EPV for CICS
Installation and Customization

IT Costs
Under Control

Supporting
EPV for CICS V15

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About this manual

This manual is intended to help anyone wanting to install and customize EPV for CICS V15.

Changes

Technical changes or additions to the text are indicated by a vertical line to the left of the change.

Terminology

A “view” is an EPV report presented in an HTML page.

1. Overview

Enterprise **P**erformance **V**ision (EPV) for CICS is a tool designed to provide performance analysts and System Administrators with a complete vision of their companies' CICS subsystems and workloads.

EPV allows quick identification of anomalies, performance problems and abnormal resource consumption.

The product uses auto discovery techniques that are completely transparent to the user, to aggregate and correlate the most useful metrics, producing valuable, ready to use information.

EPV uses standard metrics available in the z/OS environments, and is designed to use mainly SMF data, optimizing the loading procedures and avoiding data redundancy.

The product architecture is modular and very flexible. EPV can be installed on most of the hardware and software platforms on the market.

All information is presented through simple HTML static pages that can be transferred on any platform and accessed using a browser.

All tables located in the HTML pages can be exported to a Microsoft Excel spread sheet by a simple mouse click.

2. Product components

The product components, also called VISIONS, are:

- **EPV for CICS Exceptions** provides a complete vision of the most important hardware and software threshold violations which help locate problems and anomalies immediately. The default thresholds fit well for most installations.

- **EPV for CICS Critical Events** provides a general vision of the most important critical events of CICS environments.

- **EPV for CICS Configuration** provides a general vision of the hardware and software configuration of CICS environments, including important parameter settings for CTG. Configuration changes are also tracked and reported.

- **EPV for CICS Regions** provides a complete vision of Throughput, CPU, zIIP and memory usage, paging and I/O activity of CICS subsystem address spaces.

- **EPV for CICS Resources** provides detailed information about logging, temporary storage, transient data, VSAM local shared resource (LSR) pools and file activity.

- **EPV for CICS External Subsys** provides information about CICS connections with other subsystems like Db2, MQ and CTG

- **EPV for CICS Workloads** gives a detailed vision of transactions throughput, CPU consumptions and response time. The transaction response time can be broken down into all the possible wait reasons.
  Transactions can be assigned to the specific application allowing an analysis more focused on the business needs.
  Through simple customizations it is also possible to logically aggregate the CICS subsystems. Starting from a logical group vision, each CICS subsystems can be analyzed in detail.

- **EPV for CICS Trends** provides daily, weekly and monthly trends of the CICS workloads.
  Daily trends allow you to identify anomalies and changes in the number of transactions executed, and their performance.
  Weekly and monthly trends allow you to understand and estimate the growth trend of CICS workloads and their impact on Capacity Planning activities.

- **EPV for CICS User Reports** provides reports for specific CICS transactions based on user specifications. This allows you to check the performance of transactions subject to corrective or evolutionary maintenance, to compare transactions executed on different CICS subsystems and to create trend reports for each of them.

- **EPV for CICS Reports** provides the possibility to produce on demand Short and Long Transaction Reports at summary or detail level running during a specific period of time, also related to the current day.

3. Architecture

EPV is a Perl application based on three tiers:

- Data Load Interface;
- Correlation and Aggregation Engine;
- HTML Pages Production Engine.

EPV provides a free light version of the EPV Parser for SMF (Parser) product to read SMF data and store the necessary fields in a SQL or noSQL (Apache Impala) database which will form the input for the Data Load Interface.

The Data Load Interface is designed to optimize performance and resource consumption during the loading phase, avoiding duplication or data loss.
It's composed of simple Perl exits that extract meaningful data and store it in a transit database.
These exits represent a gateway from the environment to the product; there is an exit for each kind of data to load, and others for general purposes.

The EPV detail database by default contains the last 7 days of CICS monitoring data; it is designed to avoid data loss and to provide input for detailed transaction analysis.

The Correlation and Aggregation Engine loads a daily SQL or noSQL (Apache Impala) database, including only the metrics used during the reporting phase, aggregated at hour and day level.
Configuration parameters set the number of days and months to retain in the databases.

The HTML pages Production Engine can be customized in order to:

- Produce the HTML pages for one or more days,
- Report daily and monthly trends for a desired period.
- Perform the statistical analysis to spot statistical values outside the normal distribution
- Choose which and how many days to include in the statistics

The HTML pages produced by EPV are supported by most common Web servers and can be used by the majority of browsers in the market.

The HTML pages can be produced in any environment, and then transferred using FTP, or another file transfer program, to the desired server, using the appropriate conversion table when necessary (EBCDIC to ASCII).

4. Preliminary settings and verifications

Before you proceed with the EPV installation you need to perform some preliminary actions and verifications.

4.1 Hardware and Software requirements

The following table summarizes EPV Hardware and Software minimum requirements:

Component	Requirements
Operating System	any Microsoft Windows OS, Linux and Unix system (special considerations apply to AIX systems, please contact EPV technical support if you need more information about this)
Hardware	Any hardware platform supported by the previous operating systems.
Processors	4
Memory	8 Gb RAM
Disk Space	The space needed for database tables and HTML pages depends on the number of monitored subsystems and the number of days retained in the performance DB.
Software	Supported Database: MySQL Server ver. 5.0 or higher. Microsoft MS SQL Server 2005 SP4 or higher. Apache Impala ver.2.12.0

Figure 1

4.2 SMF Input records

The following SMF records need to be collected:

SOURCE	RECORD TYPE	SUBTYPE	IFCID	DESCRIPTION
SMF	30	2, 3		Address Space
SMF	70	1		CPU
SMF	88	1		System Logger
SMF	110	1		CICS Monitor
SMF	110	2	10,12,29,39,40,45, 48,62,67,74,92,93, 102,103,116	CICS Statistics
SMF	111			CICS Transaction Gateway[1]

Figure 2

[1] SMF 111 records are optional; you need to collect this info if you want detail statistics about CICS Transaction Gateway.

To produce the needed SMF 110 subtype 2 records the following parameters have to be set in DFHSIT:

- STATRCD=ON, to produce interval statistics; default is OFF;
- STATINT=010000, to set the interval to 1 hour; lower values are accepted; higher values will produce interval records which will be discarded by EPV; default is 010000.

To produce the needed SMF 111 subtype 1 records the following parameters have to be set in the GATEWAY section of the Gateway daemon configuration file (ctg.ini):

- statsrecording=on, to produce interval statistics; default is off;
- statint=010000, to set the interval to 1 hour; lower values are accepted; higher values will produce interval records which will be discarded by EPV; default is 030000.

4.3 SMF record 30 synchronization (subtype 2 & 3)

SMF 30 subtype 2 and 3 records are not produced by default.

To activate SMF interval accounting using the global recording interval the following parameters have to be set in the SMFPRMxx member of the SYS1.PARMLIB library:

- INTVAL(mm) where mm is the interval duration; suggested values are 10 or 15 minutes;
- SYNCVAL(nn) where nn is the minute in the hour that starts the interval; suggested value is 00;

In addition the following parameter has to be set under SYS and SUBSYS sections:

- INTERVAL(SMF,SYNC).

Writing of these records has to be allowed in SMFPRMxx (under the TYPE sub parameter).

It's very important you synchronise SMF and RMF data; to do that you must set the following parameter in the ERBRMFxx member, used by RMF Monitor I, of your SYS1.PARMLIB library:

- SYNCH(SMF).

5. Installation

Warning: If you performed the EXPRESS customization, the EPV product is already installed. No other action is required.

To install EPV you need to perform the following steps:

1. DBMS installation;
2. Prepare products and password folders in Windows;
3. Prepare products and password folders in Linux/Unix.

5.1 DBMS Installation

DBMS installation should have already been performed when installing the EPV zParser product which is a prerequisite to EPV. Please refer to the EPV zParser documentation.

5.2 Preparing products and password folders in Windows

Products and password folders should have already been prepared when installing the EPV zParser product which is a prerequisite to EPV. Please refer to the EPV zParser documentation.

If for any reason you need to update the EPV product, in Windows systems you have to copy the supplied /PRODUCTS/EPVCICS_VXX folder (where XX stays for the version number of the product) from the EPV Installation CD to the PRODUCTS folder in EPV zParser installation folder. From here on the *"$$$path*" variable should be substituted with the path where the installation software was copied.

Warning: those folders should not be copied to the disk drive root folder, so we recommend to create a folder in the root (e.g. $$$path=/EPVROOT).
Please remember that the path where the EPVROOT will be copied must not contain special characters (such as: $,#,*,£ etc..) because they will disrupt EPV processing.

