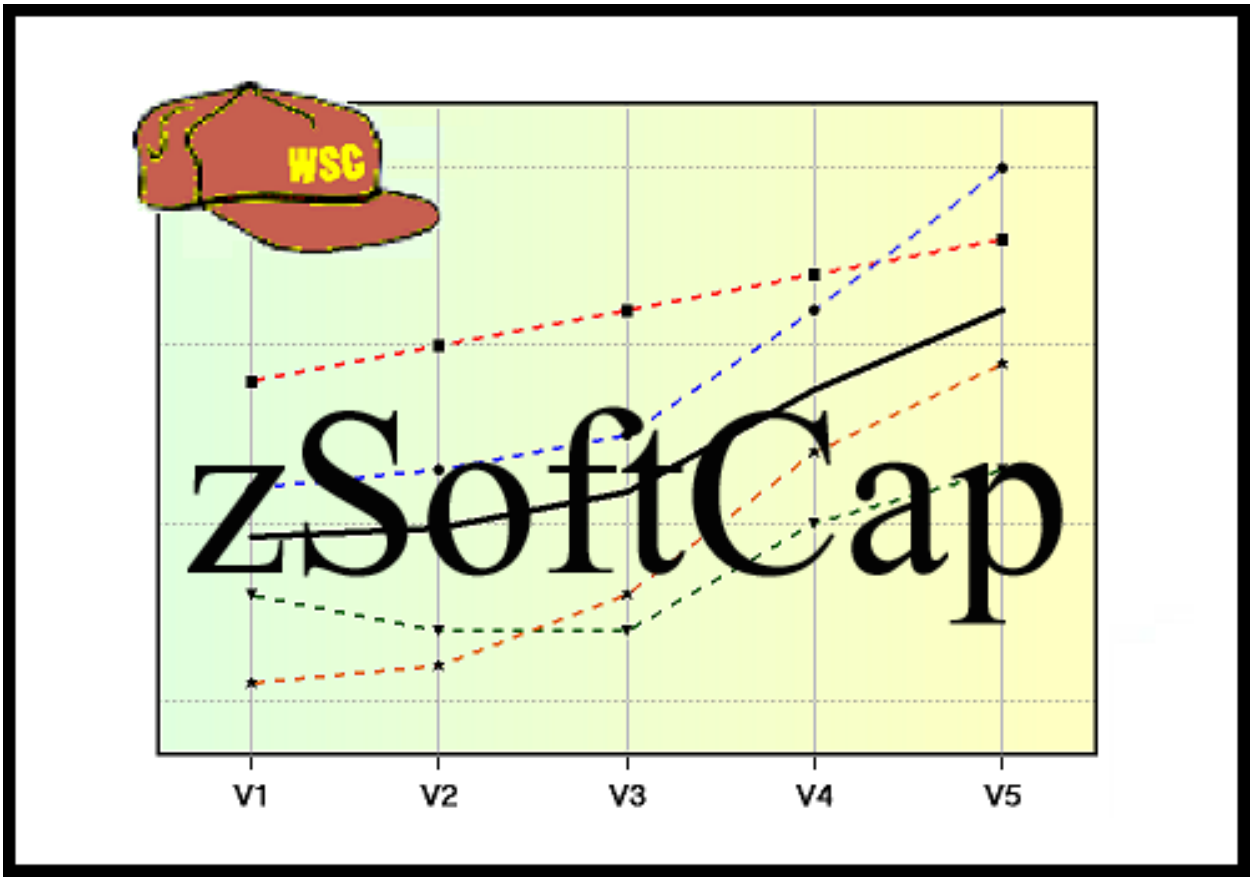
zSoftCap User's Guide

Software Migration Capacity Planning Aid

for

IBM System z



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Introduction

Software Migration Capacity Planning

zSoftCap is a PC-based productivity tool designed to assess the effect on capacity for IBM System z processors, when migrating to more current releases of the operating system or major subsystems. **zSoftCap** assumes that hardware remains constant while software releases change.

