phase 3: Review ThruPut Manager Interfaces: ThruPut Manager may have introduced changes that interact with other software products, e.g., messages for automated operators. ThruPut Manager may interact with other system software, and this phase is where you review these interactions.
- Phase 4: Activate ThruPut Manager: In this phase you start ThruPut Manager and verify that it is behaving as expected.
- Phase 5: Continue the Installation Process for AE+: ThruPut Manager AE+ requires tailoring beyond the steps in this manual and before the implementation process using the relevant dialog. Refer to the *ThruPut Manager AE+ Installation Companion Guide* for details.

Use the Installation Checklist to identify the steps relevant to your situation. Subsequent chapters provide the details for each phase. This guide is intended to install the TM software. Further steps, as outlined in the *AE Usage Guide*, are required to activate AE in your installation.

Phase 1: Install the ThruPut Manager Software

Use either Step 1A or Step 1B.

- Step 1A is for users:
  - Installing ThruPut Manager for the first time
  - Replacing their ThruPut Manager environment with a new maintenance level
- Step 1B is for users:
  - Updating (via SMP/E) an existing ThruPut Manager environment

	Step	INSTALL Dataset Member	Notes	TM AE	TM AE+	TM SE
Pre-Step 1: Install Enterprise Common Components (ECC)						
❑	Install ECC according to the Enterprise Common Components Installation and Customization Guide		• For the 18.02 TMT7110-TMT7112 releases, software/key NOT required for TM to function. • For the 18.02 TMT7113 release and above, software key is required.	✓	✓	✓

	Step	INSTALL Dataset Member	Notes	TM AE	TM AE+	TM SE
Step 1A. Use QUIKLOAD Technique (Step 1A and 1B are mutually exclusive)						
❑	1A.1. Restore the ThruPut Manager Datasets		• See the shipment email for the link to the JCL to download files. • DTMLINK must be an APF authorized library and in the LiNKLST.	✓	✓	✓
❑	1A.2. Modify the ThruPut Manager SMP/E JCL PROC	TMSMPE		✓	✓	✓
❑	1A.3. Restore SMP/E Environment	I$FSMPE		✓	✓	✓
❑	1A.4. Alter SMP/E Definitions/Settings	I$ZONE		✓	✓	✓
❑	1A.5. Reassemble/Link ThruPut Manager Source Stubs	I$JESLNK	Run each time the JES2 level changes.	✓	✓	✓
❑	1A.6. Merge SMP/E Environment (optional)	I$ZNEIMP	Optional	Opt.	Opt.	Opt.
Step 1B. Use SMP/E Technique (Step 1A and 1B are mutually exclusive)						
❑	1B.1. Download the ThruPut Manager Installation Files		See the shipment email for the link to the JCL to download files.	✓	✓	✓
❑	1B.2. ACCEPT Previous Maintenance	I$SMP1		✓	✓	✓
❑	1B.3. Allocate PDSE	I$DTMLNK	Applicable for TMT7105 level and above.	✓	✓	✓
❑	1B.4. Receive ThruPut Manager Upgrade	I$SMP2		✓	✓	✓
❑	1B.5. APPLY ThruPut Manager Upgrade	I$SMP3		✓	✓	✓
❑	1B.6. APPLY APARs	I$SMP3		✓	✓	✓
❑	1B.7. Reassemble/Link ThruPut Manager Source Stubs	I$JESLNK		✓	✓	✓

Phase 2: Configure ThruPut Manager

Complete this phase if you are installing:

- The product for the first time

- An (edition of) the product on a system for the first time

This phase may not be necessary if you are upgrading to a new maintenance level. Consult the *Release Details* for more information.

	Step	INSTALL Dataset Member	Notes	TM AE	TM AE+	TM SE
Step 2. Add the JES2 Interfaces						
❑	2.1. JES2 Load Statements	JESPARM		✓	✓	✓
❑	2.2. JES2 Exit Statements	JESPARM		✓	✓	✓
❑	2.3. TMPARM Statement	JESPARM		✓	✓	✓
❑	2.4. TMPARM Defaults	JESPARM		✓	✓	✓
Step 3. Identify the ThruPut Manager Subsystem						
❑	3.1. Update MVS Member IEFSSNxx			✓	✓	✓
Step 4A Allocate and Format ThruPut Manager Required Files						
❑	4A.1. Control File (CF)	I$ALLOC		✓	✓	✓
❑	4A.2. Volume Information File (VIF)	I$ALLOC		✓	✓	✓
❑	4A.3. Contention Management Facility File (CMF)	I$ALLOC	Required to record DCS contention	Opt.	Opt.	Opt.
Step 4B Allocate ThruPut Manger Additional Files						
❑	4B.1 Automation File (AF) - TM AE and TM AE+ ONLY		Allocated in Automation Services Dialog.	✓	✓	
❑	4B.2 Battle Plan File (BPF) - TM AE+ ONLY	I$ALLOC2	See AE+ Installation Companion Guide.		✓	
❑	4B.3 Experience Collection File (EXPC) - TM AE+ ONLY	I$ALLOC2	See AE+ Installation Companion Guide.		✓	
❑	4B.4 Experience File (EXPC) - TM AE+ ONLY	I$ALLOC2	2 files See AE+ Installation Companion Guide.		✓	
❑	4B.5 Application Management DB (AMD) - TM AE+ ONLY		See AE+ Installation Companion Guide.		✓	
Step 5. Tailor the ThruPut Manager Started Task (TMSS)						
❑	5.1. Prepare for TMSS Activation			✓	✓	✓
❑	5.2. TMSS Initialization Statements	TMSS00	Verify DCS SET XCF(YES) is coded in the TMSS init statements. See Step 7.4.2 for more detail.	✓	✓	✓
❑	5.3. TMSS Startup Considerations			✓	✓	✓

Phase 3: Review ThruPut Manager Interfaces

All users complete this phase. If you are also upgrading from Version 6, review Technical Bulletin TM140505 for version to version changes.

	Step	INSTALL Dataset Member	Notes	TM AE	TM AE+	TM SE
Step 6. Accommodate Changes Introduced with this Package (*can be performed after IPL)						
❑	6.1 Accommodate changes		See Technical Bulletin TM140505.	✓	✓	✓
Step 7 7. Verify ThruPut Manager and OEM Interfaces (*can be performed after IPL)						
❑	7.1. Implementing the ISPF Interfaces TMISPF AND UDF			✓	✓	✓
❑	7.2. Implement the DFSMShsm Interface - TM AE and TM AE+ ONLY			✓	✓	
❑	7.3. Implement Virtual Volume Staging	TMVVS		✓	✓	✓
❑	7.4. OEM Considerations			✓	✓	✓
❑	7.4.1. JES2	UCLINU UCLING		✓	✓	✓
❑	7.4.2. XCF			✓	✓	✓
❑	7.4.3. StorageTek/HSC			✓	✓	✓
❑	7.4.4 CA 7	I$CA7		✓	✓	✓
❑	7.4.5. CA-JMR - TM AE and TM AE+ ONLY			✓	✓	
❑	7.4.6. CA-Deliver - TM AE and TM AE+ ONLY			✓	✓	
❑	7.5. Implementing the Software Access Control (SAC) Interfaces			✓	✓	✓

Phase 4: Activate ThruPut Manager

All users complete this phase.

	Step	INSTALL Dataset Member	Notes	TM AE	TM AE+	TM SE
Step 8. IPL						
❑	8.1. Prepare to IPL			✓	✓	✓
❑	8.2. Perform an IPL and a JES2 warm start.		ThruPut Manager AE+ requires additional tailoring of the CA7 interface, therefore postponing IPL may be desired.	✓	✓	✓
Step 9. Start the ThruPut Manager Started Task						
❑	9.1. Start TM Started Task and Review DTM Messages		Review startup messages for errors.	✓	✓	✓
❑	9.2 Define ThruPut Manager Job Classes		Use TM CLASS ADD/SET/DEL.	✓	✓	✓

	Step	INSTALL Dataset Member	Notes	TM AE	TM AE+	TM SE
❑	9.3. Issue $MJ,START Command		• No JES2 job selection until this command has been issued. • Minimum of $MJ START required for initial implementation.	✓	✓	✓
❑	9.4 Verify ThruPut Manager is Functioning			✓	✓	✓

For AE+ additional setup refer to the *ThruPut Manager AE+ Installation Companion Guide*.

This completes the ThruPut Manager installation process.

Chapter 3
Phase 1: Install the ThruPut Manager Software

Install Compuware LMS

ThruPut Manager now has an interface to Compuware License Management System (LMS). LMS and a valid ThruPut Manager license are required for ThruPut Manager to function.

Contact your Compuware representative to obtain information on LMS and to obtain a ThruPut Manager license certificate.

Download ECC from Compuware's Support website and configure the CMSC and LMS in your environment.

ThruPut Manager performs licensing authentication at two points in processing. The first is when the TM STC is initializing and the second is a daily check performed at 12:00 p.m. When the check is performed, TM attempts to communicate with the LMS task. If it is not successful, it will retry every 30 minutes for 24 hours. Once that time expires, the TM STC will be shut down with appropriate messages.

> Note: In order to accommodate an initial IPL when LMS may be started after TMSS, TM waits 5 minutes for LMS to start (proceeding with TMSS initialization while it waits). If, after this period of time, LMS is still not active, then a 24-hour window is opened. Therefore, ensure that the CMSC task starts shortly after the TM STC begins initialization.

Also, installations that make use of the $JCSSTC JECL keyword on the TMPARM statement must ensure the LMS task is exempt from this processing. See JECL= statement in Section 3: TMPARM Initialization Statement.

Install ThruPut Manager

Step 1A and 1B are mutually exclusive.

Step 1A is directed at first time installation of ThruPut Manager as well as those wishing to completely replace their ThruPut Manager environment with a new maintenance level. Step 1B describes an incremental SMP/E upgrade.

Compuware recommends the first alternative whenever possible.

1A. Use QUIKLOAD Technique

Step 1B is an alternative to Step1A. Complete one or the other.

The installation of ThruPut Manager can be accomplished using the QUIKLOAD technique. The installation materials contain an SMP/E environment with Compuware defined options. Steps 1A.1 through 1A.7 must be executed in their entirety for the process to function correctly. This method:

- Unloads the complete SMP/E installed ThruPut Manager edition, current accumulative maintenance (PTFs in ACCEPT'd status), and APARs (not ACCEPT'd).
- Provides the corresponding self-contained SMP/E environment needed for future maintenance.
- Can remain a standalone environment or be merged into an existing SMP/E environment.

1A.1. Restore the ThruPut Manager Datasets

Restore the installation files using the JCL link and password provided on the Electronic Delivery page received via the email response to your order.

This job unloads the INSTALL dataset, the ThruPut Manager libraries and the respective SMP/E environment needed to maintain ThruPut Manager.

The INSTALL dataset may contain updated information and should be used in place of any existing installation materials.

The following chart lists the datasets and 3390 DASD space recommendations required for installation. Adjust these accordingly for different DASD device types. These estimates include additional space for SMP/E maintenance.

Datasets	Directory Blocks	Tracks	Description
INSTALL	5	15	Installation JCL and Sample library
TMGLOBAL	N/A	120	SMP/E Global CSI
SMPPTS	75	1125	SMP/E PTS dataset
DTMLINK	40	750	ThruPut Manager load library
DTMLINK (PDSE)	40	1500	ThruPut Manager load library at TMT7105 and above
DTMMAC	15	45	ThruPut Manager macro library
DTMSRC	5	15	ThruPut Manager source library
DTMMENU	100	50	ThruPut Manager ISPF menu library
DTMTENU	5	5	ThruPut Manager ISPF table library
DTMPENU	500	600	ThruPut Manager ISPF panels library
ADTMLIB	100	1350	ThruPut Manager SMP/E distribution library
ADTMMAC	400	600	ThruPut Manager SMP/E distribution library
ADTMSRC	5	15	ThruPut Manager SMP/E distribution library

1A.2. Modify the ThruPut Manager SMP/E JCL PROC

INSTALL(TMSMPE) contains the SMP/E PROC needed to run the SMP/E steps referenced by some of the installation JCL via the JCLLIB statement. This PROC should be tailored to meet your installation requirements and assumes the target and distribution libraries are defined by DDDEF.

1A.3. Restore SMP/E Environment

Run INSTALL(I$FSMPE) to build and load the SMP/E environment. JCL is provided, in a later step, to change internal SMP/E options and incorporate the SMP/E environment into an existing environment if necessary.

1A.4. Alter SMP/E Definitions/Settings

Run INSTALL(I$ZONE) to alter the zone settings and DDDEF dataset names in your new environment. Make sure the DDDEFs refer to the ThruPut Manager libraries allocated during the installation process. Return Code 04 is expected.

The VERIFY step lists the PTFs and APARs shipped with the downloaded environment. This list can be compared with the output of the ThruPut Manager command TM D LEVEL to validate the resulting SMP/E environment against the product environment.

The final optional step is sample JCL to allow installations to alter target or distribution zone settings.

At PTF TMT7113 and above, installations may make use of a new verification program DTMTMLV7. This batch program executes against a given TM library and provides the output from the TM D LEVEL command. The library in question can be specified in a JOBLIB or STEPLIB DD. If neither is provided, then the job will run against the modules found on the system where the job executes. This function allows the installation to ensure that the modules they are about to implement include the expected maintenance levels. See member TMVERIFY in the Install dataset for sample JCL

1A.5. Reassemble/Link ThruPut Manager Source Stubs

Run INSTALL(I$JESLNK) to assemble and link the ThruPut Manager source stubs with the targeted level of JES2 macros. This step provides accurate JES2 addressing. Make sure the job's system and JES2 libraries are pointing to the system level for which ThruPut Manager is targeted.

A dummy usermod for ThruPut Manager has been provided to manage the synchronization of the ThruPut Manager source stubs. TTM7120 triggers a warning message or re-assembly of ThruPut Manager JES2 source stubs DTMJ2MV7 and DTMJ2SV7 when required (See Appendix B, Synchronize JES2 and ThruPut Manager for details).

1A.6. Merge SMP/E Environment (optional)

Run INSTALL(I$ZNEIMP) to merge the newly created SMP/E information with an existing ThruPut Manager SMP/E environment. This job does the following:

- Creates transportable copy of newly installed ThruPut Manager zones
- Defines new zoneset in existing GLOBAL environment
- Imports copies into new zoneset in existing environment
- Merges new ThruPut Manager GLOBAL information into existing GLOBAL

Make sure unique TARGETZONE and DZONE names are selected. This ensures any existing ThruPut Manager Target and DLIB zones are not replaced, thereby serving as backups. Also, verify the DDDEFs point to the correct level of datasets. (This should have been done in a previous tailoring step and the information carried with the zone).