If you need to update the license key please copy the LICENSE_EPVCICS.EPV file in the $$$path/PASSWORD folder.

5.3 Preparing products and password folders in Linux/Unix

In Linux/Unix systems you have to copy the supplied /PASSWORD, /PRODUCTS, /SETUP, /TOOLS, /DOCUMENTS, /USERPROFILE, /PERL_MODULES folders and all the included subfolders, from the EPV Installation CD to a freely chosen position but the last folder has to be EPVROOT (e.g. /home/epv/EPVROOT).

From here on the *"$$$path*" variable should be substituted with the path where the installation software was copied.

Warning: If you want to create a profile by using the EPV Customization GUI you have also to copy the supplied /PASSWORD, /PRODUCTS, /SETUP, /TOOLS, /DOCUMENTS and /USERPROFILE folders, and all the included subfolders, from the EPV Installation CD to a freely chosen position in a Windows system.

All the provided passwords (included in EPV_LICENSES_WINDOWS.ZIP) have to be copied in the PASSWORD folder. These passwords will only be used to run the EPV Customization GUI.

5.4 HTML publishing folders

On the system that will host the HTML pages you have to verify that the following folders exist under the HTML path you have defined during the installation process[2]:

../HTM/**IMG**	contains images used by EPV (EPV logo, Microsoft Excel icon, etc.)
../ HTM /**JAVA**	contains JavaScript files (".JS"), style sheets (".CSS") and a configuration file (".TXT")
../ HTM /**UIHTML**	contains HTML pages needed to EPV user interface
../ HTM /**CICDOC**	contains the help page system
../ HTM /**CICHTML**	contains all HTML pages produced daily by the product
../ HTM /**START.HTML**	EPV HTML main page

.

If any of these folder and files doesn't not exist you must copy what is missing from the ./PRODUCTS/EPVUI folder of the EPV Installation CD to the HTML path.

To exploit the transaction reports (see transaction reports detail information in the next chapters) you need to have the following structure under ../ HTM /**CICHTML:**

- ../ HTM /**CICHTML/CICREP/CICLSREP/LONG**
- ../ HTM /**CICHTML/CICREP/CICSSREP/SHORT**
- ../ HTM /**CICHTML/CICREP/CICSDREP/SHORT**

[2] It depends on the type of installation you did (express or advanced) and on the installed products.

6. Manual Customization (mandatory)

If for any reason you don't want to use the EPV Customization GUI you can perform a manual customization following these steps.

6.1 Customizing the DBs

All the procedures you need are placed under the TOOLS/CICS folder and are classified by DB engine and platform installation. A unique procedure (RUNALL.BAT for Windows systems and RUNALL.sh for Linux/Unix systems) is provided which calls all the others in the right sequence.

To run the procedure, open a command prompt or shell and run:

- for Windows systems (MS SQL Server): RUNALL.BAT *youruser yourpassword instance*, where *youruser* and *yourpassword* are those defined in your DBMS and *instance* is the MS SQL Server instance;
- for Windows systems (MySQL): RUNALL.BAT *youruser yourpassword*, where *youruser* and *yourpassword* are those defined in your DBMS;
- for Linux and Unix systems (MySQL): ./RUNALL.sh *youruser yourpassword.* where *youruser* and *yourpassword* are those defined in your DBMS.

6.2 Customizing the SETTING.PL parameters

In order to create the HTML reports under a desired location please open the SETTINGS.PL file placed under the *$$$path*/USERPROFILE/*$Profilename*/COMMON folder (where *$Profilename* is the name of your user profile set at EPV zParser installation) and customize the $HTMDIR variable specifying the preferred HTML path.

6.3 Verify the MIPS table

MIPS tables are named MIPyARxx, MIPyLRxx, MIPyHRxx and MIPyPRxx, where y indicates the processor type (y=S for GCP and y=I for IIP/AAP), xx is the z/OS level (i.e xx=21 means z/OS version 2.1) and they are based on IBM LSPR benchmarks.

The **MIPSARxx** tables contain the average Relative Nest Intensity (RNI) estimated GCP MIPS (for z/OS 2.1, 2.2 and 2.3; xx should be 21, 22 or 23 in this case).
The **MIPSLRxx** tables contain the low Relative Nest Intensity (RNI) estimated GCP MIPS (for z/OS 2.1, 2.2 and 2.3; xx should be 21, 22 or 23 in this case).
The **MIPSHRxx** tables contain the high Relative Nest Intensity (RNI) estimated GCP MIPS (for z/OS 2.1, 2.2 and 2.3; xx should be 21, 22 or 23 in this case).
The **MIPSPRxx** tables contain the Performance Capacity Index (PCI) estimated GCP MIPS (for z/OS 2.1, 2.2 and 2.3; xx should be 21, 22 or 23 in this case).
The **MIPIARxx** tables contain the average Relative Nest Intensity (RNI) estimated IIP MIPS ((for z/OS 2.1, 2.2 and 2.3; xx should be 21, 22 or 23 in this case).
The **MIPILRxx** tables contain the low Relative Nest Intensity (RNI) estimated IIP MIPS (for z/OS 2.1, 2.2 and 2.3; xx should be 21, 22 or 23 in this case).
The **MIPIHRxx** tables contain the high Relative Nest Intensity (RNI) estimated IIP MIPS (for z/OS 2.1, 2.2 and 2.3; xx should be 21, 22 or 23 in this case).

The **MIPIPRxx** tables contain the Performance Capacity Index (PCI) estimated IIP MIPS (for z/OS 2.1, 2.2 and 2.3; xx should be 21, 22 or 23 in this case).

EPV uses the MIPSTAB member for GCP engine and MIPITAB for IIP engines; by default, they contain the values in the MIPSAR21 or MIPIAR21 tables. If you want to use other values, you can copy any of the above tables in MIPSTAB or in MIPITAB[3].

Customers **CAN MODIFY** MIPSTAB or MIPITAB tables values but they **SHOULD NOT** modify the MIPSLTxx, MIPSATxx, MIPSPTxx, MIPyARxx, MIPyLRxx, MIPyHRxx and MIPyPRxx tables.

EPV uses two different automatic algorithms to set the machine capacity for each CP pool. The used algorithm depends on the value assigned to the EPVMIPS and EPVMIPI CONFIG parameters. By default the CPU capacity is taken directly from the MIPSTAB table without considering the MP effect added by specialty zIIP processors. Only when the EPVMIPS parameter is set to ENHANCED, EPV estimates the CPU capacity taking into consideration the additional MP effect due to specialty processors.
By default for the IIP processors, EPV estimates the IIP capacity taking into consideration the MP effect. Only when the EPVMIPI parameter is set to TABLE, EPV take the capacity directly from the MIPITAB table without considering the MP effect.

MIPS tables and EPV estimates have to be considered as "average" values because they do not take into consideration the number of active LPARs and their configuration. We strongly advice customers to use the IBM zPCR tool in order to get good estimates and set them in the MIPSTAB and MIPITAB tables.

Two exits (UEXMIPS, UEXIMIPS) are also provided, for special needs, in the USERLIB library. They allow customers to set their trusted MIPS values for CPU and IIP pools capacity.
To avoid the risk of using obsolete MIPS values, the EPV process will terminate if it finds a new machine model and IIP configuration whose MIPS values set in the exits have not been updated.

6.4 Password

The product is licensed by the number of CICS subsystems analyzed. The password will be provided at the installation with the right codes and the right number of subsystems.
The passwords have to be copied in the PASSWORD folder.

3 Verify in the chosen table if all the machines in your site are available. EPV Technologies will provide an updated version of the tables if you verify that some of your machines are missing.

7. Scheduling

Scheduling the EPV provided procedures (manually or automatically) allows you to process data and produce the HTML reports daily.
All the .BAT procedures mentioned here are available as .sh to allow EPV to run on Linux/Unix systems.

7.1 Collecting data once a day

When your environment is set to collect data once a day the whole EPV process is run by the ALLPHASES.BAT procedure, created during EPV zParser installation and scheduled daily, which is located in the *$$$path*/USERPROFILE/*$Profilename*/COMMON/PROCS folder.

In order to add the EPV in the daily schedule you have to modify the NIGHTBATCH.BAT procedure located in the *$$$path*/USERPROFILE/*$Profilename*/EPVZPARSER/AGENT/PROCS folder.
Inside that procedure you should find (or add if missing) a CALL to the NIGHTBATCH_CICS.BAT procedure located under the *$$$path*/USERPROFILE/*$Profilename*/EPVCICS/PROCS folder.