Software Migration

For z/OS, input required by **zSoftCap** includes the selection of the **Processor Family**, number of **GP CPs**, **current version of z/OS** along with the utilization for each of the following components being exploited: **Batch**, **CICS**, **DB2**, **IMS**, **Web**, and **System**. The target operating system version must also be specified.

For both **CICS** and **IMS**, the current and planned release, and a high-level description of the subsystem's implementation is required. Results are shown for each software component, showing the net change in capacity and the effective change in processor utilization that can be expected. If migrating multiple components, results are also shown for the components combined.

For z/VSE, input required by **zSoftCap** includes the selection of the **Processor Family**, number of **GP CPs**, **current version of z/VSE** and utilization along with the **Dispatcher** and **CICS** releases. The target **VSE** operating system, **Dispatcher**, and **CICS** versions must also be specified.

Getting Started

The Software Migration Capacity Planning Aid (**zSoftCap**) is a PC-based productivity tool, developed and maintained by IBM's Advanced Technical Skills (ATS) Capacity Planning Support (CPS) team in Gaithersburg, Maryland.

The intent of **zSoftCap** is to evaluate the effect on processor capacity when migrating to different software releases. It includes support for various release levels of z/OS (CICS, IMS) and z/VSE (Dispatcher, CICS). Output is presented in table format.

PC System (minimum requirements)

Processor:	Intel Core Duo or equivalent
Memory:	512MB is required to install; 768MB or more recommended
Graphics:	1024x768 minimum; 1280x1024 or higher recommended
OS:	Microsoft Windows 7 or Windows XP3

Note: The currently supported environment for running **zSoftCap** is Windows™ XP SP3 or Windows 7. **zSoftCap** should function under Vista SP2; however, reported problems will be addressed only if they can be recreated on supported Windows versions.

zSoftCap is written in Java and **requires** the latest version of the IBM Java runtime environment that is referenced in the news file to execute successfully. Instructions for obtaining this software are available both in the **Installation** section of this guide and on the IBM web site where **zSoftCap** is located.

Approximately 82MB of hard-disk space is needed for the **zSoftCap** application and associated IBM Java runtime environment.

Obtaining zSoftCap

IBM Customers

zSoftCap is available at:

http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS268

1. In the table presented on the webpage, go to the "Click on icon to download package" row.
2. Click on **Download** to download the **zSoftCap** package.

Installing the Required IBM Java

NOTE: The IBM Java runtime environment is required and included in the zSoftCap package file, *zSoftcapInstallWithJava.exe*. After your system is updated to the IBM Java runtime environment, you will only need to obtain the ***zSoftcapInstall.exe*** file when there are updates to the **zSoftCap** tool itself.

Note: The IBM Java™ runtime environment provided herewith shall only be used with the zSoftCap tool.

1. Access http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS268.
2. Download the **zSoftCap** package file, ***zSoftcapInstallWithJava.exe***, to a temporary location on your PC.

3. Execute ***zSoftcapInstallWithJava.exe*** using RUN under the Windows START button or by executing it from an MS-DOS prompt. The installation files will be extracted and SETUP will be automatically invoked. Simply respond to the InstallShield prompts. Upon completion, the extracted install materials are automatically purged. The IBM Java runtime environment will automatically install along with the **zSoftCap** package.

Installing zSoftCap

zSoftCap uses an InstallShield™ process for installation onto the Windows platform. Once the file, ***zSoftcapInstall.exe***, has been placed on the PC drive, you can begin the installation process by performing one of the following actions.

- Use **My Computer** or **Windows Explorer** to access the correct drive and directory where the file is installed. Click on ***zSoftcapInstall.exe*** to begin installation.
- Click on **Start**, **Run**. Either input the location where ***zSoftcapInstall.exe*** is installed or click on **Browse** to select the drive and directory where it is installed, select the file, and click on **Open**. Click on **OK** to begin installation.
- From the **MS-DOS** command prompt, issue ***zSoftcapInstall.exe*** from the drive and directory where the file is installed.

Familiar InstallShield™ panels will prompt you through the installation. If there are any special installation considerations, they will be noted in documentation on the web site, from which the tool was obtained.

Registration

A user registration process has been implemented to assist in monitoring the distribution and use of **zSoftCap**. Registration is required for continued usage. **You must be connected to the internet to register**.