This completes the QUIKLOAD process.

Proceed to Phase 2: Configure ThruPut Manager if you are:

- installing the product for the first time.
- installing (an edition of) the product on a system for the first time.

Proceed to Phase 3: Review ThruPut Manager Interfaces if you are:

- upgrading to a new maintenance level.
- upgrading from Version 6 and have reviewed Technical Bulletin TM140505 for version to version changes.

1B. Use SMP/E Technique

Step 1A is an alternative to Step 1B. Complete one or the other.

This technique is applicable to installations where ThruPut Manager is already installed and is being upgraded; it is not applicable to new installations. The following jobs, in their entirety, install the current SMP/E PTF updates to your existing SMP/E environment.

1B.1. Download the ThruPut Manager Installation Files

Restore the installation files using the JCL link and password provided on the Electronic Delivery page received via the email response to your order.

This job unloads the INSTALL dataset, and the ThruPut Manager libraries providing the accumulated maintenance.

1B.2. ACCEPT Previous Maintenance

Run INSTALL(I$SMP1) to ACCEPT any installed PTFs that have not been previously ACCEPT'd. APARs should not be ACCEPT'd. This provides the option of using the SMP/E RESTORE function to back out the SMP/E upgrade if problems with the installation are encountered.

1B.3. Allocate PDSE

At TMT7105 level and above, ThruPut Manager DTMLINK and ADTMLIB libraries must be copied to a PDSE format. Refer to I$DTMLNK in INSTALL dataset.

1B.4. Receive ThruPut Manager Upgrade

Run INSTALL(I$SMP2) to RECEIVE the PTFs and APARs that were downloaded from the ThruPut Manager FTP site. The LIST option allows the display of PTF details and APAR descriptions and requirements to the SMPOUT DD for your review.

Compuware makes use of IBM's SMP/E keyword RFDSNPFX. The prefix of MVSSOL used for SYSMOD RELFILE names enables environments to permanently authorize one (MVSSOL) high-level qualifier. For sites that still have dataset naming requirements, an additional high-level qualifier may be added by altering MVSSOL to prefix.MVSSOL using the RFPREFIX keyword on the RECEIVE statement. The resulting input relfile name is RFPREFIX.RFDSNPFX.sysmod_id.F1

1B.5. APPLY ThruPut Manager Upgrade

Run INSTALL(I$SMP3) to APPLY the PTFs to the target libraries in the zone where ThruPut Manager has been APPLY'd.

- Do not use the GROUPEXTEND option on the APPLY statement. This option can produce unpredictable results.
- Add the RECEIVED PTFs to the APPLY control statement.
- The level of system (SYS1.MACLIB) and JES2 (SHASMAC) macro libraries used in the SYSLIB concatenation or SYSLIB DDDEF concatenation must reflect the level of JES2 that is running on the system ThruPut Manager is intended for (the target system). This ensures ThruPut Manager and JES2 remain in sync by providing ThruPut Manager with proper JES2 addressing.
- If your JES2 source has been modified by either USERMODS or other vendor software, ensure the libraries containing the modified JES2 macros are also concatenated ahead of the JES2 macro library in the SYSLIB DD statement or in the SYSLIB DDDEF.
- Return code 0 is expected from the APPLY. If a RC=4 is received, check the SMPOUT/SYSPRINT sysouts for space problems, missing DD statements, incomplete link edits, APARs being regressed, etc. Rectify these conditions and rerun the APPLY with the REDO option.
- The parameter being passed to the assembler (PARM=) must include options NOUSING,DECK,NOOBJECT or you will experience RC=4 with many ASMA303W messages and the linkage step will produce undesirable results.

Tip

The DTMLINK library contains the ThruPut Manager load modules customized to your SMP/E JES2 level.

1B.6. APPLY APARs

Run INSTALL(I$SMP3) to APPLY all APARs contained in the APARs zip file supplied with the installation package. All APARs should be applied to avoid encountering known problems.

- Run an APPLY CHECK with all APARs.

- SMP/E restrictions dictate the application of only one APAR to a CSECT in any single APPLY statement. Use an APPLY CHECK to determine if any APARs cannot be applied together in the same APPLY statement and code separate APPLY statements for those identified.
- All of the APARs available at the time of shipment are contained in this install. Any additional APARs made available after creating the shipment can be obtained by visiting the Download APARS/Fixes section of the Support Center on the ThruPut Manager website. If relevant, apply these additional APARs.
- An ACCEPT of the APARs is not recommended.

1B.7. Reassemble/Link ThruPut Manager Source Stubs

Once ThruPut Manager is installed, it may be necessary to re-assemble the source stubs to synchronize ThruPut Manager with the JES2 and system level macros of the target system. This ensures ThruPut Manager is provided with proper JES2 addressing.

A dummy usermod for ThruPut Manager has been provided to manage the synchronization of the ThruPut Manager source stubs. TTM7120 triggers a warning message or re-assembly of ThruPut Manager JES2 source stubs DTMJ2MV7 and DTMJ2SV7 when required (See Synchronize JES2 and ThruPut Manager for details).

This completes the SMP/E process.

Proceed to Phase 2: Configure ThruPut Manager if you are:

- installing the product for the first time.
- installing (an edition of) the product on a system for the first time.

Proceed to Phase 3: Review ThruPut Manager Interfaces if you are:

- upgrading to a new maintenance level.
- upgrading from Version 6 and have reviewed Technical Bulletin TM140505 for version to version changes.

Chapter 4
Phase 2: Configure ThruPut Manager

This phase establishes the JES2 parms, sets up the ThruPut Manager started task, and allocates files. If you are an existing customer these may already be completed and sufficient, based on your previous installations and upgrades. Phase 2 may be unnecessary for existing sites upgrading to a new maintenance level.

2. Add the JES2 Interfaces

To configure ThruPut Manager include additional statements in your JES2 initialization stream:

1. LOAD statements fetch the ThruPut Manager executable code.
2. EXIT statements describe the JES2 exits needed by ThruPut Manager.
3. A new JES2 control statement, TMPARM, customizes ThruPut Manager to your environment. It must be placed after the LOAD and EXIT statements.

2.1. JES2 Load Statements

Include these LOAD statements in your JES2 initialization stream:

```
LOADMOD(DTMJ2SV7) STORAGE=CSA

LOADMOD(DTMJ2MV7) STORAGE=PVT
```

DTMJ2SV7 contains exit routines which run in the Job Analyzer and user address spaces. This module is linked in a linklisted dataset.

DTMJ2MV7 contains exit routines which run in the JES2 address space (i.e., called by the JES2 main task). This module is linked in a linklisted dataset.

2.2. JES2 Exit Statements

Add the ThruPut Manager JES2 Exit routines to the JES2 initialization statements.

If your installation uses or plans to use the same exit points as ThruPut Manager, you must make sure that the ThruPut Manager exits are not bypassed as a result of your exits. Refer to Appendix C, Share JES2 Exit Points for details.

Review the following statements carefully. Incorrect statements can have unpredictable results, since JES2 gives control to the wrong exit. In these statements:

- Items enclosed in brackets '[ ]' are optional.
- A list of items in braces '{ }' means choose one from the list.
- Defaults are indicated by underlining.
- yourexit represents the names of your installation exits, if any, that are to be given control at that exit point.

```
EXIT(2) ROUTINE=(DTMJ2X02[,yourexit]), STATUS=ENABLED[,TRACE={NO | YES}] See Note 2
EXIT(4) ROUTINE=(DTMJ2X04[,yourexit]), STATUS=ENABLED[,TRACE={NO | YES}]
EXIT(5) ROUTINE=(DTMJ2X05[,yourexit]), STATUS=ENABLED[,TRACE={NO | YES}]
EXIT(7) ROUTINE=(DTMJ2X07[,yourexit]), STATUS=ENABLED[,TRACE={NO | YES}]
EXIT(8) ROUTINE=(DTMJ2X08[,yourexit]), STATUS=ENABLED[,TRACE={NO | YES}]
EXIT(10) ROUTINE=(DTMJ2X10[,yourexit]), STATUS=ENABLED[,TRACE={NO | YES}]
EXIT(14) ROUTINE=(DTMJ2X14[,yourexit]), STATUS=ENABLED[,TRACE={NO | YES}]
EXIT(19) ROUTINE=(DTMJ2X19[,yourexit]), STATUS=ENABLED[,TRACE={NO | YES}] See Note 1
EXIT(24) ROUTINE=(DTMJ2X24[,yourexit]), STATUS=ENABLED[,TRACE={NO | YES}] See Note 1
EXIT(49) ROUTINE=(DTMJ2X49[,yourexit]), STATUS=ENABLED[,TRACE={NO | YES}]
EXIT(51) ROUTINE=(DTMJ2X51[,yourexit]), STATUS=ENABLED[,TRACE={NO | YES}]
EXIT(52) ROUTINE=(DTMJ2X52[,yourexit]), STATUS=ENABLED[,TRACE={NO | YES}] See Note 2
EXIT(54) ROUTINE=(DTMJ2X54[,yourexit]), STATUS=ENABLED[,TRACE={NO | YES}]
```

Note 1: EXIT 19 and EXIT 24 are JES2 initialization exits. As a result, if they are activated through a command, their invocation does not take place until the next JES2 restart.

Note 2: EXIT 2 and EXIT 52 are new for installations moving from TM V6.

2.3. TMPARM Statement

The TMPARM statement must be placed after the JES2 LOAD and EXIT statements for ThruPut Manager modules. ThruPut Manager is operational with the TMPARM defaults, and you may not need to change any of the default values. However it is prudent to verify this is the case for your situation.

The TMPARM parameters referring to special classes are no longer supported. If included the following message will be issued:

```
DTM2270I FOLLOWING INVALID KEYWORD IGNORED : text
```

We recommend you remove them from your TMPARM statement. (You must define all job classes – Primary, Deferred, Analysis, Select, Exempt, and/or Default) via the TM CLASS command. See Technical Bulletin TM140505 for customers converting from ThruPut Manager V6.)

The TMPARM statement customizes the ThruPut Manager JES2 interface. The following functions can be specified:

- Process jobs with a JES2 /*SETUP statement.
- Process jobs submitted with TYPRUN=SCAN.
- Process jobs submitted with TYPRUN=HOLD.
- Define communication character(s) to be used as a signal that a given command belongs to ThruPut Manager.
- Adjust CPU factor to be used if you chose the CPU normalization facilities of ThruPut Manager. For a full explanation of this facility, refer to *Base Product: System Programming Guide "CPU Capping & Normalizing."*
- Activate or deactivate product features.
- Set user JECL mapping and processing options.
- Set system affinity for CONVERTER and Job Analysis.

2.4. TMPARM Defaults

If no TMPARM statement is coded, the following defaults apply.

```
AFFINITY = ANY
CNVTERR = NO
COMCHAR = /
OPTIONS = (see following chart)
```

Feature	Default Status	TM AE	TM AE+	TM SE
DCS	ACTIVE	✓	✓	✓
DJC	ACTIVE	✓	✓	✓
JBS	ACTIVE	✓	✓	✓
JCS	ACTIVE	✓	✓	✓
JES3	INACTIVE	✓	✓	✓
JLS	ACTIVE	✓	✓	✓
JSS	ACTIVE	✓	✓	✓
JTS	ACTIVE	✓	✓	✓
Mellon	INACTIVE	✓	✓	✓
MHS	ACTIVE	✓	✓	✓
NET	INACTIVE	✓	✓	✓
UCS	ACTIVE	✓	✓	✓
UHS	ACTIVE	✓	✓	✓
DBS	ACTIVE	✓	✓	N/A
SLM	ACTIVE	✓	✓	N/A
PCS	ACTIVE	N/A	✓	N/A

Details of the TMPARM initialization statement can be found in Section 3: TMPARM Initialization Statement in this manual.

3. Identify the ThruPut Manager Subsystem

3.1. Update MVS Member IEFSSNxx

ThruPut Manager uses the subsystem interface to communicate with consoles. For documentation purposes, Compuware recommends that you define the subsystem name $$TM to z/OS (IEFSSNxx in SYS1.PARMLIB). At initialization time, ThruPut Manager dynamically creates a subsystem entry for $$TM if it is not defined in member IEFSSNxx.

4. Allocate and Format ThruPut Manager Files

Allocate the ThruPut Manager files. All are required for the relevant edition, except the *Contention Management Facility* file, which is only required when Dataset Contention Services is enabled and the installation wants to collect information about dataset contentions.

For ThruPut Manager AE, an additional file, the *Automation File* is allocated in the Automation Services dialog, and no further action is needed at this time.

For ThruPut Manager AE+, an additional file, the *Application Management Database* is allocated in the Production Control Services dialog, and no further action is needed at this time.

ThruPut Manager AE+ also requires Battle Plan File, Experience Collection File, and Experience File to be allocated.

For further information on regular maintenance and performance, see File Maintenance and Performance.

File	Name	TM AE	TM AE+	TM SE
CF	Control File	✓	✓	✓
VIF	Volume Information File	✓	✓	✓
CMF	Contention Manager Facility File	Opt.	Opt.	Opt.
AF	Automation File	✓	✓	
BPF	Battle Plan File		✓	
EXPC	Experience Collection File		✓	
Experience	Experience File (2 files)		✓	
AMD	Application Management Data Base		✓	

4A.1. Control File (CF)

The ThruPut Manager Control File is a mandatory DASD file and contains critical information essential for the management of jobs under the control of ThruPut Manager. This file is as integral to ThruPut Manager as the JES2 checkpoint is to JES2.

To allocate this file, run INSTALL(I$ALLOC). The first time that the Control File is used, TMSS automatically formats the file. TMSS always asks for confirmation before formatting the Control File.

Tip

In a MAS environment, the Control File is best to be on its own volume, and must not be allocated on a volume that contains JES2 PARMLIB libraries or the JES2 Duplex dataset.

If the Installation wishes to setup the TM Control File in the Coupling Facility refer to Appendix F, XCF Notepad.

4A.2. Volume Information File (VIF)

The VIF is a mandatory shared DASD file which tracks volumes that are being managed by Job Setup Services (JSS) primarily for Virtual Volume Staging.

To allocate the VIF run INSTALL(I$ALLOC).

The VIF is formatted automatically upon its first use, and any time VIF=COLD is specified when starting the TMSS started task.