7.2 Collecting data in continuous mode using EPV agents

When your environment is set to collect data in a continuous mode using the EPV agents, the daily consolidation process is run by the POSTZPARSER.BAT procedure, created during EPV zParser installation, which is located in the *$$$path*/USERPROFILE/*$Profilename*/COMMON/PROCS folder.

Inside that procedure you should find (or add if missing) a CALL to the NIGHTBATCH_CICS.BAT procedure located under the *$$$path*/USERPROFILE/*$Profilename*/EPVCICS/PROCS folder.

8. Manual Customization (optional)

In the following are listed some optional steps to fit specific user needs.

IMPORTANT NOTE:
All the User exit files are located in *$EPVPATH*/PRODUCTS/EPVCICS_V15/USEREXIT.
Before applying a change, you have to copy the user exit you want to customize in *$EPVPATH*/USERPROFILE/*$Profilename*/EPVCICS/USEREXIT and then modify it.

8.1 Customizing the CONFIG parameters

The default values are valid for most sites. However you can customize parameters and thresholds settings in the *$$$path*/USERPROFILE/*$Profilename*/EPVCICS/CONFIG.PL file (where *$Profilename* is the name of your user profile set at EPV zParser installation) as desired.

Attachment A provides a short description of all the EPV parameters and thresholds, their default values and their meaning.

8.2 Loading SMF data for a subset of CICS subsystems

To comply with your EPV license, you may need to load SMF data only for some CICS subsystems. In that case you should put the list of the CICS subsystems you want to analyze in the **UCXLIST** file located in the *$$$path*/USERPROFILE/*$Profilename*/EPVCICS/USEREXIT directory or using the EPV Installation GUI.
This setting takes effect during the EPV loading phase.

8.3 Creating HTML pages for a subset of CICS subsystems

EPV allows you to create the HTML pages for only the most important CICS subsystems in order to reduce the amount of HTML pages produced and the elapsed time of the HTML phase. To do that you should put the list of the CICS subsystems you want to analyze in the **UEXPAGES** file located in the *$$$path*/USERPROFILE/*$Profilename*/EPVCICS/USEREXIT directory or using the EPV Installation GUI. This setting takes effect during the EPV HTML phase.

8.4 Exclusion of CICS address space subsystems

EPV allows you to exclude in the HTML pages the data related to some CICS address spaces coming from SMF record 30 to avoid producing partial reports for subsystems not included by **UCXLIST** and **UEXPAGES** as described in chapters 8.2 and 8.3. To do that you should put the list of the CICS subsystems that you don't want to analyze in the **UCXEXAS** file located in the *$$$path*/USERPROFILE/*$Profilename*/EPVCICS/USEREXIT directory or using the EPV Installation GUI. This setting takes effect during the EPV HTML phase.

8.5 Assign an APPL value to transaction

You can assign an application (APPL) value to each CICS transaction. It can be necessary to identify correctly each transaction request when the same transaction name is used for different applications. You can customize the user exit in the **UCXAPPL** file located in the *$$$path*/USERPROFILE/*$Profilename*/EPVCICS/USEREXIT directory or using the EPV Installation GUI. By default, APPL is set equal to the transaction name. This setting takes effect during the EPV loading phase.

8.6 Thresholds and Exceptions customization

EPV provides a set of base thresholds to control both resource utilization and application performance. Each base threshold is a single value controlling all the occurrences of a specific metric. Base thresholds can be customized by modifying the default values provided in the CONFIG.PL file located in the *$$$path*/USERPROFILE/*$Profilename*/EPVCICS/ directory or using the EPV Installation GUI.

While the threshold value in the CONFIG.PL file is generally valid there are situations where a different threshold value is needed for a specific subsystem or for specific hours of the day.
This is the reason why advanced thresholds have been introduced in EPV. The current implementation is based on a specific exit associated to each threshold. By changing the sample exit provided, customers can set as many different threshold values as needed for each controlled metric.
The name of all these user exits follows this naming convention: **T *exception name***.
Each user exit contains an example of CASE statements with all the criteria variables which can be used to modify the threshold value.
Attachment B provides the default values for each base threshold and the name of each advanced threshold file.

Every time a base or advanced threshold is violated an exception is generated.
All generated exceptions are reported by default in the HTML group.
By default, two different exception groups are defined: HTML and SUBSYS.
For each defined group except for the HTML group a text file is produced, (groupname.txt), containing a list of the exceptions associated with that specific group.

Through the **AGROUPS.PL** user exit you can define as many groups as you need and assign exceptions (using an ALERT code) to groups.
Customizing the **AFILTERS.PL** user exit you can exclude alerts or hours you do not want to consider. For example, you could consider warnings coming from the TEST environment not worth to generate exceptions.

8.7 Exclusion of incorrect values from statistical analysis

EPV trend statistical analysis allows to automatically identify abnormal behaviours. It produces the exceptions (ALERTS) described in the following table.
The user exits, provided in the members indicated in the table, can be used to exclude values caused by loops or other anomalies which could partially invalidate trend statistical analysis.
Each member contains a user exit sample with CASE statements and the variables which can be used to eliminate the anomalies.

ALERTS	MEMBER	DESCRIPTION
STDWKCPM	UESWKCPM	ABNORMAL CICS SUBSYSTEM TOTAL CPU MIPS USAGE
STDWKCPU	UESWKCPU	ABNORMAL CICS SUBSYSTEM AVG CPU TIME USAGE
STDWKDIS	UESWKDIS	ABNORMAL CICS SUBSYSTEM AVG DISPATCH TIME
STDWKIIP	UESWKIIP	ABNORMAL CICS SUBSYSTEM AVG IIP TIME USAGE
STDWKIOW	UESWKIOW	ABNORMAL CICS SUBSYSTEM AVG I/O WAIT TIME
STDWKIPM	UESWKIPM	ABNORMAL CICS SUBSYSTEM TOTAL IIP MIPS USAGE
STDWKOTW	UESWKOTW	ABNORMAL CICS SUBSYSTEM AVG OTHER WAIT TIME
STDWKRSP	UESWKRSP	ABNORMAL CICS SUBSYSTEM AVG RESPONSE TIME
STDWKTRN	UESWKTRN	ABNORMAL CICS SUBSYSTEM TOTAL TRANSACTIONS

8.8 Exclusion of transactions from workloads daily views

You can exclude transactions from workloads daily views.
In order to do that you need to customize the sample user exits provided in the following members:

UEXCXDAB	CICS total abends
UEXCXDCA	CICS average CPU time
UEXCXDCP	CICS total CPU time
UEXCXDDI	CICS average dispatch time
UEXCXDIA	CICS average IIP time
UEXCXDIO	CICS total I/O
UEXCXDIP	CICS total IIP time
UEXCXDIW	CICS average I/O wait time
UEXCXDOW	CICS average other wait time
UEXCXDRM	CICS total RMI requests
UEXCXDRS	CICS average response time
UEXCXDSU	CICS average suspend time
UEXCXDTR	CICS total transactions

8.9 Top CICS transaction statistics

EPV allows you to analyze the most important statistics for each CICS transaction showed in TOP transaction workloads views. You could verify the behaviour of each transaction by comparing the statistics data with the last 8 days and with the last 7 weeks.
In order to do that you need to customize the user exit provided in the **UEXCICTC** member the transactions of interest.
These settings take place during the EPV HTML phase. By default, no CICS transaction are selected.

8.10 CICS grouping

EPV allows you to define a group of CICS subsystems by using a key called CXGROUP.
The default value is the system where the subsystem run.
The user exit provided in the **UCXGROUP** member can be customized to create your own aggregations. These settings take place during the EPV HTML phase.

8.11 Assigning CICS buckets

EPV allows you to define a maximum of eighteen buckets in order to group the transactions based on response time.
You can choose your own buckets when configuring EPVzParser SMF Engine.

The default buckets defined are the following:

"0.1","0.3","0.5","0.8","1","1.5","2","2.5","3","3.5","4.5","5","10","15","30","45","60"

These settings take place during the EPV loading phase.

IMPORTANT NOTE: These buckets should be set at installation and not changed to avoid that transactions are assigned to the same bucket, but the meaning of the bucket is different.