Until your registration process is completed, a registration form will appear each time **zSoftCap** is started. **zSoftCap** may be used up to three times without completing and successfully submitting the registration information. After that, the registration process must be completed before the function of the tool can be accessed.

Fill in the requested fields (e.g., name, company name, geographical location, and e-mail address), and click the **Register (Internet)** button. **The primary value of providing a valid e-mail address lies in our (CPSTools) ability to notify you of any critical news relating to zSoftCap's usage and/or updates**. Use of the e-mail address will be limited to this purpose only.

There may be cases where a firewall will prevent direct internet registration. In this situation, (internet registration has failed at least once) you should click the **Register (e-mail)** button. This will:

1. attempt to initiate a properly addressed e-mail for you, and
2. invoke a dialog box with instructions to copy the encoded registration information into the e-mail note.

Send the e-mail as addressed with the encoded registration information and wait for an e-mail response (generally within 24 hours on normal work days). Once received, start

zSoftCap again, click the **Register (e-mail)** button, and continue with the dialog box instructions, indicating that you are to copy the contents of the returned note and click the **Complete Registration** button.

Registration is only required once, the first time that **zSoftCap** is installed and attempted to be used. Once registered, you have unlimited access to the tool. Occasionally, as major versions of **zSoftCap** become available, your registration will automatically be renewed.

Executing zSoftCap

zSoftCap execution can be initiated from the program icon. Alternatively, **zSoftCap** can be started from an MS-DOS command prompt by accessing the drive/directory where the tool is installed and typing **zsoftcap**.

The **zSoftCap** application is controlled through a variety of standard GUI controls, including menu bar, tool bar, push buttons, entry fields, check boxes, and radio buttons. Each of the specific controls is covered in the section where each application window is discussed.

Help Facility

An online help facility has been implemented in **zSoftCap**. It can be accessed by clicking on **Help** on the menu bar, the **Help (?)** icon on the tool bar, or F1.

Output

zSoftCap results are displayed in table format showing each software component, the net change in capacity, and the expected effective change in processor utilization. The contents can be saved in an HTML file; click on the **HTM** icon when presented on any **zSoftCap** window. This output can then be viewed in an Internet Browser (IE, Firefox), Microsoft Word, Microsoft Excel, etc.

Exiting zSoftCap

Exiting from **zSoftCap** is available from the Software Migration Scenario window. Click on **FILE** on the menu-bar and **EXIT**. Alternatively, you can click on the **EXIT** icon on the tool bar.