4A.3. Contention Management Facility File (CMF)

The CMF is an optional file used exclusively by Dataset Contention Services to record contention records that are used by the management reports produced by DCS. This file is shared by all the systems that are part of the DCS complex. For more information on how to implement DCS Recording, see the *Dataset Contention Services: System Programming Guide*.

The nature of the CMF File does not permit an exact calculation of its size. One cylinder of a 3390 device holds records for approximately 600 to 1000 jobs in contention. Consider your reporting cycle

(daily, weekly, on demand, or any other interval you may choose) and the frequency of dataset conflicts.

Calculate the number of jobs that might run into contention during your cycle time, then double the space needed. This approach should provide you with a comfortable margin of error.

To allocate the CMF run INSTALL(I$ALLOC). The dataset is formatted if DCS detects that it has not been formatted. TMSS asks for operator confirmation before formatting the CMF file.

4B.1 Automation File (AF) - TM AE and TM AE+ ONLY

The Automation File is required only for TM AE and TM AE+. It is shared among all systems in JESplex. Installations with more than one JESplex will need one Automation File for each JESplex.

AF is initialized and maintained using ISPF dialogs. The TMISPF dialog performs the actual allocation and initialization.

4B.2 Battle Plan File (BPF) - TM AE+ ONLY

To allocate Battle Plan File run member 1$ALLOCZ in the INSTALL dataset. See the ThruPut Manager AE+ Installation Companion Guide for more information.

4B.3 Experience Collection File (EXPC) - TM AE+ ONLY

To allocate Experience Collection File run member 1$ALLOCZ in the INSTALL dataset. See the ThruPut Manager AE+ Installation Companion Guide for more information.

4B.4 Experience File (EXPC) - TM AE+ ONLY

To allocate Experience File run member 1$ALLOCZ in the INSTALL dataset. See the ThruPut Manager AE+ Installation Companion Guide for more information.

4B.5 Application Management DB (AMD) - TM AE+ ONLY

This file is defined from the PCS dialog. See the ThruPut Manager AE+ Installation Companion Guide for more information.

5. Tailor the ThruPut Manager Started Task (TMSS)

5.1. Prepare for TMSS Activation

ThruPut Manager Support Services (TMSS) runs as a started task in its own address space, and must be active for ThruPut Manager to perform any of its functions (excluding job selection).

The following discussion describes the TMSS sample JCL procedure delivered with ThruPut Manager. In most cases, this procedure can be used without modification.

At a minimum, the ThruPut Manager DTMLINK library must be an APF authorized library which is contained in the LINKLIST (concatenated with SYS1.LINKLIB). The TMSS Started Task requires a Control File, a Volume Information File (VIF), and optionally for DCS, a Contention Manager File (CMF). These files are automatically formatted upon initial ThruPut Manager startup.

TMSS Sample Procedure

A sample procedure is in INSTALL(TMPROC). The JCL for this procedure is shown below.

```
//TM PROC TMSS=00,P='SYS1.PARMLIB',CF=,CMF=,SPOOL=,VIF=
//TM EXEC PGM=DTMTMV7,TIME=1440,REGION=0K,
// PARM='CF=&CF,CMF=&CMF,SPOOL=&SPOOL,VIF=&VIF'
//* PARAMETERS USED TO SUPPORT THRUPUT MANAGER FILES:
//* CF USED TO FORMAT THE CONTROL FILE, OR A PART OF
//* THE CONTROL FILE ASSOCIATED WITH AN FEATURE
//* CMF USED TO FORMAT THE CMF FILE
//* SPOOL USED TO FORMAT THE SPOOL FILE
//* VIF USED TO FORMAT THE VOLUME INFORMATION FILE
//* PARAMETERS FOR FILES NOT USED ARE CHECKED FOR SYNTAX BUT
//* ARE OTHERWISE IGNORED
//SYSPARM DD DSN=&P(TMSS&TMSS),DISP=SHR,FREE=CLOSE
```

- This procedure needs only one DD statement, SYSPARM, from which TMSS reads sequential input. TMSS dynamically allocates any other required datasets. This DD statement points to the dataset that contains the TMSS initialization statements and allows the installation to customize the product to your installation requirements. They are discussed in Section 4: TMSS Initialization Statements.
- Do not add SYSABEND, SYSMDUMP, or SYSUDUMP DD statements to the procedure, since TMSS takes dumps using the z/OS SVC Dump facility.

Sample PROC Parameters

Two of the parameters in the sample PROC are used to indicate where TMSS can find its initialization statements. These are:

`TMSS=nn`

Specifies a one or two character qualifier to be appended to the characters TMSS to form the name of a PDS member which contains TMSS initialization statements. The default for this parameter is 00.

`P=dsname`

Specifies a cataloged dataset name indicating a partitioned dataset which contains the member TMSSnn, as specified by the TMSS parameter. The default is SYS1.PARMLIB.

The load module name for the TMSS PROC is DTMTMV7. It accepts options in the EXEC PARM field. The options are supported in the sample procedure by parameters, each of which apply to a ThruPut Manager file. They are:

`CF=COLD or CF='FORMAT(feature1[,...,featuren])'`

Requests an exceptional action to be taken for the area of the Control File used by one or more features. This is a request to reformat the area (or areas) associated with the features listed. You are asked for permission and must confirm the request.

`CMF=COLD`

Requests an exceptional action to be taken for the CMF file. Use this parameter only when you want to COLD start this file. Before the CMF is reformatted, you are asked for permission and must confirm the request.

The CMF file is an optional file used only with DCS, and might not be enabled in your installation. Consult your ThruPut Manager systems programmer.

`VIF=COLD`

Requests an exceptional action to be taken for the Volume Information File. Use this parameter only when you want to COLD start this file. Before the VIF is reformatted, you are asked for permission and must confirm the request.

The Volume Information File is required by Job Setup Services (JSS).

This sample procedure applies to all editions of ThruPut Manager. Parameters from this procedure apply to specific files, some of which might not be used in your installation. If you specify a parameter for a file that your installation does not use, the parameter is checked for syntax but is otherwise ignored.

The syntax for the START command using the JCL procedure shown earlier is:

```
S TM[,TMSS=nn | 00]
[,P=dsname | SYS1.PARMLIB]
[,CF=COLD | CF='FORMAT(feature1[,...,featuren])']
[,CMF=COLD]
[,VIF=COLD]
```

5.2. TMSS Initialization Statements

A sample TMSSnn is provided in member TMSS00 in the INSTALL dataset. A summary of the required initialization statements for a basic ThruPut Manager installation follows. A complete description of all the TMSS initialization statements is included in Section 4: TMSS Initialization Statements in this manual. The following table lists the required TMSS initialization statements and their descriptions.

Statement	Description
DCS SET XCF(YES)	Sets global defaults for DCS. Allows DCS to use XCF for communication across SYSplexes. Assuming you are using GRS, this should be set for all members of the SYSplex. New and existing customers should review section Section 6: DCS XCF Setup.
FILE CF	Specifies the name of the Control File, as well as some timing parameters to ensure all systems can access the file.
FILE CMF	Specifies the name of the file to be used for dataset contention data recording.
FILE VIF	Specifies the name of the dataset used for the Volume Information File.

5.3. TMSS Startup Considerations

Before attempting to start ThruPut Manager, make sure that your initialization statements include the FILE CF and FILE VIF statements, and that the files have been properly allocated.

Once the cataloged procedure is in place, you can start and stop the TMSS started task just as you would any other started task. TMSS always runs under the subsystem which processes the start command, allowing you to use secondary subsystems when desired. To run under a secondary subsystem, use the SUB keyword in your START command. For example, to run under JESB type: S TM,...,SUB=JESB

In most installations, the START TM command can be part of an auto-start command string executed during system IPL.

TMSS is identified by the task identifier “TM” (for example, in the display from a z/OS D A command).

The precise START command you use depends on your environment and the ThruPut Manager files used in your installation.

Chapter 5
Phase 3: Review ThruPut Manager Interfaces

ThruPut Manager may have introduced changes that affect its current implementation or interaction with other software products, e.g., messages for automated operators.

6. Accommodate Changes Introduced with this Package

Refer to the *Release Details* manual for any changes introduced by a PTF, (initialization parms, messages, JAL descriptors, etc.) that may affect your automation operations or general implementation, and make appropriate accommodations.

Also, for customers upgrading from TM V6, refer to the following Technical Bulletin:

- TM140505 – ThruPut Manager V6 to 18.02 Considerations

7. Verify ThruPut Manager and OEM Interfaces

This section describes additional steps to tailor ThruPut Manager after the initial installation or maintenance upgrade. Also refer to this section, after OEM upgrades, for possible information specific to products that interface with ThruPut Manager, such as JES2, CA products, or automated tape.

Tip: The following can be performed after an IPL.

7.1. Implementing the ISPF Interfaces TMISPF AND UDF

ThruPut Manager includes ISPF datasets to provide support for the TMISPF and UDF facilities. Verify the following:

- For both TMISPF and UDF, concatenate the DTMMENU, DTMPENU, and DTMTENU datasets defined during the INSTALL process to your current ISPF environment.
- To activate ISPF, we recommend you invoke it through a CLIST. Please tailor the CLIST sample provided in member $TMISPF of the ThruPut Manager INSTALL dataset. For details about using TMISPF, refer to *ThruPut Manager ISPF Services (TMISPF): System Programming Guide: Base Product*.
- To activate UDF, we recommend you invoke it through a CLIST. Please use the documentation provided in members $READUDF and $UDF of the ThruPut Manager INSTALL dataset. Alternatively, if invoked as a command, update your ISPF command table (ISPCMDS) to include the command to invoke the User Display Facility. The required entry is:

```
TMUSER 0 SELECT PGM(TMUSER) NEWAPPL(DTM) PARM(&ZPARM)
```

Once these steps have been taken, the UDF is activated. To invoke it, simply enter the TMUSER command at any ISPF command prompt. For details about using UDF, refer to *User Display Facility (UDF): System Programming Guide: Base Product*.

7.2. Implement the DFSMShsm Interface - TM AE and TM AE+ ONLY

ThruPut Manager AE and ThruPut Manager AE+ prioritize DFSMShsm recalls. Accordingly, the DFSMShsm exit ARCRPEXT is required and is installed with TM AE and TM AE+. If the site has not already implemented this exit point, the routine must be activated either via a F HSM,SETSYS

EXITON(RP) command or permanently enabled by updating the parmlib member ARCCMD00 to include:

```
SETSYS EXITON(ARCRPEXT)
```

The exit can be disabled via the command F HSM,SETSYS EXITOFF(RP).

7.3. Implement Virtual Volume Staging

Virtual Volume Staging is supported for IBM, Storage Tek and CA VTAPE Virtual Tape Technologies. In order to implement Virtual Volume Staging for IBM VTS or CA/VTAPE, the TMVVS procedure is required.

When a Virtual Volume Staging request is needed, ThruPut Manager determines if a TMVVS address space is available. If it is, the request is queued to that address space. If it is not, ThruPut Manager creates one using the TMVVS procedure, included in the INSTALL dataset:

```
//TMVVS PROC PROG=DTMVVSSn
//IEFPROC EXEC PGM=&PROG,REGION=OK,TIME=NOLIMIT
```

This procedure should be placed in the same PROCLIB that holds your TMSS procedure.

No additional step is required to support Storage Tek devices.

7.4. OEM Considerations

7.4.1. JES2

When maintaining JES2, refer to Appendix B, Synchronize JES2 and ThruPut Managerfor the instructions to keep ThruPut Manager and JES2 synchronized.

7.4.2. XCF

The XCF Manager allows ThruPut Manager to use cross systems communications to support separate Control Files for each node in a SYSplex, resulting in significant performance improvements and reduced management overhead. Installations are encouraged to use XCF.

ThruPut Manager starts up with DCS enabled. Sites that do not use XCF will see enqueues for QNAME DTMDCSQX as outlined in the *Dataset Contention Services: System Programming Guide*.

To allow DCS to use XCF for communication across SYSplexes, you should code DCS SET XCF(YES) in the TMSS initialization statement. For further information, see Section 6: DCS XCF Setup in this manual.

7.4.3. StorageTek/HSC

ThruPut Manager auto-detects OEM tape software. This functionality allows ThruPut Manager to automatically obtain correct tape unit definitions.

This auto-detect functionality requires HSC (and SMC when using HTTP communication) be fully initialized before ThruPut Manager is started. In addition, ThruPut Manager requires that the following STK install libraries be available via the LINKLST on each system running:

- HSC, the LINKLST must include SLSLINK
- SMC 6.2, the LINKLST must include SLSLINK and SMCLINK
- ELS (7.0), the LINKLST must include SEALINK

7.4.4 CA 7

Ensure the TM interface for CA 7 has been implemented such that CA 7 facilities in JAL are available.

In conjunction with TM maintenance PTF TMT7110 a new interface to CA 7 is introduced. This interface is used to provide CA installations with the JAL descriptors representing CA 7 information

along with providing functionality to communicate with CA 7 terminals for DCS Alerts and Messages issued from JAL.

This interface will allow ThruPut Manager to populate the existing CA 7 descriptors as follows (see the *JAL Reference Guide* for more information):

$CA7
$CA7_DUEOUT_DATE
$CA7_DUEOUT_TIME
$CA7_ENTRY
$CA7_INSTANCE_ALIAS
$CA7_INSTANCE_ID
$CA7_JCLID
$CA7_JOB#
$CA7_SCHID
CARTRIDGES $LIST_VOL_AUTO
$JECL_CA7(YES|NO) -indicates if a //*CA-7 statement was found in the JCL

In addition, it allows TM JAL to send messages to the CA 7 console as described in the MSGDEF and WTCA7 JAL statements

The interface is packaged as a new FMID (TTM7105) and a new Usermod (TTM7115). The FMID provides the code to allow TM to interface with CA 7 . The Usermod is provided as a convenience. If there is a need to reassemble the provided interface routine (DTMCA7UI), then an APPLY REDO of this Usermod (TTM7115) will accomplish this.

The procedure to install the CA 7 interface is as follows

- Customise the CA 7 interface JCL provided in the install dataset (I$CA7)
- Execute the customized JCL I$CA7

As delivered this JCL performs a RECEIVE and APPLY CHECK of TM FMID TTM7105. **Be sure to rerun the APPLY step removing the CHECK keyword. The affected module is DTMJAV7. Be sure this module is copied to the system execution library.**

Once this interface is running with TM PTF TMT7110, then all of the CA 7 facilities described in the CA 7 JAL Reference Guide are available for the installation to use.