8.12 Reporting CICS buckets

EPV allows you to choose a maximum of five buckets, to be reported in the HTML pages, by customizing the user exit provided in the **UCXBUCKH** member.
The sixth bucket is automatically created including all the transactions with a response time longer than the fifth bucket threshold.
The buckets that can be chosen are those defined in **$ResponseBucketValue** variable stored in EPVzParser SpecificForSMF.PL Userprofile file.
The **UCXBUCKH** user exit can be customized to choose the buckets for each CICS subsystems; by default, EPV takes the first five defined buckets for all the CICS subsystems.
These settings take place during the EPV HTML phase.

8.13 Setting SHIFTS

All Trend reports provide HTML tables for different shifts. The user exit named **SHIFT.PL** contains our default shift values which should be modified with your standard company values. When migrating to a new version, it is very important to control your shift definitions in the **SHIFT.PL** file before loading new data. The easiest way is by copying the **SHIFT.PL** file from your old installation to the new installation.
EPV summarizes the shifts when producing the HTML pages.

8.14 Managing configuration changes

EPV audits configuration changes allowing an immediate identification of possible anomalies related to them. It is possible to enable or disable the parameters controlled by EPV. You need to customize the CHANGES member provided in the user exit library by modifying the CHANGE column flag. This setting takes effect during the EPV HTML phase.

8.15 Exclusion of configuration changes

If you need to define rules to exclude configuration changes for specific objects you need to manually customize the user exit provided in the UEXCHGCX member. These settings take effect during the EPV HTML phase.

8.16 CICS reporting at 5 minutes

EPV may create special pages for CICS transactions providing detailed statistics at 5 minutes; by default, these reports are not created. If you want to activate you have to customize the user exit

provided in the **UEXCXHRS** member choosing the hours of the day and the CICS subsystems to be reported.

IMPORTANT NOTE: You need to be careful when choosing how many hours and subsystems to report in order to avoid producing a very large number of HTML pages

8.17 Publishing on the IBM HTTP Server on zSeries

To publish the EPV HTML pages on the IBM HTTP Server on zSeries, the following steps are needed:

a) Verify that all files and directories are in uppercase except for the .class suffix.
b) Transfer all the files in the IMG directory in binary mode.
c) Transfer the .pdf files in the CICDOC directory in binary mode.
d) Transfer the following files in the JAVA directory in binary mode:

   *.JS
   *.CSS

Transfer all the other files in ascii mode using the following quote command[4]:

quote site sbdataconn=(IBM-1047,ISO8859-1)

IMPORTANT NOTE: Beyond these general rules the correct FTP mode (binary or ascii) depends on how customers set their web server. Depending on the **addtype** statement in **httpd.conf** the different file types have to be transferred in binary or ascii mode.

Normally .JS files are used without converting to ebcdic (the conversion needs to be done again when transferring the .JS to the client; it takes some time and is not good for performance).
However if the .JS files are defined as ebcdic they need to be transferred in ascii.

The .CSS should in any case be defined using an **8bit addtype** and transferred in binary mode to work properly.

8.18 Outlier CICS transactions

EPV may identify individual transactions showing CPU consumptions or elapsed time which are outside their normal variability. The detailed workloads HTML page contains the actual value and the distance in percentage from normal distribution limits.
The user exit provided in the **USTATCX** member can be used to include or exclude transactions from this analysis. By default, all transactions are excluded.

IMPORTANT NOTE: You need to be careful when choosing how many transactions you want to control because of the amount of data to process.

[4] IBM-1047 has to be eventually substituted with the DefaultFsCp value set in httpd.conf (if different from IBM-1047).

8.19 User reports

EPV permits you to perform User Reports for specific CICS transactions.
This makes it possible to compare activity in different subsystems in the same report and/or create a trend report for a specific activity.
Before the user reports can be created you need to allocate a database (i.e. **CCICU**), which will contain CICS user data.

After these simple allocation steps, you need to populate the user exit **USRTCICS** with your specific CICS transactions. It is important to add your objects after the second row.

IMPORTANT NOTE: It is very important to be very cautious when choosing the transactions due to the amount of HTML pages that could be generated.

8.20 Transaction Reports

EPV provides the possibility to produce on demand Short and Long Transaction Reports at summary or detail level for transactions running during a specific period-of-time.
This makes it possible to investigate in depth the behaviour of these objects running in a CICS subsystem in order to analyze performance problems and anomalies.
Data are loaded directly from the EPV detail databases and are showed in HTML pages.

The **CACCTCFG** user exit contains all the configuration parameters needed to create these reports.
You must set:

- CICS subsystem id,
- system id where the subsystem is running,
- report's type,
- start date and time,
- end date and time,
- transaction name (optional).

IMPORTANT NOTE: It is very important to be very cautious when choosing the length of the interval due to the amount and size of the HTML pages that could be generated. Attachment D contains a short description of all the transaction reports parameters and their default values.

By customizing the user exit provided in the **UEXACTRP** member you can filter the input data that you do not want to consider. For example, you could consider a transaction executed by a certain user or that have some specific CICS attributes.
The **CICACTRP** procedure placed under the *$$$path*/USERPROFILE/*$Profilename*/EPVCICS/PROCS/ folder needs to be executed in order to produce the HTML transaction reports.

8.21 Customizing the SORT feature

EPV allows you to sort each report inside the HTML pages; to avoid performance problem when you activates this feature, EPV provides two variables inside the **EPV_CONFIG.TXT** file[5] in the JAVA directory (see Chapter 5.4). The **SORTMIN** and **SORTMAX** variables allow you to sort only the tables with a number of records in that range. Moreover to correctly sort the numeric data inside each table, you should verify the **FMT** variable located in **EPV_CONFIG.TXT** file. The value of this variable should be equal to the one assigned to the **FMT** parameter in the **CONFIG.PL** file located in the $$$*path*/USERPROFILE/*$Profilename*/EPVCICS

8.22 Automatic deletion of old pages in the Windows environment

The deletion of old EPV HTML pages can be performed by a program named **RemoveOldFile.exe** that runs in the WINDOWS environments[6]. This program must be scheduled daily on the server hosting the EPV HTML pages; it will automatically delete directories and pages older than a user defined number of days.

This program can be found on the installation CD under *$$$path*/TOOLS and must be customized to fit your needs.

A full explanation of the parameters that must be modified is provided in the program comments.

8.23 HELPLINK feature

This feature creates a list of links to the daily EPV HTML pages that can be used when you activate the Help Search function.[7]

After the EPV HTML process, you must schedule daily the **CHELPLNK.BAT** (in Windows) or the **CHELPLNK.SH** in (Linux/Unix). They are located in the installation CD under \TOOLS\CHELPLNK directory.

Before running this process, you need to customize the path inside the file **CONFIG.PL** located in the same directory.

[5] For a detailed description of the content of this file, see the "EPV 15 - User Interface".

[6] If the HTML pages are published in z/OS (USS), UNIX or Linux, a user function based on the rm command should be implemented.

[7] For a description of the Help Search function, see the "EPV V15 - User Interface" manual.

9. Using the EPV Customization GUI

The EPV Customization GUI has been designed to run on a Windows system; however, you can create a profile which can be used to run the EPV products on UNIX or Linux.

To start working with the EPV Customization GUI, you must enter the SETUP folder and run the EPV_Setup.exe program.

9.1 ADVANCED customization

You will get the windows in Figure 3 where you have the possibility to choose the customization mode.

To proceed with the ADVANCED customization, you need to select ADVANCED and press CONTINUE (for the EXPRESS customization please refer to the EPV V15 Installation and EXPRESS Customization manual).