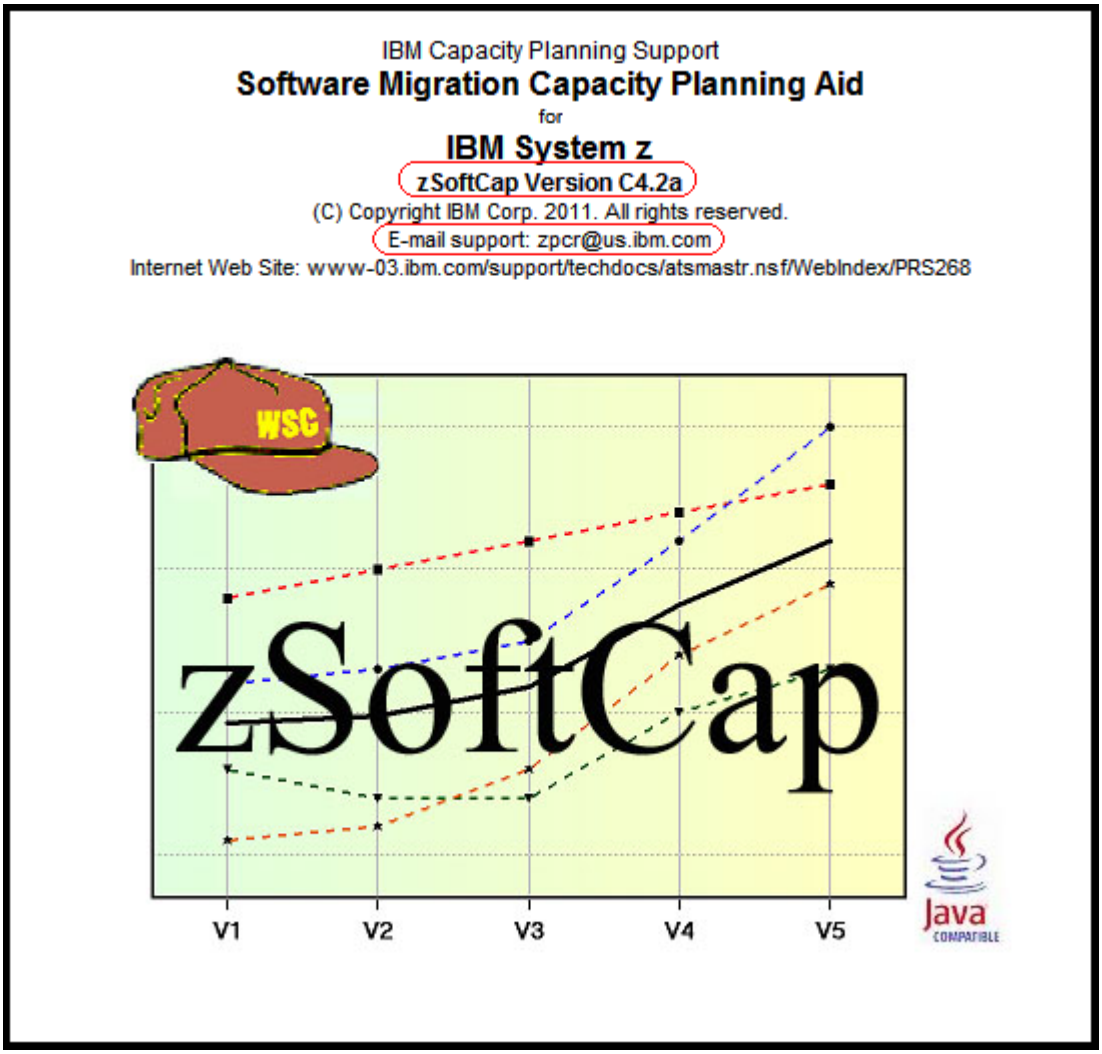
Documentation

This user's guide is in Adobe™ PDF format and available for download from the **zSoftCap** distribution site. The online help implemented in **zSoftCap** is basically the same information that is contained in this user's guide, without the figures.