If TMT7110 is implemented and this interface is NOT installed, then message DTM3869I will be issued if the loaded JAL references any of the CA7 facilities. The message will be issued once to the system log (non-deletable) the first time a JAL is loaded and a job is analyzed. Jobs will continue to process, but the lack of CA 7 functionality may result in JAL logic flaws and the job may not be processed correctly.

7.4.5. CA-JMR - TM AE and TM AE+ ONLY

If a job is managed by Service Level Manager (SLM) and then processed by JMR, the JMR status will be invalid. This is because the HASP373 message issued to both the console and the joblog is modified by SLM to alter the initiator name and to expand the message beyond its normal length, in response to TM INIT. If this behavior is undesirable, please contact Compuware.

7.4.6. CA-Deliver - TM AE and TM AE+ ONLY

Define SLM job classes (GS and PS) to the CA-DELIVER class table. If the job classes are not defined, delivery of some CA output may not occur.

7.5. Implementing the Software Access Control (SAC) Interfaces

Job Binding Services includes the Software Access Control (SAC) facility. This optional Software License control facility extends the existing mechanism of JBS to allow an installation to restrict access to a specified function that is invoked via TSO, ISPF, REXX or a CLIST.

See Software Access Control (SAC) Guide for more information and the complete Implementation Process.

Chapter 6
Phase 4: Activate ThruPut Manager

To activate ThruPut Manager, you IPL the system, start ThruPut Manager, and verify that it is behaving correctly.

8. IPL

8.1. Prepare to IPL

Prior to IPLing, verify three critical load modules are installed correctly:

- • The load module DTMJ2SV7 must reside in a linklisted dataset. This module must be marked as RENT, REUS, and REFR.
- • The load module DTMJ2MV7 must be installed in an APF authorized library that is available to JES2 during initialization.
- • The load module DTMPRTN7 must be installed in the same library as the module above (DTMJ2MV7). This module must be marked as RENT, REUS, and REFR. A LOAD statement is not required for DTMPRTN7.

Add the ThruPut Manager load module library DTMLINK to the APF and Linklist.

8.2. Perform an IPL and a JES2 warm start.

Prior to activating z/OS 2.n with ThruPut Manager Version 6 in the JESplex, compatibility APAR TR62489 must be installed on all systems running levels of ThruPut Manager below TMT6219. See Technical Bulletin TM140405 for details.

It is advised to implement the ThruPut Manager JES2 interface by performing an IPL with a JES2 WARM START. If an IPL is not desirable, see Dynamic Activation Options.

If the ThruPut Manager JES2 exits are installed correctly the following sample messages is issued at JES2 startup;

```
DTM2224I THRUPUT MANAGER VERSION 18.02 PTF TMT71nn
DTM2233I CPU NORMALIZATION INACTIVE
DTM2234I COMMUNICATIONS CHARACTER - /
DTM2235I OPTION JBS INSTALLED, ENABLED
DTM2235I OPTION JCS INSTALLED, ENABLED
DTM2235I OPTION JLS INSTALLED, ENABLED
DTM2235I OPTION MELLON INSTALLED, DISABLED
DTM2235I OPTION DJC INSTALLED, ENABLED
DTM2235I OPTION DCS INSTALLED, ENABLED
DTM2235I OPTION MHS INSTALLED, ENABLED
DTM2235I OPTION NET INSTALLED, DISABLED
DTM2235I OPTION UCS INSTALLED, ENABLED
DTM2235I OPTION DBS INSTALLED, ENABLED                TM AE and TM AE+ ONLY
DTM2235I OPTION JSS INSTALLED, ENABLED
DTM2235I OPTION JTS INSTALLED, ENABLED
DTM2235I OPTION UHS INSTALLED, ENABLED
DTM2235I OPTION SLM INSTALLED, ENABLED              TM AE and TM AE+ ONLY
DTM2235I OPTION PCS INSTALLED, ENABLED                TM AE+ ONLY
DTM2235I OPTION JES3 INSTALLED, DISABLED
```

```
DTM3233I TM CLASS LIST
Analysis..... 9
Deferred..... None
Selectable... All
Exempt....... None
On_Demand.... None                          TM AE and TM AE+ ONLY
PS.......... None                                  TM AE and TM AE+ ONLY
General Srvcs None                             TM AE and TM AE+ ONLY
Default...... None
```

9. Start the ThruPut Manager Started Task

9.1. Start TM Started Task and Review DTM Messages

Subsequent starts of the ThruPut Manager started task result in the following messages:

```
S TM,TMSS=S2
$HASP100 TM       ON STCINRDR
IEF695I START TM       WITH JOBNAME TM       IS ASSIGNED TO USER TM
   , GROUP SYS1
$HASP373 TM       STARTED
IEF403I TM - STARTED - TIME=15.11.36
DTM0000I THRUPUT MANAGER AE V18.02
         TMT71nn (C) COPYRIGHT 1985, 2017 COMPUWARE CORPORATION
                     ALL RIGHTS RESERVED.
DTM0051I SNAME= sssssssss
         CODE=cc
DTM8000I DATA SPACE SERVICES SUBTASK INITIALIZED
DTM8300I DATA COLLECTION SUBTASK INITIALIZED
DTM7261I THRUPUT MANAGER XCF SERVICES SUBTASK INITIALIZATION COMPLETE
DTM0803I THE VOLUME INFORMATION FILE IS filename ON volume
DTM0832I VIF INITIALIZATION COMPLETE
DTM6016I THE CONTROL FILE IS filename ON volume
DTM6602 Initialized DBS: DRIVE BOOKING SERVICES                    TM AE and TM AE+ ONLY
DTM6028I THRUPUT MANAGER IS RECONCILING JES2 member ON JES2 node
DTM7433I NO DBS CONFIGURATION IS CURRENTLY INSTALLED               TM AE and TM AE+ ONLY
DTM6029I RECONCILIATION OF JES2 member ON JES2 node IS COMPLETE
DTM6200I DATA COLLECTOR READY
DTM7150I The DCS CMF File is on VOLUME volser
                  Dsname: filename
DTM8139I NO ACTIVE SLM POLICY IN CONTROL FILE                      TM AE and TM AE+ ONLY
DTM0023I TMSS INITIALIZATION COMPLETE
DTM6422I JLS RECONCILE COMPLETE
```

9.2 Define ThruPut Manager Job Classes

9.2.1 ThruPut Manager Reserved Classes.

ThruPut Manager reserves specific classes as follows;

- Analysis Class - the class in which TM analysis processing occurs. Its default is Class 9. See Note 1.
- Deferred Analysis Class(es) - an optional additional analysis classes that may be activated for other purposes. See Note 1.
- General Services (GS) Class - required for Service Level Manager. TM AE and TM AE+ Only. See Note 2
- Production Control Services (PS) Class - TM AE and AE+ Only. See Note 2.
- Default Class - Optional class defined as part of 8-character job classes with z/OS 2.1 and above. See Note 1.

Note 1: Use standard JES2 $TI and $SI to DEFINE and ACTIVATE initiators that process these classes. See Section 5: The Job Analyzer Initiator(s) for more details.

Note 2: Do not assign JES2/WLM initiators to process these classes. ThruPut Manager will start and stop dynamic initiators to process these classes as required.

Use the TM CLASS SET command to define these specific classes, if required. See Section 2: TM CLASS Command Syntax for complete syntax and details.

9.2.2 ThruPut Manager Selectable Classes

Selectable classes define what work ThruPut Manager should process. With ThruPut Manager 18.02, the initial setting for SELECTABLE classes is ALL, meaning all JES2 job classes will be selected.

For Installations Upgrading from Version 6, verify that the selectable list matches your current settings via the TM CLASS command and adjust if necessary.

Users new to ThruPut Manager may prefer to start with no selectable classes (EXEMPT ALL) and then add them incrementally over time.

- Use TM CLASS DEL(ALL) to remove all classes from ThruPut Manager analysis processing.
- Use TM CLASS ADD(class1,class2..) when you wish to indicate to ThruPut Manager that a particular JES2 job class should be selected for analysis.

9.3. Issue $MJ,START Command

The first time ThruPut Manager is started in a JESplex, job selection will not occur until the class list is:

- verified using TM CLASS DISPLAY
- adjusted using TM CLASS ADD or DEL
- confirmed by issuing $MJ,START

This procedure will only be required once per JESPlex. The “confirmed” indicator and the selection class list are maintained in the JES2 checkpoint so they will need to be re-established and reconfirmed after a JES2 cold-start.

This message is re-issued every 2 minutes if the $MJ,START is not issued.

```
*DTM3503E Job selection delayed.
To start job selection enter $MJ,START after
confirming class definitions with the
TM CLASS ADD or DELETE commands.
See class definition below (DTM3233I).

DTM3233I TM CLASS LIST
Analysis..... 9
Deferred..... D,X
Selectable... All
Exempt....... None
On_Demand.... 3
PS.......... 1
General Srvcs 2
Default...... None
```

Any jobs that have been submitted prior to the class confirmation via the $MJ command will either display as AW CONVERSION or CONVERTING depending upon how many jobs are submitted.

9.4 Verify ThruPut Manager is Functioning

Issue the following commands to confirm ThruPut Manager is installed and ready for further implementation tasks as expected. Ensure your results are similar to those shown here, and that you can account for any variations.

a. Issue TM D LEVEL command

```
/TM D LEVEL
DTM6563I TM LEVEL DISPLAY
  SYSNAME=SUPP2 JES2 NODE=LONDON SYS=SUP2
  TM AE 18.02 AT PTF TMT71nn, z/OS Rn.n.0, JES2 z/OS n.n MODE=Znn
 Znn will be one of Z21 or Z22
   APARS APPLIED: TR71nnn
```

b. Issue TM OPTIONS command

Confirm the correct options are enabled.

```
/TM OPTIONS
DTM6502I TM OPTIONS DISPLAY 483
OPTION    STATE           STATUS
DBS       ENABLED         ACTIVE    TM AE and TM AE+ ONLY
DCS       ENABLED         ACTIVE
DJC       ENABLED         ACTIVE
JBS       ENABLED         ACTIVE
JCS       ENABLED         ACTIVE
JES3      DISABLED        INACTIVE
JLS       ENABLED         ACTIVE
JSS       ENABLED         ACTIVE
JTS       ENABLED         ACTIVE
MELLON    DISABLED        INACTIVE
MHS       ENABLED         ACTIVE
NET       DISABLED        INACTIVE
SLM       ENABLED         ACTIVE    TM AE and TM AE+ ONLY
UHS       ENABLED         ACTIVE
```

c. Verify the Analyzer Process (recommended for new installations)

Issue TM CLASS command to display settings. Verify your classes have the values you expect.

```
/TM CLASS
DTM3233I TM CLASS LIST
Analysis..... 9            analysis class previously defined
Deferred..... D,X          if previously defined
Selectable... None
Exempt....... All
On_Demand.... None
PS.......... None
General Srvcs None
Default...... None
```

Issue TM CLASS ADD(x) to add a Selectable class for testing, e.g., Z

```
/TM CLASS ADD(Z)
DTM3233I TM CLASS LIST
Analysis..... 9
Deferred..... D,X
Selectable... Z
Exempt....... A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,X
,Y,0,1,2,3,4,5,6,7,8,9
On_Demand.... None
PS.......... None
General Srvcs None
Default...... None
```

Ensure a JES2/WLM analyzer initiator is defined and active.

```
$TI(n), C=9
$SI(n)
```

Submit a few jobs in class Z.

```
//BR14 JOB (RSI),'TEST CLASS Z JOB',NOTIFY=&SYSUID,CLASS=Z
/*JOBPARM S=*
//*-------------------------------------------------------------------*
//* JCL TO CONFIRM REQUEUE TO CLASS Z *
//*-------------------------------------------------------------------*
//S1 EXEC PGM=IEFBR14
```

Delete the selectable class to ensure no additional work is processed by ThruPut Manager until you are ready.

```
/TM CLASS DEL(Z)
```

d. Confirm you see DTM1460I message in the system log.

The test jobs should be requeued to same class and priority as submitted:

```
JOB04489 00000281 $HASP100 BR14 ON INTRDR TEST CLASS Z JOB FROM TUSERID1
JOB04489 00000290 IRR010I USERID USERID1 IS ASSIGNED TO THIS JOB.
JOB04489 00000090 DTM1460I JOB BR14 REQUEUED TO CLASS=Z
JOB04489 00000281 ICH70001I USERID1 LAST ACCESS AT 17:52:19 ON MONDAY, MARCH 1
JOB04489 00000090 $HASP373 BR14 STARTED - INIT 2 - CLASS Z - SYS
JOB04489 00000281 IEF403I BR14 - STARTED - TIME=17.55.44
JOB04489 00000090 IEF404I BR14 - ENDED - TIME=17.55.44
JOB04489 00000281 $HASP395 BR14 ENDED
INTERNAL 00000290 SE '17.55.46 JOB04489 $HASP165 BR14 ENDED AT LONDON MAXC
                  LOGON,USER=(USERID1)
```

e. Confirm you see DTM1459I message in the job log.

The job includes a message indicating it was processed by ThruPut Manager analysis:

```
*************************** TOP OF DATA ******************************
         J E S 2 J O B L O G -- S Y S T E M S U P 2 -- N O D

17.55.43 JOB04489 ---- MONDAY, 10 MAR 2014 ----
17.55.43 JOB04489 IRR010I USERID USERID1 IS ASSIGNED TO THIS JOB.
17.55.44 JOB04489 ICH70001I USERID1 LAST ACCESS AT 17:52:19 ON MONDAY, MARCH 1
17.55.44 JOB04489 $HASP373 BR14 STARTED - INIT 2 - CLASS Z - SYS
17.55.44 JOB04489 IEF403I BR14 - STARTED - TIME=17.55.44
17.55.44 JOB04489 IEF404I BR14 - ENDED - TIME=17.55.44
17.55.44 JOB04489 $HASP395 BR14 ENDED
------ JES2 JOB STATISTICS ------
10 MAR 2014 JOB EXECUTION DATE
           6 CARDS READ
           35 SYSOUT PRINT RECORDS
           0 SYSOUT PUNCH RECORDS
           2 SYSOUT SPOOL KBYTES
        0.00 MINUTES EXECUTION TIME
      1 //BR14 JOB (RSI),'TEST CLASS Z JOB',NOTIFY=&SYSUID,CLASS=Z
        IEFC653I SUBSTITUTION JCL - (RSI),'TEST CLASS Z JOB',NOTIFY=USERID1,CL
      2 /*JOBPARM S=*
        //*-------------------------------------------------------------------*
        //* JCL TO CONFIRM REQUEUE TO CLASS Z *
        //*-------------------------------------------------------------------*
      3 //S1 EXEC PGM=IEFBR14
DTM1459I 2014.069 17:55:43 JOB BR14 REQUEUED TO CLASS=Z
ICH70001I USERID1 LAST ACCESS AT 17:52:19 ON MONDAY, MARCH 10, 2014
IEF142I BR14 S1 - STEP WAS EXECUTED - COND CODE 0000
IEF373I STEP/S1 /START 2014069.1755
IEF032I STEP/S1 /STOP 2014069.1755
```

This completes the installation process. Jobs can now be processed by ThruPut Manager. Your technical support person or system programmer is now able to perform tasks such as adding classes for ThruPut Manager processing, adding JAL rules, or using the dialog to set up ThruPut Manager-specific constructs. ThruPut Manager AE+ installations should continue the installation process with details found in the *ThruPut Manager AE+ Installation Companion Guide*, which is available upon request.