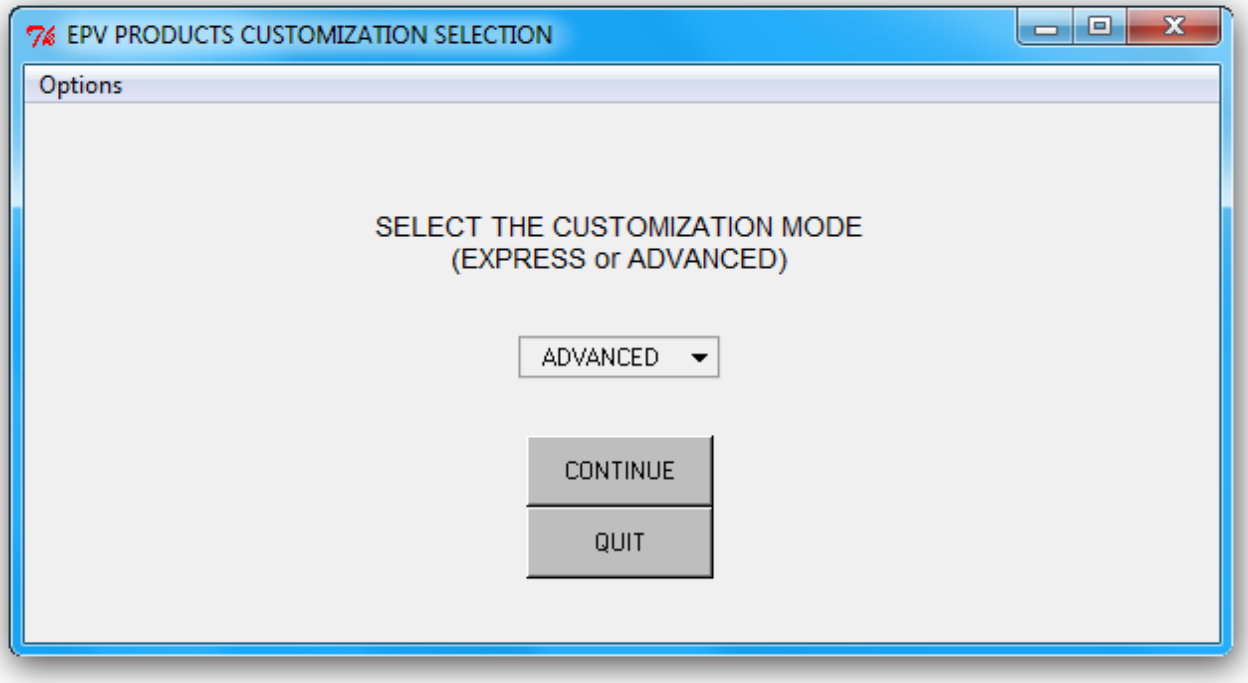

Figure 3

In the next window you are asked to select a profile.

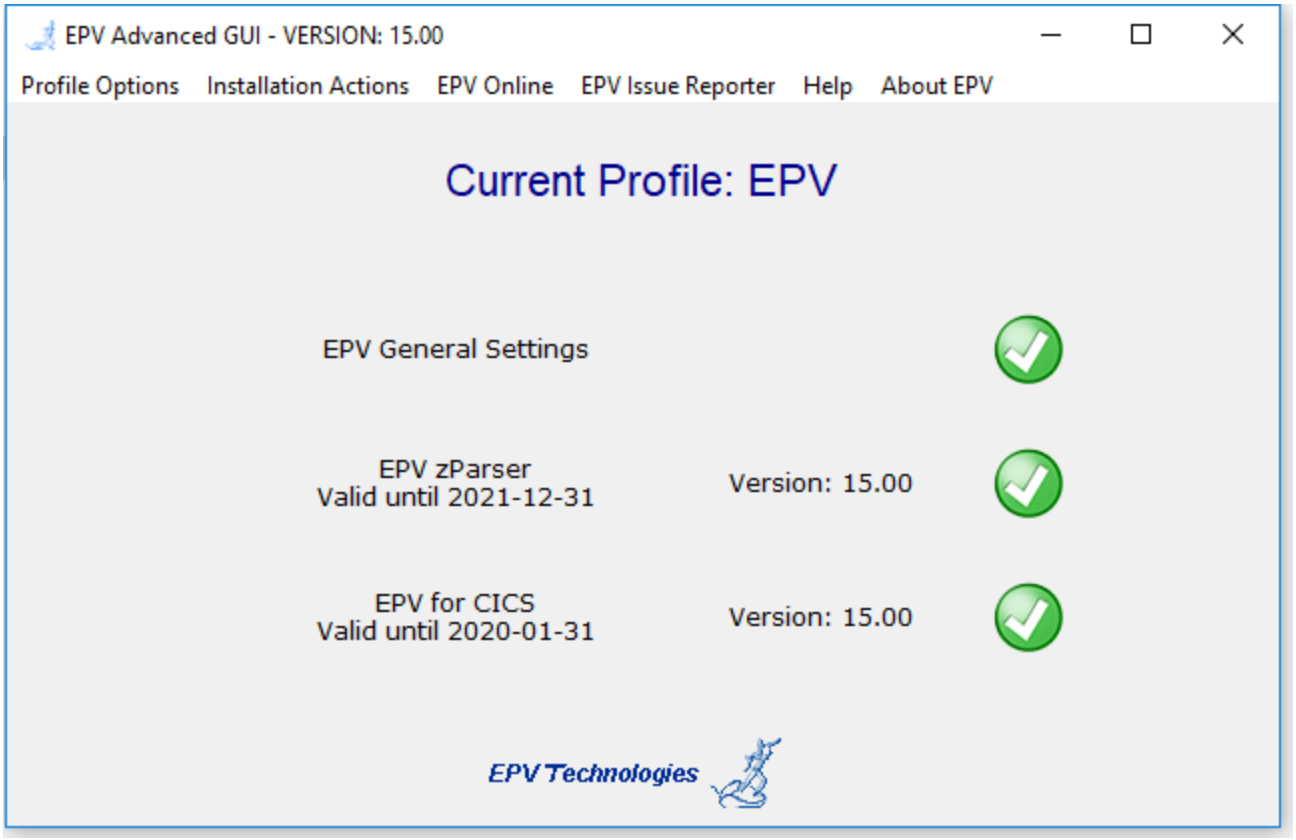

Figure 4

Click OK and choose an existing profile (normally created during the EPV zParser installation).

9.2 Customizing the DBs

After selecting the user profile, you have click on "General Parameters Settings" and Save the settings.

Then click on the "EPV for CICS" product, choose the name of the DBs or leave the default.
Save and Return.

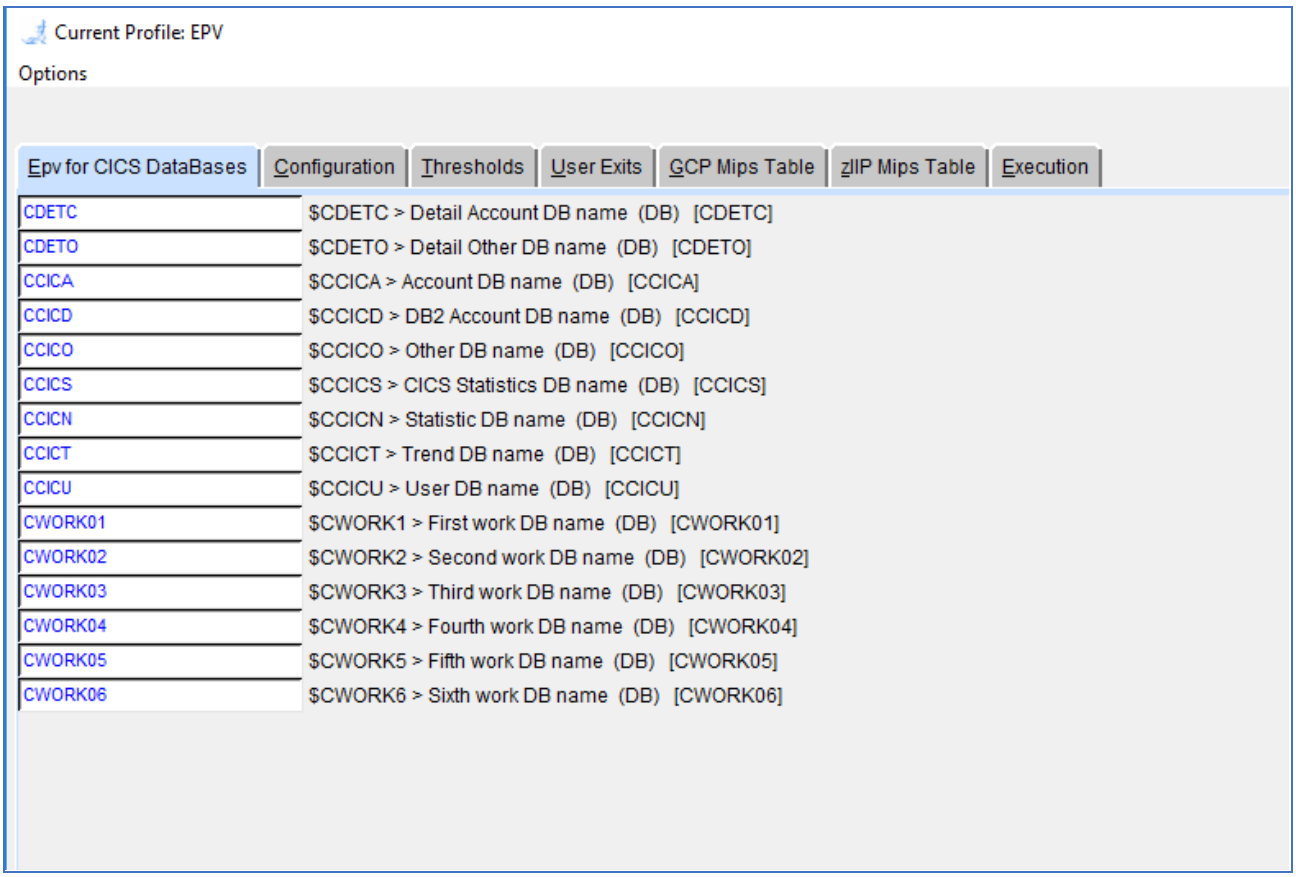

Figure 5

Then you m need to run the "Create DataBases and Install Stored Procs" options (in this order) provided under the Installation actions menu on the top of the window, as shown in the image below, to create the databases needed by the EPV product:

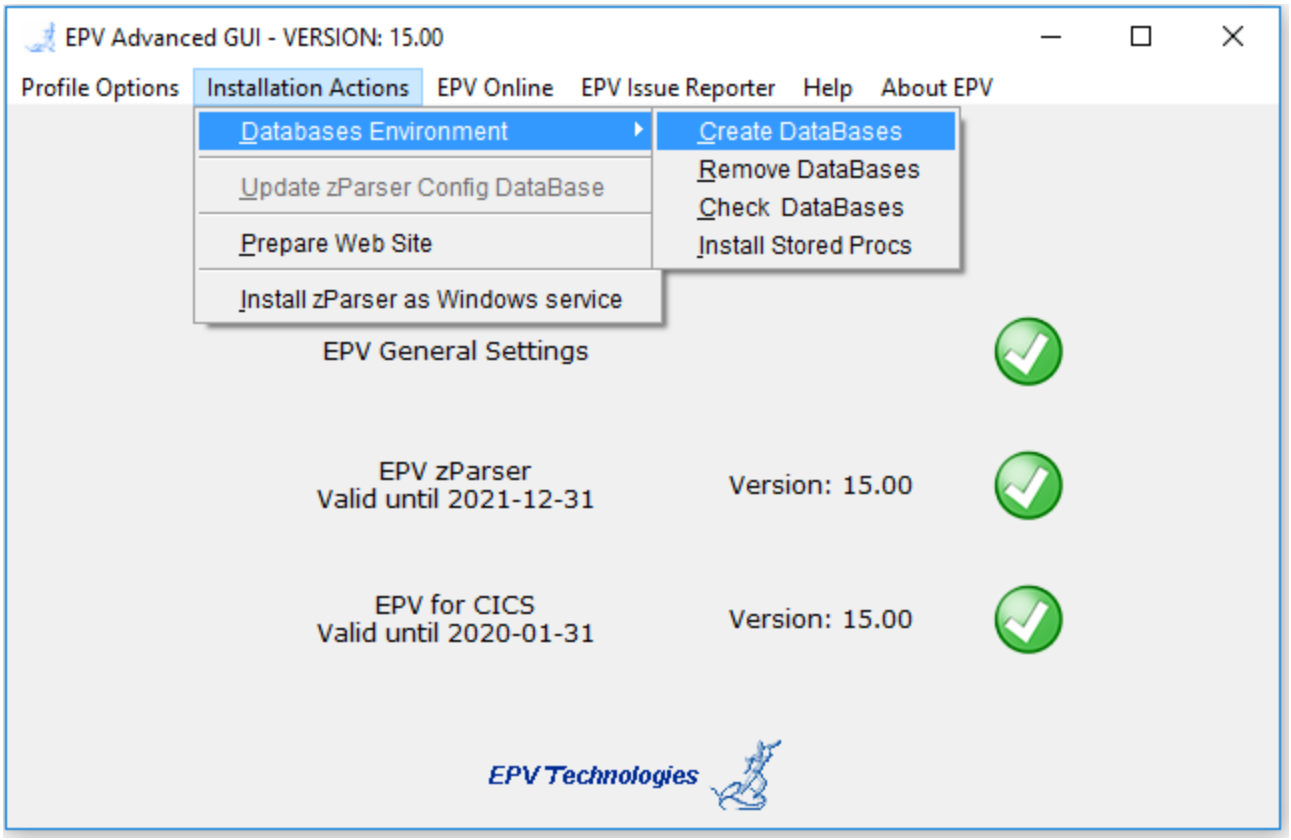

Figure 6

Warning: this window does not appear when installing EPV Products in Linux/Unix.
In this case the DBs need to be allocated after moving the profile in the Linux/Unix system by performing the steps described in Chapter 9.4.

9.3 Customizing the product's parameters

If you have a valid license for the EPV product you first need to select the correct version from the combo box located at the left side of the main panel and then choose the EPV for CICS entry.

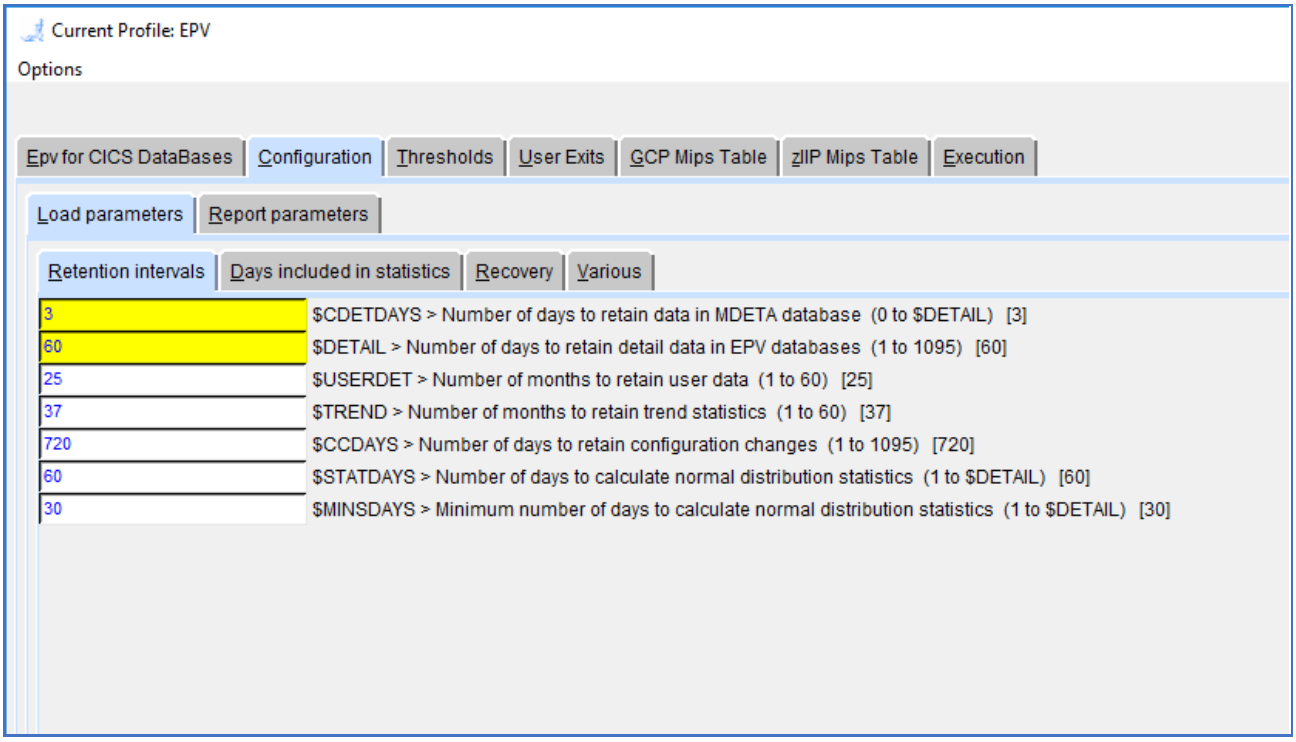

Figure 7

Through this panel you can customize all the parameters needed by EPV, change the default threshold settings, modify the user exits, and decide what kind of benchmark to use to evaluate the MIPS of your environment and so on.

For a detailed description of all this parameters, please refer to Attachment A, B and C at the end of this manual or to the detailed description done in the previous chapters dedicated to the manual installation.

Finally save the customizations you have done by clicking on the 'Options' menu and choosing the 'Save and Return' option; it will close the panel and bring you again to the main window.