Using zSoftCap

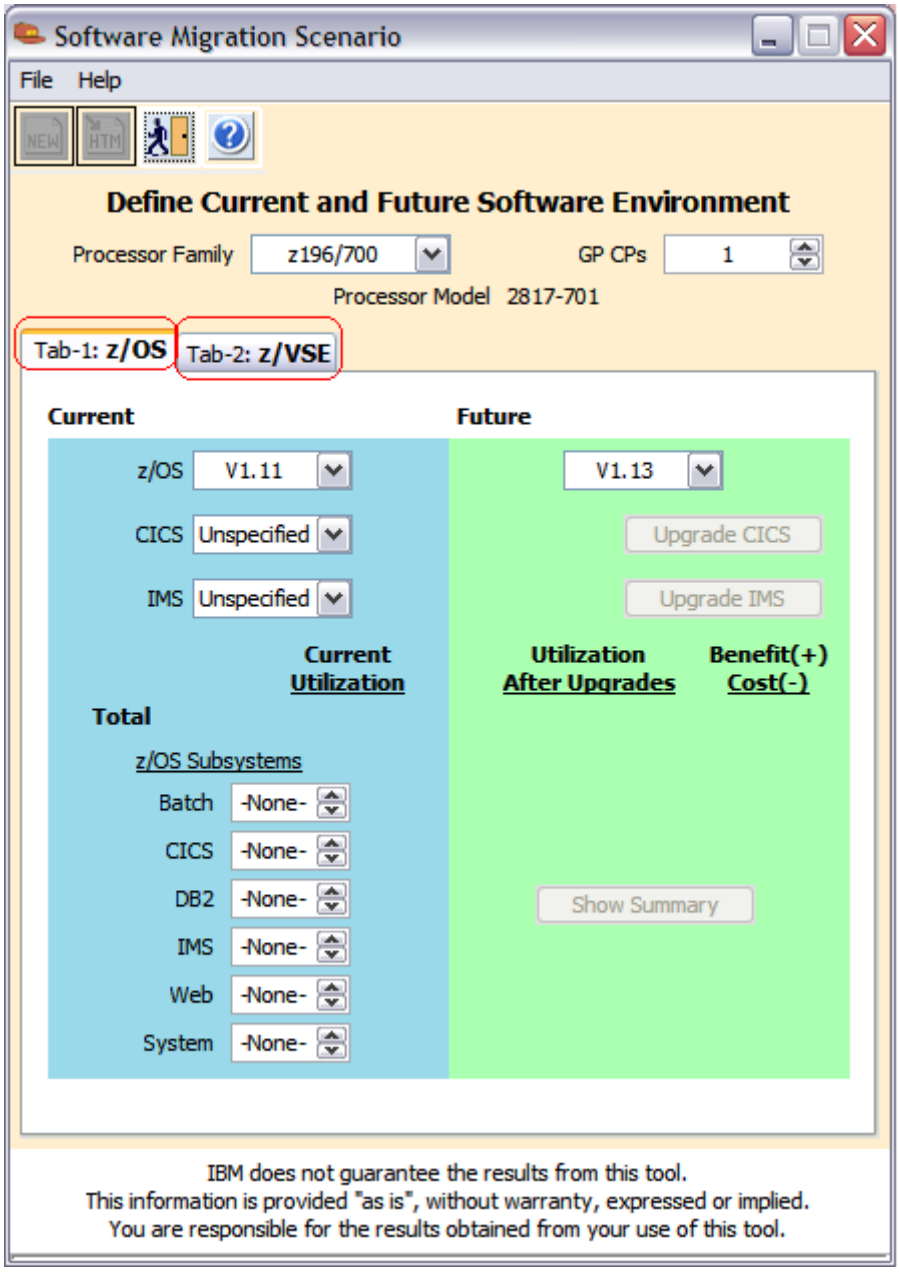
Logo Window

When **zSoftCap** is initiated, the logo window appears displaying the Version and technical support contact information.