Chapter 7
Reference

The following sections provide additional details about the ThruPut Manager installation for datacenters with particular requirements.

Section 1: ThruPut Manager Subsystem Interface

The use of the subsystem interface offers the following advantages:

- ThruPut Manager can use the subsystem interface and a communications character (COMCHAR, the default for ThruPut Manager is /) to recognize commands. This is the simplest technique and is considered the normal method of operating, therefore the examples and discussions in this guide assume that you are using this technique.
- ThruPut Manager commands can also be issued using the MODIFY (F) command interface. While fully supported, this method is considered an exception, used in rare circumstances such as when the subsystem interface is not working.
- In some situations, responses to ThruPut Manager commands can be given prior to the ThruPut Manager (TMSS) address space being activated.

The following points should be considered:

- The subsystem name is $$TM.
- If this name presents you with any conflicts, contact ThruPut Manager Product Support. We can provide you with a substitute subsystem name.
- The subsystem character identifier (COMCHAR) default value is /. A parameter is provided in TMPARM for an installation supplied value.

Refer to Section 3: TMPARM Initialization Statement for a description of the COMCHAR keyword. Also shown there is a list of valid communication characters.

Section 2: TM CLASS Command Syntax

TM CLASS | TM C

Display/Alter Job Classes specific to ThruPut Manager.

This command displays the current settings for the ThruPut Manager job classes, and allows you to change those settings.

All keywords are mutually exclusive. If no keyword is specified, the default is DISPLAY.

All Job Classes are maintained in the JES2 checkpoint to ensure that they are the same for all members of the JESplex. Changing any job class therefore applies to all members of the JESplex.

Scope: JES2 node

Duration: Until JES2 cold start.

TM CLASS TM C	[? | HELP] DISPLAY ADD([list | ALL]) DELETE([list | ALL) REPLACE(list) SET ANALYZE(class) SET DEFAULT(class | NONE) SET DEFER([list | NONE]) SET GENERAL_SERVICES([class | NONE]) [FORCE] SET ON_DEMAND([class | NONE]) SET PS([class | NONE]) [FORCE]

`? | HELP`

Requests the command syntax from HELP.

`DISPLAY`

Displays all job classes used by ThruPut Manager.

The short form for this keyword is D.

`ADD([list | ALL])`

Specifies one or more job classes to be added to the list of job classes being selected for Job Analysis.

The short form for this keyword is A.

`list`

Is a list of valid JES2 job classes separated by commas, these are the job classes to be selected for analysis.

`ALL`

All valid job classes defined to JES2 will be selected for analysis.

`DELETE([list | ALL])`

Specifies one or more job classes to remove from the list of job classes being selected for Job Analysis

The short form for this keyword is DEL.

`list`

Is a list of job classes separated by commas that are NOT to be selected for analysis.

`ALL`

No job classes are selected.

`REPLACE(list)`

Specifies one or more job classes to replace the list of job classes being selected for Job Analysis.

The short form for this keyword is REP.

`list`

Is a list of job classes separated by commas, these are the job classes to be selected for analysis.

`SET ANALYZE(class)`

Specifies that the Analysis Class is to be set.

`class`

Is a valid JES2 job class that will be used to queue jobs for Job Analysis. This job class must be reserved exclusively for ThruPut Manager.

`SET DEFAULT(class | NONE)`

Specifies that the DEFAULT job class is to be set.

`class`

Is a valid JES2 job class that will be used in situations where a valid job class was not provided. This could be for a job that was submitted with a job class that was not defined to JES2 or perhaps when a job was assigned an invalid job class during job analysis.

`NONE`

Removes the DEFAULT job class.

`SET DEFER(list)`

Specifies one or more Deferred job classes to be set.

`list`

The list includes up to 10 job classes which must be valid job classes defined to JES2, specifying the job classes to be used to “park” the deferred jobs. These job classes must be reserved exclusively for ThruPut Manager.

`NONE`

Removes Deferred job classes.

`SET GENERAL_SERVICES([class|NONE]) - TM AE ONLY`

Specifies that the job class for SLM General Services is to be set. The short form for the GENERAL_SERVICES term is GS.

`class`

Is a valid JES2 job class that will be used for jobs managed by SLM General Services. This job class must be reserved exclusively for ThruPut Manager.

`NONE`

Removes the SLM General Services job class. If unprocessed jobs are in the queue, the command will be rejected.

`FORCE`

Allows NONE to be specified for SLM General Services job class even if there are still unprocessed jobs in the queue. If not specified and unprocessed jobs exist, the command will be rejected.

`SET ON_DEMAND([class|NONE]) - TM AE ONLY`

Specifies that the job class for ON_DEMAND Services is to be set. This job class must be reserved exclusively for ThruPut Manager.

`class`

Is a valid JES2 job class that will be used for jobs managed by ON_DEMAND Services.

`NONE`

Removes the ON_DEMAND job class.

`SET PRODUCTION SERVICES([class|NONE]) - TM AE and AE+ ONLY`

Specifies that the job class for SLM Production Services is to be set. This job class must be reserved exclusively for ThruPut Manager.

`class`

Is a valid JES2 job class that will be used for jobs managed by AE Production Services.

`NONE`

Removes the SLM Production Services job class. If unprocessed jobs are in the queue, the command will be rejected.

`FORCE`

Allows NONE to be specified for SLM Production Services job class even if there are still unprocessed jobs in the queue. If not specified and unprocessed jobs exist, the command will be rejected.

Examples:

```
/TM CLASS ADD(F)
/TM CLASS REP(A,B,TESTING,N)
/TM CLASS DEL(X,Y)
/TM CLASS SET ANALYZE(ANAL)
/TM CLASS SET DEFAULT(Z)
/TM CLASS SET GENERAL_SERVICES(2)
```

Notes:

The TM CLASS SET command does not change the job class of queued SLM managed jobs. It is therefore strongly recommended that before issuing this command, you should empty the queue for the ThruPut Manager Service whose job class is to be changed or removed.

Section 3: TMPARM Initialization Statement

TMPARM

JES2 Initialization Statement

This initialization statement provides the information required for the initialization of ThruPut Manager to establish the JES2 interface, the subsystem interface, and other ThruPut Manager related

options that are required as soon as JES2 job processing begins. The syntax for the JES2 initialization statement TMPARM conforms to the form and syntax for JES2 parameter statements.

TMPARM	[AFFINITY={* | ANY | (member1,member2,...)}] [,CNVTERR={NO | YES | PROC}] [,COMCHAR={{chars | / }[,NR] | NONE})] [,CUSTOM=(UMnnnn,UMnnnn,...,UMnnnn) [,FACTORn={ff.ff | (ff.ff smfid)[,(ff.ff smfid), ...]} [,TMINITS=(ii,hh,jjjj,aa)] [,HEALTHCHECK={NO | YES}] [,JECL=({$JCSSTC | $JCSTSO | old-verb1},old-verb2,JES2-action,TMaction)] [,JECLEXEMPT] [,OPTIONS=(ON(feature1,...,featuren), OFF(feature1,...,featuren))] [,SETUP] [,TYPHOLD] [,TYPSCAN]

`AFFINITY={* | ANY | (member1,member2,...)}`

Specifies to the Job Selector that you want to set system affinity for the conversion and Job Analysis process for jobs with AFFINITY=ANY.

*

Indicates that the affinity is to be set for this JES2 member, that is, the system where the job was submitted.

ANY

Indicates that the affinity is to be set for any eligible JES2 member.

(member1,member2,...)

A list of valid JES2 member names. Up to 32 can be specified.

Notes

- If AFFINITY keyword is not specified, ThruPut Manager takes no action. The job is selected for analysis on any eligible system. This may be different than where it will execute.
- Once the job has completed analysis, the job affinity reverts to ANY.
- If the job is submitted in an EXEMPT class (no ThruPut Manager processing) the affinity reverts to ANY after conversion is done.
- If the job contains a /*JOBPARM statement that requests affinity, or if the RDR that processed the job is set to a specific affinity, their values override the AFFINITY value in TMPARM.

For a discussion of the Job Analysis Affinity, refer to *System Programming Guide: Base Product* "*Job Analysis Affinity*."

`CNVTERR={NO | YES | PROC}`

Specifies how converter errors are to be handled for jobs that will be transmitted to another node. This parameter is useful only for a multi-node/multi-member environment in which systems have asymmetric JCL procedures.

NO

Indicates that JCL errors detected by the converter should cause the job to fail. This is the default.

YES

Indicates that JCL errors detected by the converter will be ignored until after JAL processing.

`PROC`

Indicates that only PROC related errors detected by the converter will be ignored. The check for this type of error does not occur until the job is selected by the analyzer.

Note: Jobs that have been failed by the converter receive a minimal analysis pass. At the end of JAL processing, the job may be bound to an JBS agent which may allow the job to reconvert and execute on another member/node. If so, it is allowed to remain in the queue on the assumption that the error will not occur at the target node. If the job attempts to execute locally, it fails with a JCL error.

`COMCHAR=({{chars | / }[,NR] | NONE})`

Specifies 1-8 characters to be used to identify ThruPut Manager commands issued from local consoles to the subsystem interface. You can omit the parentheses if you code only a communication character value or NONE.

The default COMCHAR is: /

`chars`

Is 1-8 characters from the table below, in any combination. This prefix cannot currently exist, or exist as a subset or superset, for any other subsystem.

Valid COMCHAR Characters							
¢	|	'	%	:	.	&	+
'	\	_	#	<	!	-	>
@	"	$	/	?	=	*	;
uppercase letters A-Z				Numerals 0-9			

`NONE`

Indicates that a communication character is not used. The z/OS MODIFY (F) command will be used to issue ThruPut Manager commands.

`NR`

Indicates that the communication character is not to be registered with the z/OS service CPF DEFINE.

`CUSTOM=(UMnnnn,UMnnnn,...,UMnnnn)`

Provides the ability to activate ThruPut Manager customization options. These options are non-standard functions should only be activated on the recommendation of ThruPut Manager Support.

`UMnnnn`

Specifies a customization option name.

`FACTORn={ff.ff | (ff.ff smfid) [,(ff.ff smfid),...]}`

Specifies the normalization factor used to adjust JOB and STEP CPU execution times. Up to 8 unique FACTORn keywords can be specified.

There is no default for this keyword.

`n`

Is a digit from the range 1-8, identifying the set of normalizing factors.

`ff.ff`

Is a factor, where 00.00 < ff.ff <= 99.99. If the factor is a whole number, the decimal point and trailing zeros can be omitted. If the decimal point is used, it must be preceded by at least one digit (e.g 0.11).

`smfid`

Is the SMF identifier for the system which uses the preceding normalization factor. This allows you to have the same TMPARM for systems in the same MAS that require different factors.

JAL allows you to specify whether or not a job is eligible for normalization. If it is, the JOB or STEP CPU time is multiplied by the factor for the system which runs the job. This normalization is done at execution time.

Up to 32 pairs of factors and SMF identifiers can be specified for each FACTORn keyword.

Note: FACTOR can be used instead of FACTOR1.

For an explanation of this facility refer to *Base Product: System Programming Guide "CPU Capping & Normalizing."*

`TMINITS=(ii,hh,jjjjj,aa)` - **TM AE and TM AE+ ONLY**

This keyword specifies parameters to control dynamic initiators.

- These parameters are positional and optional.
- Use a comma to indicate a missing value.
- Trailing commas can be omitted.

`ii`

Specifies the maximum number of dynamic initiators that ThruPut Manager is allowed to start in multiples of 100, and is a number in the range 1 to 99. If this value is omitted, the default is one (100). ThruPut Manager is allowed to start multiples of 100 initiators or the number of JES2 initiators that have been defined, whichever is greater.

** For TM dynamic installs in environments where TM was not previously present, a default TMPARM is provided that will set the TMINITS value to 1 (or 100 dynamic inits).

`hh`

Specifies the initiator recycle time, expressed in hours, and is a value in the range 1 to 99. If this value is not provided, the default is 24 hours.

`jjjjj`

Specifies the number of jobs before ThruPut Manager recycles initiators, and is a number in the range 1 to 99999. The default value is 1000.

`aa`

Specifies the number of ThruPut Manager Job Analyzer initiators per 100 jobs in the analysis queue, and is a number in the range of 0 to 99. The default value is 0. ThruPut Manager will automatically start the number of dynamic Job Analyzer initiators specified here for every 100 jobs in the analysis queue. These Job Analyzer initiators are in addition to any Job Analyzers started manually or by automated command. There is no requirement to use either method, but ThruPut Manager requires that at least one Job Analyzer initiator be started.

Note: ThruPut Manager recycles its initiators based on whichever limit occurs first. Recycling is performed to minimize system pollution. The recycling parameters can be altered with the TM INITS operator command.

`HEALTHCHECK={YES | NO}`

This keyword allows you to disable the Health Checks that are added when JES2 is started. By default, ThruPut Manager will add the Health Checks that can be examined under SDSF.

`JECL=({$JCSTSO | $JCSSTC | verb1},verb2,JES2-action,TM-action)`

This keyword allows you to define the way you want ThruPut Manager to handle named user JECL statements. You can code this keyword as many times as required to accommodate all your user JECL statements.

Installations that use the $JCSSTC option JES2 initialization statement must ensure that the CMSC task is excluded from any ThruPut Manager dependencies. If it is not excluded, operations will be required to respond IGNORE to DTM3800A message to allow CMSC to continue. ThruPut Manager will not be able to initialize until LMS is initialized via CMSC.

The following statement can be used to ensure that the task under which LMS starts bypasses TM control

```
JECL=($JCSSTC,CMSC*,IGNORE,IGNORE),
```

`$JCSTSO`

Is a unique subparameter indicating that this JECL keyword is specifying a JCS Batch Name to be added to one or more TSUs.