9.4 Additional customization steps for Linux and Unix systems

After you moved your profile to a Linux or Unix system you have to perform the following additional customization steps:

a) export a variable named $EPVPATH that contains your EPV path installation root folder excluding EPVROOT (e.g.: $EPVPATH=/home/epv/) by inserting the following command:

export EPVPATH=/home/epv/

in your .bashrc script or in the shell script that initializes the user shell used to run EPV products procedures;

b) change the permission of all folders and files, inside it, to at least 755;

c) remove all the CR (Carriage Return) inside all the .sh files in the profile; you can do that by using the standard DOS2UNIX utility; we suggest to run the following command on all the profile folder (*$$$path*/USERPROFILE): **find . -type f -name '*.sh' -exec dos2unix '{}'** \;

d) allocate the zParser DBs by executing the RUNALL.sh script, located in /$$$path/EPVROOT/TOOLS/PARSER/MYSQL_PROCS/UNIX, providing MySQL user name and password (e.g. ./RUNALL.sh youruser yourpassword).

9.5 EPV online (only when running in Windows systems)

The EPV online menu permits you to load data, create reports and view all the log files interactively. You should run the phases in the same order in which they appear in the menu.

Warning: be aware that to run the EPV Products on a regularly basis you need to put the appropriate procedures in your daily scheduling (see Chapter 7).

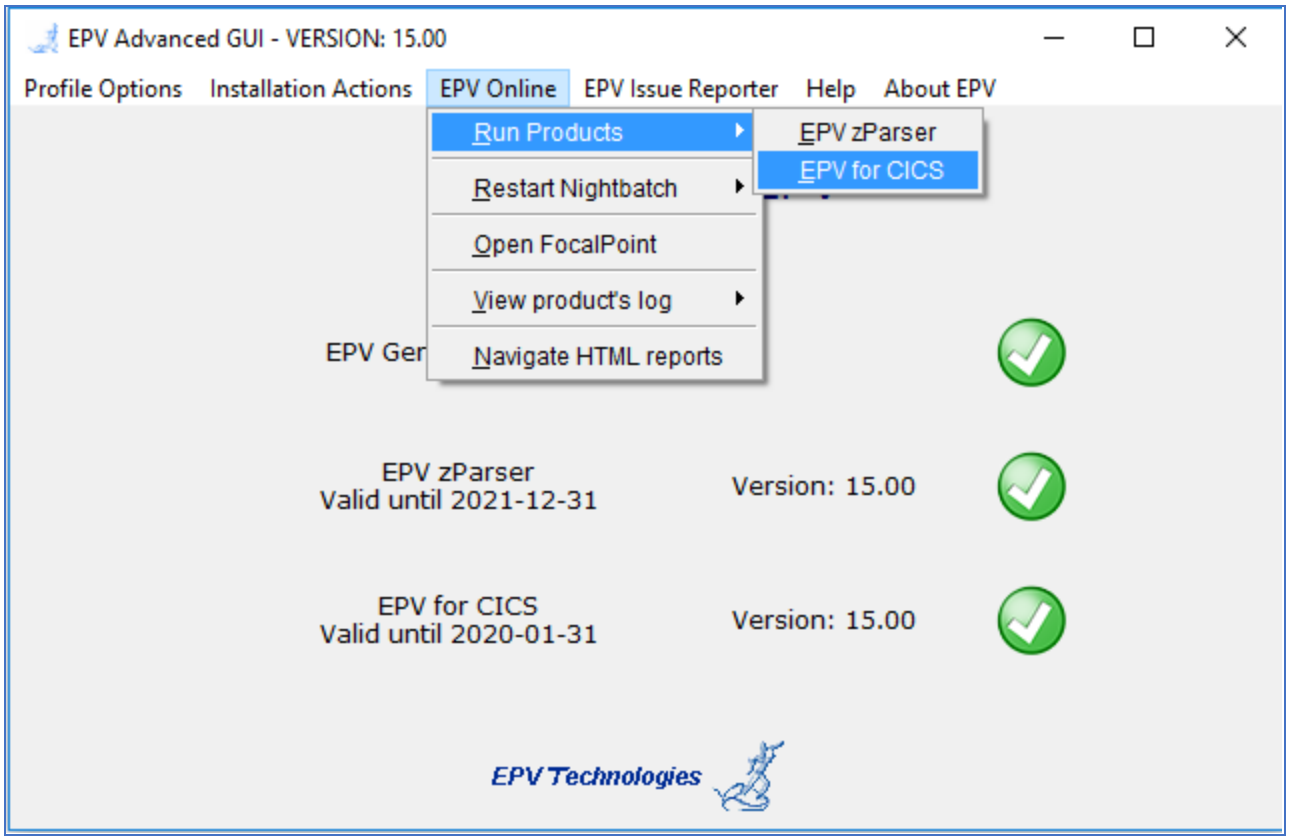

Figure 8

For each step a dedicated window will be opened. From this window it is possible to check the return code of each step performed and view the relative detail log created by the EPV Products.
This feature is very useful to perform spot loading of old data or to produce html pages for old dates without changing the user profile settings.

10. Customer support

For any technical problem with or question about EPV please write an email to:

epv.support@epvtech.com

For any other issue about EPV please write an email to:

epv.info@epvtech.com

Attachment A – CONFIGURATION parameters

PARAMETER	DESCRIPTION	DEFAULT VALUE
CDETDAY	NUMBER OF DAYS TO RETAIN IN CDETC AND CDETO DATABASE	7
DETAIL	NUMBER OF DAYS TO RETAIN IN CCICA, CCICD, CCICN, CCICO AND CCICS DATABASE	60
USERDET	NUMBER OF MONTHS TO RETAIN IN USER DB	25
TREND	NUMBER OF MONTHS TO RETAIN IN TREND CCICT DATABASE	25
EPVMIPS	ESTIMATE GCP POWER CAPACITY. THE DEFAULT VALUE WILL NOT TAKE INTO CONSIDERATION THE MP EFFECT CAUSED BY SPECIAL ENGINES	TABLE
EPVMIPI	ESTIMATE IIP POWER CAPACITY. THE DEFAULT VALUE WILL TAKE INTO CONSIDERATION THE MP EFFECT CAUSED BY SPECIAL ENGINES	ENHANCED
CHECKMIP	PERMITS TO CHOOSE IF AN ABEND WILL OCCURR WHEN THERE IS A CEC UPDATE AND THE MIPS POWER CAPACITY DOES NOT CHANGE	YES
LOADSMF	FORCE OLD DATA IN EPV (FORCE / DEFAULT) THE DEFAULT VALUE WILL NOT FORCE OLD DATA IN THE EPV DATABASE	DEFAULT
STAT	ACTIVATE NORMAL DISTRIBUTION ANALYSIS FOR TREND DAY ANALYSIS	YES
RPTCICS	STARTING REPORTING DATE THE DEFAULT VALUE IS ALWAYS YESTERDAY. THIS CAN BE MODIFIED IN THE CCONFIG MEMBER	DEFAULT
RPTCICE	ENDING REPORTING DATE THE DEFAULT VALUE IS ALWAYS YESTERDAY. THIS CAN BE MODIFIED IN THE CCONFIG MEMBER	DEFAULT
NAVIGATE	NUMBER OF DATES TO NAVIGATE IN MAIN MENU	10
TRENDDAY	NUMBER OF REPORTED DAYS IN TREND DAY VISION	60
TRENDMON	NUMBER OF REPORTED MONTHS IN TREND WEEKLY AND MONTH VISIONS	25