Software Migration Scenario Window

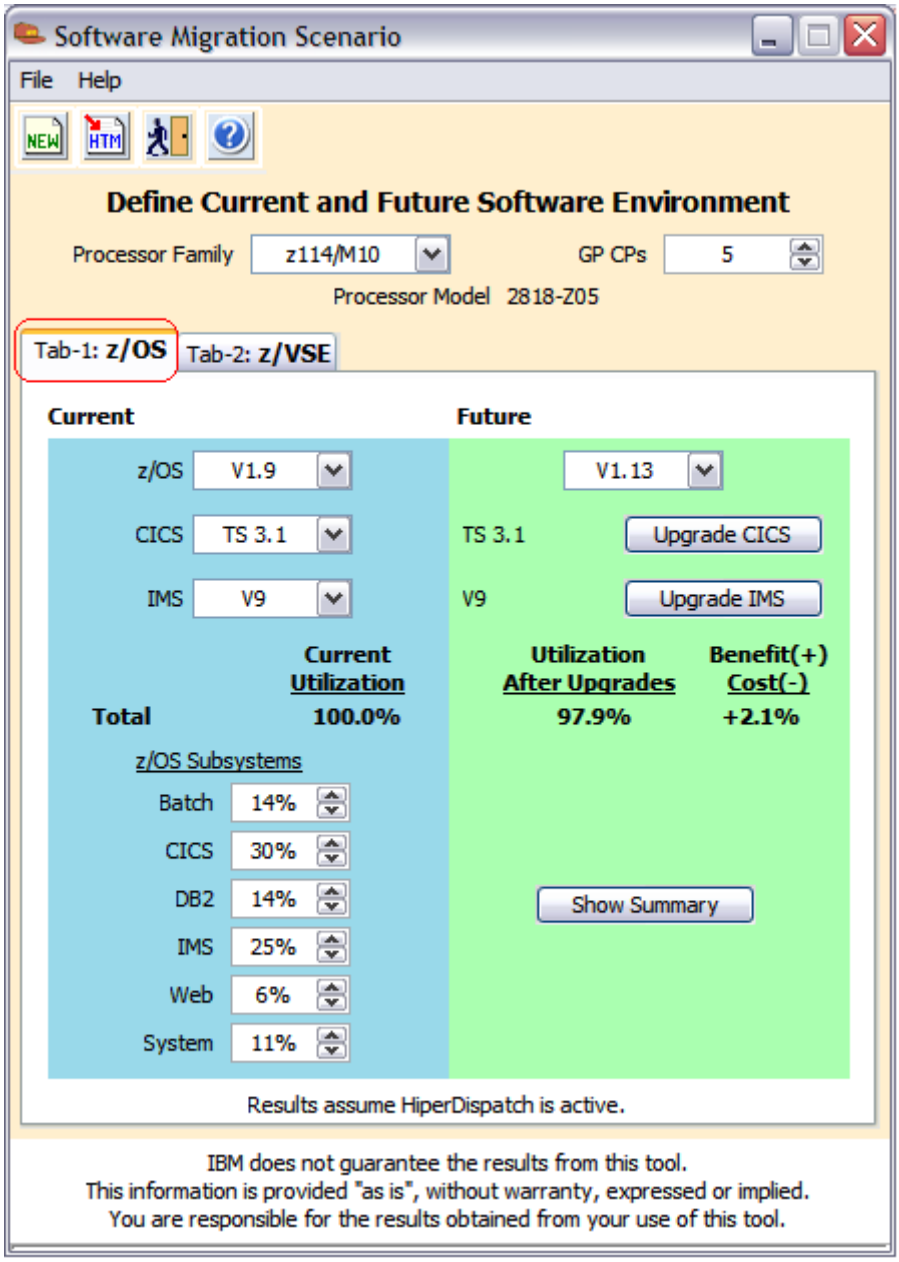
This window is the initial screen for your software migration study. From this window new studies are started or **zSoftCap** can be terminated. You can access the help menu from this screen by selecting Help on the menu bar or clicking on the Help icon on the tool bar.



zSoftCap provides the capability to estimate the change in utilization and the percent benefit or cost to capacity when upgrading a z/OS or z/VSE processing environment to new versions of the primary software.

zOS Migration

Click **Tab-1: z/OS** on the **Software Migration Scenario** window. This allows selection of the processor family and the number of z/OS GP CPs. The level of z/OS that is selected in the **Current** environment must be supported by the processor family selected.



Current

The following inputs are required in defining the current environment.

1. Processor Family.

   Select the processor family in the drop-down list that is currently installed in your data center. Beginning with z/OS 1.11, capacity deltas for all z10 and later processor models are represented with HiperDispatch turned on.

2. z/OS GP CPs
   Select the number of z/OS GP CPs for the processor family defined. Beginning with z/OS 1.8, **zSoftCap** will provide capacity deltas that are sensitive to the processor N-way. Only the portion of the delta from z/OS V1.7 to z/OS 1.8 and later z/OS releases will reflect this sensitivity.

3. Identify the current version of **z/OS** that is supported by the processor family selected. If an upgrade will be performed for either **CICS** or **IMS**, the current version level must be specified.

Processor Utilization by z/OS Subsystems

The current processor utilization for each of the following z/OS Subsystems: **Batch, CICS, DB2, IMS, Web**, and **System** are to be entered in the respective fields. The input for the processor utilization for each of the workloads can be found in the RMF Workload Activity Report or by analyzing the SMF type 30 records for each system image.
NOTE: The **total** for all workload components cannot exceed 100%.

To input, either type in the utilization percentage or use the spin button. Press the tab key to advance the cursor to the next field. This information will immediately be applied to the **Current Utilization total**.

Future

The following inputs are required in defining the future environment.

1. Operating System
   Select a z/OS release that is equal to or greater than the one identified as the **Current** release.