`$JCSSTC`

Is a unique subparameter indicating that this JECL keyword is specifying a JCS Batch Name to be added to one or more STCs.

`verb1`

Represents the first verb to be found in the user JECL statement. For example, for a JECL statement /*RESOURCE, verb1 is RESOURCE. This is the verb that is to be translated or ignored.

`verb2`

An optional second verb to handle compound JECL names. verb2 represents the second word to be found in the user JECL statement. The second verb is optional (most user JECL statements have only one verb). Since this is a positional parameter, if verb2 is not coded, the intervening comma must be present.

`JES2-action`

Represents the action the you want JES2 to take. The possible actions are:

`IGNORE`

JES2 does not take any action. This is the default for the JES2 action.

`PROCESS`

The JECL statement is passed to JES2 for processing.

`CANCEL`

The job is to be CANCELLED.

`PURGE`

The job is CANCELLED and purged.

`TM-action`

Represents the action you want ThruPut Manager to take. The possible actions are:

`IGNORE`

ThruPut Manager does not take any action.

`PROCESS[(PROC)]`

ThruPut Manager processes the statement. This is the default for the ThruPut Manager action. If the optional PROC subparameter is included, the statement is allowed within JCL procedures for batch jobs.

`EXIT19[(PROC)]`

The JECL statement is presented to ThruPut Manager Exit 19, if the exit is active. If the optional PROC subparameter is included, the statement is allowed within JCL procedures for batch jobs.

`JES2XLATE(new-verb1,new-verb2)`

Indicates that you want the statement to be mapped into a JECL statement. When the JES2XLATE keyword is present, you must provide at least new-verb1 as a parameter. Note that a single verb statement can be mapped into a two verb statement, and that a two verb statement can be mapped into a single verb statement.

`new-verb1`

Indicates the first target verb. This parameter is mandatory.

`new-verb2`

Indicates the second target verb. This parameter is optional.

`XLATE(new-verb1,new-verb2)`

Indicates that you want the statement to be mapped into a ThruPut Manager JECL (//*+) statement. When the XLATE keyword is present, you must provide at least new-verb1 as a parameter.

`new-verb1`

For JECL translation, this indicates the first target verb. This parameter is mandatory. It specifies the verb that will be substituted.

For adding a Batch Name to a TSU or STC ($JCSTSO or $JCSSTC was specified), this is the first level of the desired Batch Name.

`new-verb2`

For JECL translation, this indicates the second target verb. This parameter is optional. If specified, it is added to the substitution.

For adding a Batch Name to a TSU or STC ($JCSTSO or $JCSSTC was specified), this is the second level of the desired Batch Name.

For a detailed explanation of this facility, refer to the *JECL Reference Guide*.

`JECLEXEMPT`

If this keyword is included, ThruPut Manager usually ignores jobs submitted in Exempt classes even if they include JECL statements that would otherwise require ThruPut Manager services. Without this keyword, jobs in Exempt classes are examined to determine whether they contain JECL requesting ThruPut Manager services. Exceptions:

- If DCS is installed, even jobs in Exempt classes are managed for dataset contention.
- JECL processed by the XLATE/JES2XLATE capability of the JECL keyword of the TMPARM statement continues to be translated.

For a detailed explanation of this facility, refer to the *JECL Reference Guide*.

`OPTIONS=(ON(feature1,...,featuren),OFF(feature1,...,featuren))`

This keyword allows you to instruct ThruPut Manager to enable or disable certain features, once they are installed.

The list of features that you can enable/disable is:

- DBS for Drive Booking Services. The default is enable. **TM AE and TM AE+ only**
- DCS for Dataset Contention Services. The default is enable.
- DJC for Dependent Job Control. The default is enable.
- JBS for Job Binding Services. The default is enable.
- JES3 for JES3 Compatibility Services. The default is disable.
- JCS for Job Chaining Services. The default is enable.
- JLS for Job Limiting Services. The default is enable.
- JSS for Job Setup Services. The default is enable.
- JTS for Job Timing Services. The default is enable.
- MELLON for Mellon Bank Compatibility. The default is disable.
- MHS for Multi-Hold Services. The default is enable.
- NET for JES3 //* NET support. The default is disable.
- SLM for Service Level Manager. The default is enable. **TM AE and TM AE+ only**
- UCS for User Control Services. The default is enable.UHS for User Hold Services. The default is enable.

`ON(feature1,...,featuren)`

The listed features are enabled.

`OFF(feature1,...,featuren)`

The listed features are disabled. It is not necessary to disable components that are not installed.

`SETUP`

Determines how jobs with a /*SETUP statements are handled. This keyword is used to indicate to ThruPut Manager that jobs using the /*SETUP statement should not be held. Note that the standard /*SETUP message is sent to the console.

This parameter does not affect jobs which are exempt from ThruPut Manager processing; the /*SETUP statement functions normally for exempt jobs. Also, if this keyword is not included, jobs with a /*SETUP statement receive standard JES2 processing.

Note: The message "$HASP101 jobname HELD" is not issued if the option is specified. For a detailed explanation of this facility refer to *Base Product: System Programming Guide* "*Job Validation Services (JVS).*"

`TYPHOLD`

Instructs ThruPut Manager to process jobs that are submitted with TYPRUN=HOLD, or any jobs submitted in a class that is marked HOLD by JES2. If this keyword is coded, jobs receive ThruPut Manager processing. After Job Analysis the jobs are put in HOLD status. The installation can alter this with JAL.

If this keyword is not included, jobs submitted with TYPRUN=HOLD receive standard JES2 processing. In this case the jobs are held prior to ThruPut Manager analysis.

Note: The message "$HASP101 jobname HELD" is not issued if the option is specified. For a detailed explanation of this facility refer to *Base Product: System Programming Guide* "Job Validation Services (JVS)."

TYPSCAN

Instructs ThruPut Manager to do JCL analysis for jobs submitted with TYPRUN=SCAN. After the JCL analysis phase, the jobs are not allowed to continue to execution. When errors are found appropriate messages appear with the JCL listing.

If this keyword is not included, jobs submitted with TYPRUN=SCAN receive standard JES2 processing. In this case the jobs are not processed by ThruPut Manager; therefore, they do not benefit from the JCL analysis provided by the Job Analyzer.

For a detailed explanation of this facility refer to the *Base Product: System Programming Guide* in the section "Job Validation Services (JVS)."

Section 4: TMSS Initialization Statements

This summary provides a quick alphabetical reference to all initialization statements. It includes chapter references in the appropriate System Programming Guide manual for a detailed discussion of how the statement is used. See *Base Product: System Programming Guide* for complete syntax.

Statement	Description	SPG Manual	Usage (chapter)
CFM SET	Within a FOR group, sets values for the Control File.	Base	2
CPS WRITER	Activates a CPS Writer and defines its characteristics.	Base	4
		DCS	5
DAL LOAD	Loads DAL internal text.	DCS	2
DAL TRACE	Activates DAL tracing at TMSS initialization.	DCS	2
DCS SET	Sets global defaults for DCS.	DCS	4,5
DJC SET	Sets global defaults for DJC.	UCE	2
ENDFOR	Indicates the end of a FOR group of initialization statements.	Base	2
FILE CF	Specifies the name of the Control File, as well as some timing parameters to ensure all systems can access the file.	Base	3
		JBS	3
		DCS	3
FILE CMF	Specifies the name of the file for recording dataset contention.	DCS	3
FILE SPOOL	Specifies the name of the SPOOL File.	Base	3
FILE VIF	Specifies the name of the dataset used for the Volume Information File.	Base	3
FOR	Indicates the beginning of a FOR group, which allows sharing of common TMSS initialization statements for multiple systems.	Base	2
JAL LOAD	Loads JAL internal text.	Base	13
JAL TRACE	Activates JAL tracing at TMSS initialization.	Base	13
JSS RECALL	Allows you to alter the security environment under which DFSMShsm recalls are processed.	Base	2, 24
JSS SET	Specifies a list of programs for which certain types of allocation processing should not be performed.	Base	34

Statement	Description	SPG Manual	Usage (chapter)
JTS OPTIONS	Sets global defaults for JTS.	UCS	2
SPS DEFINE	Defines a set of SYSOUT characteristics.	Base	4
TBL LOAD	Loads a table for use with DAL or JAL.	Base	15
TM BATCH	Requests the execution of a batch of ThruPut Manager commands contained in a file.	Base	22
TM CATALOG SET	Sets the timeout interval and requeue priority to be used when z/OS Catalog Management is not responding.	Base	22
TM DLM	Defines the device characteristics and tape management library that are associated with this pool of devices.	Base	2
TM EXIT	Specifies which installation exits are to receive control from ThruPut Manager, and their initial status.	Base	22
TM SMF	Specifies which SMF user record is used to write SMF data, as well as which data are to be collected.	Base	10
TM TCPIP ADD	Specify TCP/IP information used to connect to ThruPut Manager on remote JESplexes. Required when using Automated Capacity Management support for Country Multiplex Pricing.	Base	2
TM TCPIP SET	Specify TCP/IP port used by ThruPut Manager. Required when using Automated Capacity Management support for Country Multiplex Pricing.	Base	2
TM TRACE	Activates and deactivates the ThruPut Manager tracing facility.	Base	22
TM UNIT HANDLE	Informs ThruPut Manager of unit name changes that your system might alter after the job has been processed by ThruPut Manager.	Base	22
TM UNIT SET	Establishes a default unit name to be used when a unit name is required but has not been provided in JCL.	Base	22
TM USER	Defines user areas that can be associated with each job.	Base	22
TM VTAPE	Indicates the DFSMS DATACLAS used for virtual tape volumes by CA-Vtape (formerly known as SAMS:VTAPE) support.	Base	33
TM VTFM	Indicates the esoteric and generic unitnames, and the subsystem name needed for VTFM support.	Base	33
UCS SET	Controls the way that UCS handles the arrival time for jobs that have been released from MHS_USER hold.	UCS	2
UDF SET	Sets the column heading that UDF recognizes for the column containing JES2 job numbers.	Base	5
VOL SET	Sets the status of a given volume in the ThruPut Manager DASD Volume List.	Base	22

Section 5: The Job Analyzer Initiator(s)

Define the ThruPut Manager Analyzer Initiators

ThruPut Manager uses the analysis process to collect information about a job and capture that data to pass along to the installation in the JAL (Job Action Language). For installation and verification of the install, you do not require any JAL however you do require a JOB Analyzer Class and an Initiator to process that class.

Do not add other classes to the initiator selecting jobs for the Job Analysis Class or Deferred Analysis Classes. Should such an initiator select a long-running job, no Job Analyzer processing can occur until the long-running job terminates.

If an initiator selecting the Job Analysis Class is started and TMSS is not active, a console message is generated. Job Analysis is suspended until TMSS is started, and no jobs are selected for analysis. When TMSS is started, the Job Analyzer deletes the message and work proceeds. For the Job Analyzer to process jobs, the following conditions must be satisfied:

- There is at least one job class to be selected by ThruPut Manager.
- An initiator has been assigned the Job Analysis Class.
- TMSS is active.

Duplicate Job Names

If your installation has chosen to suppress duplicate job name processing $TJOBDEF,DUPL_JOB=NODELAY, the following comments are irrelevant. If, however, duplicate job name processing is enabled, ThruPut Manager relaxes the JES2 duplicate job name serialization somewhat:

- For Job Analysis only, ThruPut Manager can select a job that has the same name as a job that has already been selected for execution or Job Analysis.
- For execution, ThruPut Manager extends JES2 to select a job with the same name as one that has already been selected for Job Analysis.

Using JES2 Initiators for Job Analysis Classes

This is the simplest choice because there is no change to the way the Job Analyzer works. Issue $TIn,CLASS=y where class is the ThruPut Manager Analysis Class. The number of required ThruPut Manager analyzers depends upon the rate of job submission.

Normally a couple of analyzers active on each member of the JESplex is adequate to keep up with job submission. If you determine there are times when there is a queue waiting for analysis, you may add additional analyzer initiators.

Using WLM Initiators for Job Analysis Classes

If you choose to allow WLM to manage the Job Analyzer initiators, there are some considerations:

- You should define a WLM service class that handles the Job Analysis class. The goals for this service class should be suitable to deliver fast service to short-running transactions. The service class routine should ensure that jobs in the Job Analysis job class are assigned the Job Analysis service class. Do not use this service class for purposes other than Job Analysis.
- WLM controls the number of Job Analyzer initiators only at the JESplex level. You control the total number of Job Analyzers by setting the XEQCOUNT for the Analysis Class, but control at the member level is not available.

Using JES2 Initiators for Deferred Processing Classes

This is the simplest choice, as there are no changes to the way things worked previously.

Using WLM Initiators for Deferred Processing Classes

If you allow WLM to manage the initiators for your Deferred Processing class, there are several considerations:

- You can assign the Job Analysis WLM service class or define a separate WLM service class for the Deferred classes. Because deferred jobs by definition do not need immediate service, a separate service class can have less aggressive goals but still should deliver fast service to short-running transactions. The service class routine should ensure that jobs in the Deferred Processing job class

are assigned the correct service class. Do not use this service class for purposes other than Job Analysis.

- WLM controls the number of Deferred Processing initiators only at the JESplex level. You can control the total number of Job Analyzers by setting the XEQCOUNT for the Deferred class. Control at the system level is not available.
- You can also control the availability of Deferred Processing initiators by defining a scheduling environment for the Deferred Processing class that is not always available.
- Because Deferred Processing accumulates jobs, consider the potential WLM reaction when the Deferred jobs are eligible for processing. For example, even if you choose to control the Deferred analysis by the availability of a scheduling environment, you might want to set the XEQCOUNT for the Deferred class to a value that ensures that WLM does not start too many initiators. You might also consider a WLM service class that ignores queue time (e.g., velocity-based).

Section 6: DCS XCF Setup

This section describes the planning considerations and steps required to implement/convert DCS to using XCFM support.

What is XCF Communications Manager (XCFM)?

The XCF Communications Manager manages communications between different instances of ThruPut Manager using the cross-system coupling facility (XCF). XCFM executes as a subtask in the ThruPut Manager Support Services (TMSS) address space.

Using XCFM provides improvements to the way in which multiple instances of ThruPut Manager communicate. This means that even if your installation uses only a single JESPlex, it is a good idea to use XCFM.

For installations using MIM instead of GRS, contact Compuware Customer Support.