UEXCLOLD	CREATE USER PAGES WITHOUT EXCLUDE ANY OBJECTS LOADED IN THE USER DATABASES. YES, TO CREATE USER PAGES ONLY WITH OBJECTS IN THE USER INPUT FILES BY EXCLUDING OLD LOADED OBJECTS.	NO
TOPFILE	NUMBER OF TOP CICS FILE TO SHOW IN THE RESOURCE VISION REPORTS	50
TOPPCT	PERCENTILE VALUE OF TOP CICS TRANSACTIONS IN DETAIL STATISTICS VIEWS OF WORKLOADS VISION	95
TOPTRAN	NUMBER OF TOP TRANSACTION TO SHOW IN THE WORKLOADS VISION REPORTS	50
FMT	FORMAT OF NUMERIC OUTPUT EUROPEAN/USA/SWISS	E
GMT	NORMALIZE USER DATA TO GMT TIME	NO
GMTOFF	GMT OFFSET TO NORMALIZE THE HOUR	0
DBCHECK	CREATE HTML PAGES SHOWING EPV DATABASES STATISTICS	NO
	DAY STATISTICS FILTERS	
MONDAY	INCLUDE MONDAYS IN STATISTICAL ANALYSIS	YES
TUEDAY	INCLUDE TUESDAYS IN STATISTICAL ANALYSIS	YES
WEDDAY	INCLUDE WEDNESDAYS IN STATISTICAL ANALYSIS	YES
THUDAY	INCLUDE THURSDAYS IN STATISTICAL ANALYSIS	YES
FRIDAY	INCLUDE FRIDAYS IN STATISTICAL ANALYSIS	YES
SATDAY	INCLUDE SATURDAYS IN STATISTICAL ANALYSIS	NO
SUNDAY	INCLUDE SUNDAYS IN STATISTICAL ANALYSIS	NO
HOLIDAY	INCLUDE HOLIDAYS IN STATISTICAL ANALYSIS	NO
	TREND DAY REPORT FILTERS	
RDAYMON	INCLUDE MONDAYS IN REPORTS	YES
RDAYTUE	INCLUDE TUESDAYS IN REPORTS	YES
RDAYWED	INCLUDE WEDNESDAYS IN REPORTS	YES
RDAYTHU	INCLUDE THURSDAYS IN REPORTS	YES
RDAYFRI	INCLUDE FRIDAYS IN REPORTS	YES
RDAYSAT	INCLUDE SATURDAYS IN REPORTS	NO
RDAYSUN	INCLUDE SUNDAYS IN REPORTS	NO
RDAYHOL	INCLUDE HOLIDAYS IN REPORTS	NO

	TREND WEEK AND MONTH REPORT FILTERS	
RMONMON	INCLUDE MONDAYS IN REPORTS	YES
RMONTUE	INCLUDE TUESDAYS IN REPORTS	YES
RMONWED	INCLUDE WEDNESDAYS IN REPORTS	YES
RMONTHU	INCLUDE THURSDAYS IN REPORTS	YES
RMONFRI	INCLUDE FRIDAYS IN REPORTS	YES
RMONSAT	INCLUDE SATURDAYS IN REPORTS	YES
RMONSUN	INCLUDE SUNDAYS IN REPORTS	YES
RMONHOL	INCLUDE HOLIDAYS IN REPORTS	YES

Attachment B – Base and EXCEPTIONS thresholds

BASE THRESHOLD	ADVANCED THRESHOLD USER EXIT	DESCRIPTION	OP(*)	DEFAULT VALUE
CDSACU	TCDSACU	FREE MB CDSA	<	-9999
DSCREL	TDSCREL	NUMBER OF CUSHION RELEASED	>	0
DSCRISS	TDSCRISS	REQUESTS FOR REFUSED NO STORAGE	>	0
DSGUAFL	TDSGUAFL	REQUESTS FOR CHANGEGUARD FAILED	>	0
DSPWWS	TDSPWWS	TASKS FOR PURGED AFTER SUSPENSION	>	0
DSSOS	TDSSOS	ABENDS FOR SHORT ON STORAGE	>	0
DSSV	TDSSV	NUMBER OF STORAGE VIOLATION	>	0
DSUCSS	TDSUCSS	REQUESTS FOR SUSPENDED NO STORAGE	>	0
ECDSACU	TECDSACU	FREE MB ECDSA	<	-9999
ERDSACU	TERDSACU	FREE MB ERDSA	<	-9999
ESDSACU	TESDSACU	FREE MB ESDSA	<	-9999
ETDSACU	TETDSACU	FREE MB ETDSA	<	-9999
EUDSACU	TEUDSACU	FREE MB EUDSA	<	-9999
GCDSACU	TGCDSACU	FREE MB GCDSA	<	-9999
GSDSACU	TGSDSACU	FREE MB GSDSA	<	-9999
GUDSACU	TGUDSACU	FREE MB GUDSA	<	-9999
LGTY2WR	TLGTY2WR	LOGGER TYPE2 WRITES PERCENTAGE	>	1
LGTY3WR	TLGTY3WR	LOGGER TYPE3 WRITES PERCENTAGE	>	0
LSRPWAV	TLSRPWAV	LSR POOL AVERAGE STRINGS WAIT PERCENTAGE	>	10
LSRPWMX	TLSRPWMX	LSR POOL MAX STRINGS WAIT PERCENTAGE	>	20
MAXTASK	TMAXTASK	NUMBER OF TIMES MAXTASK REACHED	>	0
MINSDAYS		MINIMUM NUMBER OF DAYS TO CALCULATE NORMAL DISTRIBUTION STATISTICS		30
RDSACU	TRDSACU	FREE MB RDSA	<	-9999
SDSACU	TSDSACU	FREE MB SDSA	<	-9999

STATDAYS		NUMBER OF DAYS TO CALCULATE NORMAL DISTRIBUTION STATISTICS FOR TREND DAY ANALYSIS		60
STD		NUMBER OF STANDARD DEVIATIONS TO TEST NORMAL DISTRIBUTION FOR TREND DAY ANALYSIS		3
TRXIMMP	TTRXIMMP	NUMBER OF TRXS PURGED IMMEDIATE	>	0
TSASTRW	TTSASTRW	TEMPORARY STORAGE AUXILIARY STRINGS WAIT PERCENTAGE	>	30
TSKWTCB	TTSKWTCB	PEAK CICS TASKS WAITING FOR TCB	>	0
TSKWTHR	TTSKWTHR	PEAK TASKS WAITING FOR POOL THREADS	>	0
TSMUSMX	TTSMUSMX	TEMPORARY STORAGE MAIN MAX USED PERCENTAGE	>	70
TXCPU5R	TTXCPU5R	MAXIMUM NUMBER OF CPU SECONDS FOR TOP CICS TRANSACTION IN FIVE MINUTES AT REGION LEVEL	>	100
TXCPUHG	TTXCPUHG	MAXIMUM NUMBER OF CPU SECONDS FOR TOP CICS TRANSACTION IN ONE HOUR AT GROUP LEVEL	>	1800
TXCPUHR	TTXCPUHR	MAXIMUM NUMBER OF CPU SECONDS FOR TOP CICS TRANSACTION IN ONE HOUR AT REGION LEVEL	>	900
TXCPUHT	TTXCPUHT	MAXIMUM NUMBER OF CPU SECONDS FOR TOP CICS TRANSACTION IN ONE HOUR AT GLOBAL LEVEL	>	3600
TXIIP5R	TTXIIP5R	MAXIMUM NUMBER OF IIP SECONDS FOR TOP CICS TRANSACTION IN FIVE MINUTES AT REGION LEVEL	>	100

TXIIPHG	TTXIIPHG	MAXIMUM NUMBER OF IIP SECONDS FOR TOP CICS TRANSACTION IN ONE HOUR AT GROUP LEVEL	>	1800
TXIIPHR	TTXIIPHR	MAXIMUM NUMBER OF IIP SECONDS FOR TOP CICS TRANSACTION IN ONE HOUR AT REGION LEVEL	>	900
TXIIPHT	TTXIIPHT	MAXIMUM NUMBER OF IIP SECONDS FOR TOP CICS TRANSACTION IN ONE HOUR AT GLOBAL LEVEL	>	3600
UDSACU	TUDSACU	FREE MB UDSA	<	-9999

(*) Logical operator

Attachment C – CACCTCFG parameters

PARAMETER	DESCRIPTION	DEFAULT VALUE
CICSID	CICS SUBSYSTEM APPLID NAME	
ENDINTRV	DATETIME INTERVAL END	
MAXINTSU	MAX INTERVAL LENGTH IN MINUTES FOR SUMMARY REPORTS	60
MAXINTTR	MAX INTERVAL LENGTH IN MINUTES FOR DETAIL REPORTS	5
STRINTRV	DATETIME INTERVAL START	
SYSTEM	SYSTEM ID NAME	YYYY
TRAN	TRANSACTION NAME	ALL
TRANLIM	MAX NUMBER OF ROWS IN ALL TRANSACTION HTML REPORTS	1000
TYPREP	REPORT TYPOLOGY	SS

Related documentation

The following manuals complement the information provided in this manual:

- *EPV for CICS V15 List of Views*
- *EPV for CICS V15 DataBase Layout*
- *EPV for CICS V15 Preparing Input for a Demo*
- *EPV V15 User Interface*
- *EPV V15 Messages and Codes*