Controls

Menu Bar

- **File** - displays the following drop-down menu
  - **New** - Initiate a new **zSoftCap** study. Any existing data will be lost!
  - **Exit** - Terminates the **zSoftCap** application. If a scenario was begun, **zSoftCap** will prompt you to confirm the action.
- **Help** - displays the following drop-down menu.
  - **Context Help** (invokes online help for the displayed window). **F1** also executes **Context Sensitive Help**.
  - **About zSoftCap** – displays the initial **zSoftCap** logo window.

Toolbar Icons

Most of the windows in **zSoftCap** include smart icons on the toolbar, providing a fast path to various common functions. These icons should be familiar to Windows' users. A description of the icon's function will appear, when the mouse dwells over a toolbar icon.

- **New**

  Initiate a new **zSoftCap** study. Any existing data will be lost!
- **HTM**

  Write out capacity data to an HTML file.
- **Exit**

  Leave **zSoftCap**.
- **Help**

  Display context sensitive help.

Push Buttons

- **Upgrade CICS releases**

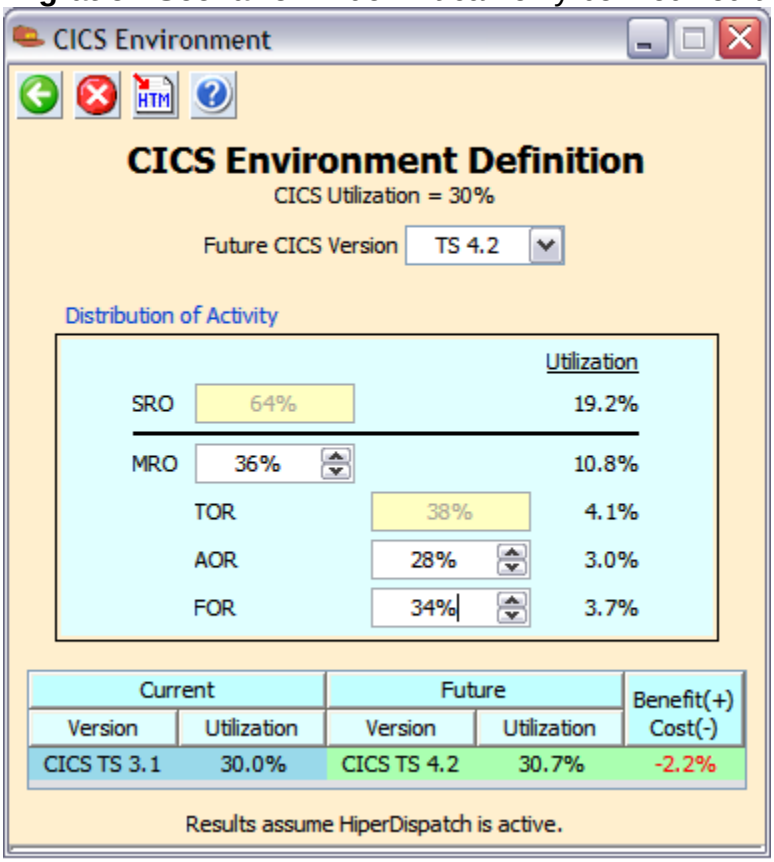
  Display the window to further define the CICS environment.
- **Upgrade IMS releases**

  Display the window to further define the IMS environment.
- **Show Summary**
  Display the Summary Report window showing the Current/Future utilization and capacity deltas by component.

CICS Environment Definition Window

This window is accessible from the **Software Migration Scenario** window; click on **Upgrade CICS**. It describes the future CICS releases along with the distribution of the CICS work, which is found in the SMF record type 110.

Note: The value shown for **CICS Utilization** was specified on the **Software Migration Scenario** window. It can only be modified there.



Select a release from the **Future CICS Version** drop-down, which will only contain releases newer than the **Current** one.

Distribution of CICS Activity

- **SRO**

  The utilization percentage for this CICS activity is initially fixed at 100%. **zSoftCap** automatically changes this value, as the one for MRO changes.

- **MRO**

  Specify the weight that represents this activity. The utilization percentage for the **TOR** component is initially fixed at 100%. Values may also be input for the **AOR** and **FOR** components.

zSoftCap will calculate the Relative Percent for SRO and MRO from the specified weight values for each activity. The total relative percent will always equal 100%.