Dataset Contention Services and XCFM

Dataset Contention Services (DCS) requires cross-systems communication in a multisystem environment. Dataset holders might not be on the same system as the job needing the dataset. When a job that is holding a dataset terminates, notification might be required on another system on a different node. As well, some DCS operator commands must query all systems sharing the relevant DASD.

Activating XCFM

If your installations shares ThruPut Manager initialization statements among systems, you need to add a FOR group for each CFPLEX.

You can switch DCS to use XCFM support by recycling DCS or recycling TMSS.

Recycling DCS

1. Turn on DCS XCFM support on by issuing the following operator command on all systems:

   ```
   /ADS SET DCSXCF ON
   ```

2. Recycle DCS on by issuing the following operator command on all systems:

   ```
   /TM OPTIONS RECYCLE DCS
   ```

3. Perform some verification: create some dataset contention, issue some commands, create some reports, etc. to ensure DCS is running properly.

4. Once you are satisfied everything is working, do not forget to add DCS SET XCF(YES) to the ThruPut Manager initialization statement.

To back out of this step, enter the /ADS SET DCSXCF OFF command and remove the XCF(YES) keyword from the DCS SET initialization statement, then recycle DCS on all systems.

Recycling TMSS

1. Add the DCS SET XCF(YES) keyword to the TMSS initialization statement for all systems.
2. Recycle TMSS on all systems.
3. Perform some verification: create some dataset contention, issue some commands, create some reports, etc. to ensure DCS is running properly.

To back out of this step, simply remove the XCF(YES) keyword from the DCS SET initialization statement, then recycle TMSS on all systems.

Related Commands

The following commands are also useful when setting up XCF for DCS.

- XCFM DISPLAY – This command displays the information for an XCFM Services member. This includes member name, status, Control File, and JES2 MAS information.
- XCFM TASK – This command displays, disables, enables, or recycles the XCFM subtask.

Full syntax for commands is found in the *Command Reference Guide*.

Appendix A.
Dynamic Activation Options

Method 1 – No IPL

Our recommendation is to implement maintenance with an IPL but if this is not possible, the following procedure dynamically update the maintenance for most scenarios.

- Drain the Job Analyzer inits using $PIn.
- Drain any TM Dynamic initiators. Make note to re-enable them after the install.

  ```
  /TM INITS ANALYZERS(0)
  ```

- Activate the new software in the LINKLIST (e.g., LLA, REFRESH).
- Activate any new JES2 interfaces included in this maintenance using the following command:

  ```
  /ADS REINSTALL JES2EXITS FROMDSN (new maintenance level library)
  ```

- Restart the ThruPut Manager STC so that it is now referencing the new maintenance level library.
- Activate any new Common interfaces included in this maintenance by entering the following command:

  ```
  /ADS REINSTALL COMMON FROMDSN (new maintenance level library)
  ```

- Restart the PCS Control Region STC. **TM AE+ ONLY**
- Restart the Job Analyzer inits using $SIn.
- Enter the ThruPut Manager Operator command /TM D LEVEL and verify message DTM6563I indicates the highest maintenance level applied.
- For those sites moving to ThruPut Manager AE from ThruPut Manager SE, TM AE can now be activated dynamically by issuing the following command:

  ```
  /TM OPT ENABLE SLM
  ```

- Enter the ThruPut Manager Operator command /TM OPTIONS D and verify that the display reflects features that are installed and enabled.

Method 2 - No IPL using JES2 Dynamic Exits

For ThruPut Manager upgrades, JES2 Dynamic Exit support only addresses a portion of the implementation, therefore ThruPut Manager upgrades are accomplished using preexisting ThruPut Manager commands as described in Method 1.

For customers installing ThruPut Manager into a new environment, (the first time ThruPut Manager is introduced into the MAS) ThruPut Manager can be completely implemented without an IPL or a JES2 restart. Contact Compuware for details.

Appendix B. Synchronize JES2 and ThruPut Manager

Synchronization Considerations

When JES2 (z/OS) is upgraded/downgraded, ThruPut Manager modules DTMJ2MV7 and DTMJ2SV7 must be synchronized with the changed JES2. Compuware provides two techniques, outlined below, for handling JES2 macro changes on which ThruPut Manager relies for its addressing.

USERMOD TTM7120 is also provided for synchronizing the ThruPut Manager source stubs and JES2 source maintenance. Members UCLINU, UCLING and UCLINUG (a combination of the two) are found in the INSTALL dataset.

Technique 1 adds a UMID entry of TTM7120 to any existing UMID entry for each JES2 macro on which ThruPut Manager is dependent. During APPLY CHECK processing for the JES2 maintenance, SMP/E indicates the JES2 maintenance being applied does not PRE or SUP the ThruPut Manager USERMOD TTM7120.

This signals to the installation that ThruPut Manager has been affected by the JES2 maintenance being APPLY'd. SMP/E BYPASS ID processing is used to allow the maintenance to be applied. If a RESTORE of the JES2 maintenance is required, the UMID entries must be removed after the BYPASS ID of TTM7120 is performed.

Notify the ThruPut Manager support personnel that the JES2 maintenance has affected ThruPut Manager. INSTALL(I$JESLNK) can then be used to re-assemble and link the ThruPut Manager source stubs with the new level of JES2 macros, keeping the two synchronized. Care must be taken to implement the JES2 level with the ThruPut Manager level at the same time.

Technique 2 adds a GENASM entry of DTMJ2MV7 and/or DTMJ2SV7 to each JES2 macro that ThruPut Manager is dependent on. The source stub is reassembled and re-linked if any of the macros listed in the UCLIN are altered during the APPLY of JES2 maintenance. This allows the installation to install JES2 maintenance without having to worry about ThruPut Manager being out of synchronization with JES2.

For the assembly to be automatic, the ThruPut Manager Source and Macro libraries (both target and distribution) must be added to the SYSLIB concatenation for JES2. Failure to add these libraries results in the inability to assemble the ThruPut Manager source stubs, preventing the successful application of the JES2 maintenance.

Synchronizing ThruPut Manager and JES2

The following outlines the steps necessary to keep the ThruPut Manager source stubs and JES2 source maintenance synchronized:

- Choose one of the synchronization techniques outlined previously.
- To implement both methods, follow Technique 2 using the UCLINUG member provided in the INSTALL dataset instead of UCLING.

	Desired Effect	Implementation
Technique 1 Add UMID Entries	"Warning Bell" is issued when JES2 maintenance is applied. SMP/E indicates the JES2 maintenance does not PRE or SUP the ThruPut Manager USERMOD TTM7120. SMP/E BYPASS ID may be used to APPLY the JES2 maintenance. ThruPut Manager Support personnel must reassemble source stubs outside of JES2 maintenance by APPLY-ing TTM7120.	Execute member INSTALL(UCLINU)
Technique 2 Add GENASM Entries	Occurs Automatically when JES2 maintenance is applied. Most current ThruPut Manager source and macro libraries must be added as part of the SYSLIB concatenation for JES2 maintenance.	Define ThruPut Manager libraries in JES2 target zone (DTMLINK, DTMSRC, ADTMLIB, ADTMSRC). Add ADTMMAC and DTMMAC to the SYSLIB concatenation for the JES2 zone. Apply the USERMOD UMxxxxxx (usermod name selected by the installation) to the JES2 zone. Use INSTALL(@UMOD1) to inform SMP/E how to link to the source stubs when they are reassembled. Use INSTALL(UCLING) to ADD the ASSEM entry for the JES2 macros upon which ThruPut Manager is dependent.

Appendix C.
Share JES2 Exit Points

If your installation uses any of the exit points required by ThruPut Manager you must ensure that the ThruPut Manager exits are always invoked. This appendix outlines the special considerations that must be taken into account.

Required Calling Sequence

If your installation places an exit routine at one of the exit points used by ThruPut Manager, code the JES2 initialization statement for that exit point so that the ThruPut Manager routine is called first, unless you have specific, well understood reasons to do otherwise. For example:

EXIT4 ROUTINE=(DTMOMX04,YOUREXIT)...

All ThruPut Manager exits have been carefully designed to ensure that subsequent exit routines at the same exit point are called; however, exits 8, 14, and 49 might require special consideration, as described in this chapter.

Return Codes from ThruPut Manager JES2 Exits

Many of the standard exit points in JES2 allow return codes that preempt calls to subsequent exits taken at the same entry point. The following tables describe the codes returned by ThruPut Manager JES2 exits. Use these tables in conjunction with the list or return codes for the specific exit, as documented in the *JES2 Initialization & Tuning Guide*. Careful study of the JES2 return codes and these tables allows you to ensure that your installation's exits still work correctly in a ThruPut Manager environment. Where the return code is non-zero, another exit is not called.

DTMOMX05 — JES2 Exit 5	
0	Command was not a ThruPut Manager command. No action taken.
4	Not used.
8	Internal ThruPut Manager Interface Command. Processed ok.
12	Not used.

DTMOMX07 — JES2 Exit 7	
0	Always returned.
All others	Not used.

DTMOMX08 — JES2 Exit 8	
0	Always returned.
All others	Not normally used.

DTMOMX10 — JES2 Exit 10	
0	No action taken.
4	Unused.
8	ThruPut Manager has suppressed the message.

DTMOMX14 — JES2 Exit 14	
0	ThruPut Manager has determined that this is not a request to select a job for execution.
4	Not used.
8	A job has been selected for execution.
12	No jobs are eligible to be selected.

DTMOMX19 — JES2 Exit 19	
0	Initialization statement is not a ThruPut Manager initialization statement.
8	TMPARM initialization statement processed.
All others	Not used.

DTMOMX24 — JES2 Exit 24	
0	ThruPut Manager environment analyzed and found to be correct.
All others	Not used.

DTMOMX49 — JES2 Exit 49	
0	Always returned. If the flag X049SKIP in the byte X049RESP is set to B'1', the job has been skipped.
All others	Not used.

The JES2 Job Exit Mask

The JES2 Job Exit Mask associated with each job and located in the field JOBMASK in the JCT, can cause certain job-related exits to be bypassed. ThruPut Manager is sensitive to changes involving JES2 exits 7 and 8; therefore, you must ensure that any manipulation of the Job Exit Mask does not prevent the ThruPut Manager exit routines from being called.

Sharing JES2 Exit 8

ThruPut Manager introduces a new phase of processing into your system, called Job Analysis. A consequence of this new phase of processing is that JES2 Exit 8 (HASPSSSM JCT Read/Write) is invoked in the user's address space during Job Analysis. Of course, it is invoked again during normal job execution. Depending on the purpose and logic of your installation Exit 8 routine, this might be

undesirable. The ThruPut Manager JES2 Exit 8 routine is designed so that you can eliminate the calls to Exit 8 during the Job Analysis phase.

To prevent calls to other Exit 8 routines, you can change the source module for DTMJ2SV7 supplied with ThruPut Manager, so that return codes are passed to other exits based upon the processing decisions made by ThruPut Manager's use of Exit 8.

ThruPut Manager Exit 8 returns via a "return code" routine. This routine is shipped in source form. In this source there is a mapping table (shown below) that maps the return codes from Exit 8 to the "return code" routine and the corresponding return to your routines.

The table, as supplied, maps all return codes to 0 so your routines are always called. You can modify this mapping to influence the subsequent calling of your routines.

The following table shows the relationship between the codes returned by ThruPut Manager Exit 8 to the source stub and the actual return codes returned at the completion of Exit 8. (This represents the way ThruPut Manager is delivered to you.) The completion return codes are the ones that affect your routines.

To stub	To your routines	Action
Code	Completion Code	
0	0	The exit took no action since the job was not eligible for ThruPut Manager processing.
non-zero	0	Job was processed by Job Analyzer.

Sharing Exit 14 and Exit 49

Exit 14 and Exit 49, the Job Queue Work Select QGET exits, can be shared without concern with one exception. If the purpose of the exit is to select jobs for execution, it could conflict with the ThruPut Manager use of the exit. Under these circumstances, contact ThruPut Manager Customer Support.

Appendix D.
File Maintenance and Performance

The Control File (CF)

For a new allocation, ThruPut Manager attempts to cold start the Control File and reports errors if it is not 64 Cyls in size. The Control File may now reside in the coupling facility. Refer to Appendix F, XCF Notepad for more information.

Performance

JESplex Considerations

The control file must be placed on a device that provides good to excellent service times. Access to the file has been optimized for a cylinder boundary.

The MINDORM, MAXDORM, and MINHOLD keywords are provided to ensure that all systems sharing the file can have access to it. The use of these values is similar to the equivalent parameters in JES2.

ThruPut Manager also supports a MAXHOLD keyword that allows you to specify the maximum time a system can hold the Control File. MAXHOLD is intended to control JESplex members that do not run much (or any) batch work. It is a requirement that ThruPut Manager be running on all members of the JESplex but it is not desirable that these non-batch members interfere with Control File activity by any unnecessary accesses.

A recommended set of time values for a quiet or non-batch member is:

```
MINDORM(0) MAXDORM(12000) MAXHOLD(25)
```

This allows the member to be responsive if any activity originates from that member, such as a job arriving or a VARY ONLINE command being issued. Otherwise it only accesses the Control File once every 2 minutes, and releases it immediately if no work is to be processed.

The DEPTH keyword allows you to control how many JES2 action requests can be queued before ThruPut Manager waits.

These keywords can be specified on the FILE CF TMSS initialization statement or on a CFM SET TMSS initialization statement within a FOR group. Additionally, these parameters can be changed with the /CFM SET operator command.

CF and RESERVE

For performance reasons, do not allow the Control File RESERVE to be converted to a GLOBAL ENQ or propagated as a GLOBAL ENQ. If your installation is using GRS or a similar means of propagating ENQs, do not include the CF RESERVE in the RESERVE conversion RNL, but include it in the SYSTEMS exclusion RNL. The qname used by ThruPut Manager for the CF RESERVE is TMRMCF. The rname is formed by the dataset name, padded with blanks to 44 characters, followed by the serial number of the volume containing the Control File.

Sharing the Control File

For each JESplex, you must share the Control File among all systems that comprise that JES2 node. Do not share the Control File across JES2 nodes. If your installation uses MIM, and shares DASD across multiple JES2 nodes, then Control File sharing is required to allow DCS to communicate holder

information. Otherwise, DCS should be configured to use cross-systems communication via the DCS SET XCF(ON) TMSS initialization statement.

Note that ThruPut Manager does not allow two active nodes with the same name.

Maintaining the Control File

A support utility to help manage the Control File is provided. This utility, DTMCFMU7, has been designed to help in maintenance and problem determination situations:

- It copies the Control File to another area, or another device type.
- It provides a formatted dump for repair or analysis of the Control File.

For the move function, the Control File must be 64 cylinders are needed on a 3380 or 3390, regardless of the device used. The allocation should be on a cylinder boundary and on a device that provides good to excellent service times.

To move the Control File run the DTMCFMU7 member in the INSTALL dataset with the following changes.

```
//Name EXEC PGM=DTMCFMU7,PARM=COPY
//SYSPRINT DD SYSOUT=*
//DTMRMCF DD DSN=name.of.the.control.file,DISP=OLD
//NEWRMCF DD DSN=name.of.the.new.file,DISP=(,CATLG),
// SPACE=(CYL,64,,CONTIG),UNIT=unitname
```

To dump the Control File run the DTMCFMU7 member in the INSTALL dataset with the following changes.

```
//Name EXEC PGM=DTMCFMU7,PARM=DUMP
//SYSPRINT DD SYSOUT=*
//DTMRMCF DD DSN=name.of.the.control.file,DISP=OLD
//DTMDUMP DD SYSOUT=*
```

Duplexing the Control File - Using the Control File Utility

The DUPLEX function of DTMCFMU7 provides a means to protect against the risk of Control File media damage. A sample PROC is provided:

```
//TMDUPLX PROC CF='control.file',I=10,
// DUPLEX='control.file.DUPLEX'
//TMDUPLX EXEC PGM=DTMCFMU7,TIME=1440,REGION=0K,
// PARM='DUPLEX,&I'
//STEPLIB DD DISP=SHR,DSN=tm.load.library
//SYSPRINT DD SYSOUT=*
//DTMRMCF DD DISP=SHR,DSN=&CF
//NEWRMCF DD DISP=SHR,DSN=&DUPLEX
```

You can modify:

- **&CF** - Control File dataset name
- **&DUPLEX** - Dataset the same size as the Control File on a different physical volume, preferably via a different channel/control unit path.
- **&I** - Frequency in seconds the Control File is examined for changes. The DUPLEX file is only written to when changes to the Control File are detected. Only the portions with changes are read and written.

Duplexing has very low overhead, one EXCP per cycle fixed overhead, plus the necessary I/O when changes are detected. A very low “I” parameter, say 2 or 3 seconds increases the overhead, but almost certainly ensures a seamless recovery from the duplex file. A high “I” parameter, say 30 to 60 seconds yields an almost negligible overhead at a risk of small data loss during the recovery process. This choice may require more operator intervention after recovery, e.g. some jobs may need to be re-analyzed.

The DUPLEX STC should be run once per Control File instance, it doesn't matter which system is used, no reserves are issued. ThruPut Manager must be active on at least one system sharing the Control File, otherwise the DUPLEX STC will simply make one copy of the Control File and terminate.

The DUPLEX STC stops in response to a P TMDUPLX command, or shortly after the last copy of ThruPut Manager terminates that is sharing the Control File.

If Control File damage occurs, the recommended recovery procedure is as follows:

1. Stop duplexing with P TMDUPLX command.
2. Stop ThruPut Manager on all systems sharing the CF with /PTM if possible, otherwise CANCEL.
3. Rename the production Control File.
4. Rename the DUPLEX file to the Control File name.
5. Restart ThruPut Manager on all systems sharing the CF.
6. Create a new DUPLEX file and restart TMDUPLX.

The Volume Information File (VIF)

Performance

VIF and RESERVE

ThruPut Manager issues both a RESERVE and an ENQ for the VIF. For performance reasons, do not allow the VIF RESERVE to be converted to a GLOBAL ENQ or propagated as a GLOBAL ENQ. If your installation is using GRS or a similar means of propagating ENQs, do not include the VIF RESERVE in the RESERVE conversion RNL, but include it in the SYSTEMS exclusion RNL.

The qname used by ThruPut Manager for both the VIF RESERVE and ENQ is DTMVIF. The rname for the RESERVE is formed by the dataset name, padded with blanks to 44 characters, followed by the serial number of the volume containing the VIF:

```
SYS2.TMVnn.VIFILE.PROD WORK01
```

The rname for the ENQ is formed in the same way, but LOCK is appended to the volume serial number:

```
SYS2.TMVnn.VIFILE.PROD WORK01LOCK
```

Sharing the V IF

The VIF should be shared across nodes. To allow JSS to hold and release all jobs depending on a particular volume, the VIF must be shared by all systems using the same set of volumes. If systems from multiple nodes share the VIF, each node must have a unique name.

Maintaining the VIF

The VIF can be moved among identical device types. If it is necessary to move the file to a different device type, the VIF must be reallocated and formatted. If the VIF is moved to a different device type, the operator is informed and is given a choice to format the file. TMSS always asks for operator confirmation before formatting the VIF.

The Contention Management Facility File (CMF)

A “snap-shot” utility is provided to transfer the records from this shared file to another external file suitable for input to the management reporting system. This data is not critical so the consequences of losing some records should not be severe.

The CMF File is a DASD file, consisting of a CMF Control Record and a variable number of dataset contention records. The control record points to where the next record is to be written. The structure of the file prevents the situation where you run out of space by using a “wrap-around” technique.

Performance

There are no specific performance considerations. The CMF file does not use a reserve.

Maintaining the CMF File

Establish a cycle (daily, weekly, etc.) for data unloading that suits your installation.

The CMF File is completely portable among supported devices. It can be copied to a different device and used by ThruPut Manager without being reformatted.

CMF File sharing should duplicate Control File sharing; that is, the CMF File should be shared to include all systems in a particular JES2 node, and there should be one CMF file per JESplex.

Appendix E.
Software Access Control (SAC) Guide

Software Access Control (SAC) Facility

Job Binding Services includes the Software Access Control facility. This optional facility extends the existing mechanism of JBS to allow an installation to restrict access to a specified function that is invoked via TSO, ISPF, REXX or a CLIST.

Installations Considerations for Batch

For BATCH jobs, no additional installation steps, outside of the standard ThruPut Manager, install are required.

Installations Considerations for Foreground

SAC (for foreground environment) makes use of the following IBM interfaces:

- TSO intercept module IKJEFTB2
- ISPF exits 3 and 5
- REXX Host Command Environment Routine IRXSTAM/IRXSTAMP
- CLIST Statement Exit IKJCT44S

There are additional steps required to implement these interfaces in your installation. The first is to implement the interfaces for TSO, REXX, and CLISTs. The second is to install the ISPF interface. These steps are described below.

1. Implement SAC via SMP/E (TSO/REXX/CLIST interfaces)

The install dataset contains member @UMOD4 that must be used in order to implement SAC via SMP/E. Customize this member to reflect the installation's environment. This member consists of:

- a series of UCLIN statements to be APPLY'd to the existing MVS zone, not the ThruPut Manager zone. This will require the TSO/E and ISPF target and dlib zone names.
- two usermods to be APPLY'd to the zone where TSO/E and ISPF have been installed. Follow the customization directions included at the top of the member before the SMP/E RECEIVE and APPLY of the usermod.

  Note: If the USERMODs require reinstallation due to system maintenance, these USERMODS must be RESTORE'd and Re-APPLY'd.

Because IKJEFT02 and it's ALIASES, along with IRXSTAM, live in SYS1.LPALIB, you will need to IPL with CLPA.

If your installation is already using any ISPF exits you will need to add the exit routines definition to the source provided.

The following link edit steps are performed:

- ISPF exit module ISPEXITS into library ISP.SISPLOAD
- REXX Exec module IRXSTAM into library SYS1.LPALIB
- CLIST module IKJCT44S into a linklisted dataset such as the ThruPut Manager INSTALL dataset

IBM provides sample modules for IKJEFTB2 and IRXSTAM in SYS1.LPALIB. Therefore the JCL provided includes modules by these names in the link edit steps and uses the CHANGE linkage editor statement to build load modules that includes both the sample and the ThruPut Manager module. This occurs automatically.

However, if your installation is already making use of either the TSO intercept IKJEFTB2 or the CLIST intercept IKJCT44S you are required to alter the JCL provided to allow the inclusion of your installations' modules. In each case review the comments in the specific step before altering the JCL.

2. ISPF Configuration Utility

Use the ISPF configuration utility to enable ISPF exit routines. (Refer to the *ISPF Planning and Customizing Manual SC28-1298* for more details).

The utility is entered by issuing the ISPF command ISPCCONF. A sample of the panels to follow is described below; consult the manual for complete details.

1. Select option 1 - Create/Modify Settings and Regenerate Keyword File.

   You will be required to enter your installations keyword file dataset. If your installation already has one, enter it in the Keyword File Dataset area of the panel; otherwise, allocate a new one and enter its name in the panel (DSORGPO/ RECFM FB/LRECL 255/BLKSIZE 27795).

   If your installation already has a configuration member in the keyword file dataset, enter it; otherwise, provide a member name as desired.

2. Select option 5 - ISPDFLTS, CUA Colors, and Other DM Settings.

   Enter / to select option.

   Enable ISPF Exits.

3. Use END or EXIT to return to the previous panel and then END or EXIT again to generate the keyword file. You will now be placed into edit in the dataset(member) you originally specified.
4. Verify that the keyword ENABLE_ISPF_EXITS is set to YES in the keyword table that has been generated (a standard FIND ENABLE_ISPF_EXITS locates the text in the table).
5. Use END or PF3 to return to the main panel.
6. Select option 3 - Verify keyword table contents.
7. Select option 4 - Build a keyword table

Module ISPCFIGU will be created (by default). This module must be copied to ISP. SISPLOAD so ISPF can use it.

Activate SAC Interfaces

Because IKJEFT02 and it's ALIASES, along with IRXSTAM, live in SYS1.LPALIB, you will need to IPL with CLPA.

Implement SAC with ThruPut Manager

Once all of the SAC interfaces have been implemented, the SAC table used by ThruPut Manager must be built and activated. Refer to the *JBS System Programming Guide*, "*Chapter 4. JBS: Software Access Control (SAC)*" for further details.

Please note: SAC will not be active until a table is defined in the TMSS parameters and that table contains entries. For batch scenarios, the JBS BIND FROM_SAC statement has to be included in the JAL as well.

Appendix F.
XCF Notepad

What is the XCF Notepad?

The XCF Notepad is a copy of the ThruPut Manager Control File maintained in an IBM coupling facility.

The scope of the XCF Notepad is the JESplex. When XCF Notepad is activated, there is a unique XCF Notepad created for each JESplex.

Why Use the XCF Notepad?

The XCF Notepad improves access to Control File data when there are several systems in the JESplex.

As the Control File is similar to the JES2 Checkpoint, the recommendation follows what IBM suggests for the use of the Coupling Facility for the JES2 Checkpoint; that is to use the Notepad in situations where the JESplex consists of 4 or more members. (4way+ JESplex). One of the ThruPut Manager started tasks in the JESplex will assume responsibility for writing the data to the DASD version of the Control File as backup. The others read the Control File data from the XCF Notepad and write the Control File data to the XCF Notepad.

Prerequisites

Before activating XCF Notepad, you must ensure that all systems in the JESplex are running the same levels of software;

- ThruPut Manager V7R1.0, PTF TMT7108 or higher
- ThruPut Manager Automated Edition (AE) or Automated Edition Plus (AE+)
- z/OSV2R1 or higher

  Note: If your installation shares the Control File across multiple JESplexes or multiple SYSPlexes, XCF Notepad cannot be activated.

Planning Considerations

Each XCF Notepad is hosted in a list structure in an IBM coupling facility, and an additional structure is used to host the note pad catalog. To use XCF Notepad services, the installation needs to define these structures in the Coupling Facility Resource Management (CFRM) policy.

ThruPut Manager creates its Note Pad with an owner name of $$TM and an application name of JES2. The maximum number of notes specified when the Note Pad is created is 53248.

See IBM manual "*z/OSV2R1 MVS Setting up a SYSPLEX*", chapter "*Planning XCF Note Pad Services in a SYSPLEX*" for a detailed description on creating the necessary coupling facility definitions.

Security Considerations

Your installation's security administrator may wish to define System Authorization Facility (SAF) profiles restricting access to the ThruPut Manager XCF Notepad.

See IBM manual *"z/OSV2R1 MVS Setting up a SYSPLEX"*, chapter *"Planning XCF Note Pad Services in a SYSPLEX"*, section *"Authorizing XCF note pad requests"* on how the SAF profiles can be created and modified.

Initialization Statements

Initialization statement CFM SET XCF_NOTEPAD(ON|OFF) has been added to the ThruPut Manager started task (TMSS). The default state is OFF.

Activating XCF Notepad

XCF Notepad is activated by including a CFM SET XCF_NOTEPAD(ON) initialization statement. XCF Notepad must be activated on all systems in the JESPlex simultaneously. Each participating TMSS must be brought down. The first TMSS started will create the XCF Notepad.

Commands

The CFM DISPLAY command has been updated. When XCF Notepad is active, the CFM DISPLAY command shows XCF_NOTEPAD(ON) and includes the Notepad name and description.

Recovery from a Notepad failure

If there is an issue with the Notepad, then the installation should return to use of the DASD Control File. This is readily performed by simply replacing the CFM SET XCF_NOTEPAD(ON) initialization statement with CFM SET XCF_NOTEPAD(OFF) and then restarting the TM STC on all members of the JESPlex. The failed Notepad will be deleted automatically during initialization of the first TM STC where the XCF NOTEPAD is off.

Failure of the XCF Notepad

In rare circumstances, it might be necessary to delete the XCF Notepad so it can be re-created from the data in the ThruPut Manager Control File. This can be done by using IBM utility program IXCMINPD.

The following statement is an example of how to invoke the utility:

```
//DELETE EXEC PGM=IXCMINPD,PARM='notepadname'
```

ThruPut Manager's XCF Notepad(s) has a name which includes the JES2 cold-start date and time so that it is unique within the IBM SYSPlex.

Each XCF Notepad name is constructed as follows:

```
$$TM.JES2.coldstartdate.coldstarttime"
```

where

$$TM.JES2 - is constant

coldstartdate.coldstarttime - is the cold start date and time of the JESPlex

XCF command D XCF,NP,SCOPE=DET lists all notepads defined to the SYSPlex. The description associated with ThruPut Manager's XCF Notepad(s) includes the node name of the corresponding JESPlex.

When the XCF Notepad has been deleted, the next ThruPut Manager started with CFM SET XCF_NOTEPAD(ON) will re-create the XCF Notepad from the Control File data.

A scenario where deletion of the Notepad might be necessary is in a Disaster Recovery environment where cold starts are performed. As the notepad name is constructed from the cold start data and time, a new Notepad will be created when ThruPut Manager initializes. The installation may wish to clean up lingering Notepads from previous starts.