Controls

Toolbar Icons

- **Return** (**green** left arrow)

  Save the input, and return to the Software Migration Scenario window.

- **Cancel** (**red** X)

  Discard all input, and reset to initial **zSoftCap** defaults.

- **HTM**

  Write out capacity data to an HTML file.

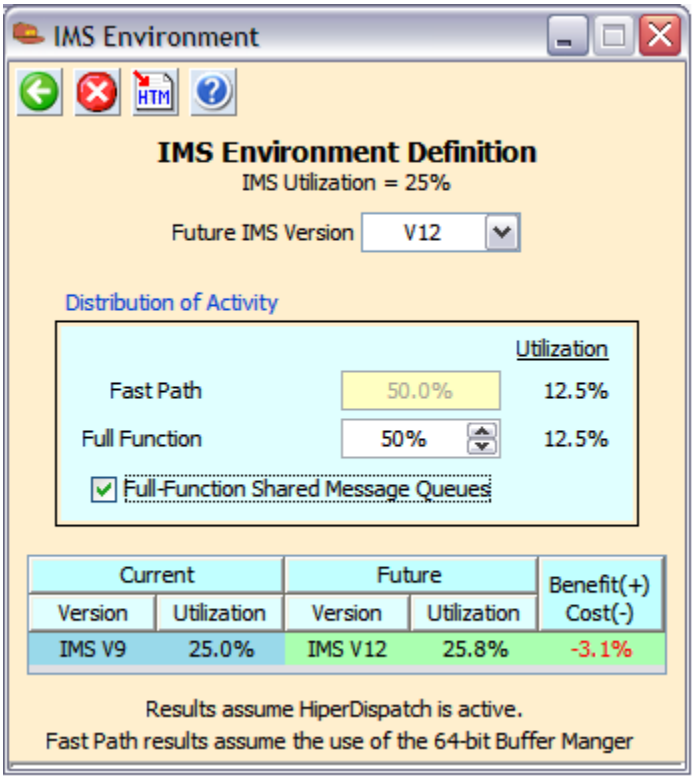
- **Help** (**blue** question mark)

  Display context sensitive help.

IMS Environment Window

This window is accessible from the **Software Migration Scenario** window by clicking on **Upgrade IMS**. It describes the future IMS releases along with the distribution of IMS activity.

Note: The value shown for **IMS Utilization** was specified on the **Software Migration Scenario** window. It can only be modified there.



Select a release from the **Future IMS Version** drop-down list, which will only contain releases newer than the **Current** one.

Distribution of IMS Activity

- **Fast Path**
  IMS functions for applications that require good response characteristics and that may have large transaction volumes. Programs have rapid access to main-storage databases (to the field level), and to direct-access data entry databases.

  The utilization percentage for this IMS activity is initially fixed at 100%. **zSoftCap** automatically changes this value, as the one for **Full-Function** changes.

- **Full Function**
  Hierarchic databases that are accessed through Data Language I (DL/I) call language and can be processed by all four types of application programs: IFP, MPPs, BMPs, and batch. Full-function

databases include HDAM, HIDAM, HSAM, HISAM, SHSAM, and SHISAM.

Input the utilization percentage for this IMS activity. Press the tab key to advance to the next input field.

- **Full-Function Shared Message Queues**
  IMS V6 introduced shared message queues. With shared queues, the message queues are moved to list structures in the coupling facilities where they are available to any IMS in the shared queues group. A terminal is connected to one IMS system. Then input messages from the terminal are placed in the shared queues. They are accessible from any IMS using those queues. This means that another IMS, not the one to which the terminal is connected, may process the input message.

The total utilization for both the **Fast Path** and **Full Function** activity combined **must** total 100%. **zSoftCap** calculates the **Relative Percent** for **Fast Path**, as the value changes for **Full Function**.

Controls

Toolbar Icons

- **Return** (**green** left arrow)

  Save the input, and return to the Software Migration Scenario window.

- **Cancel** (**red** X)

  Discard all input, and reset to initial **zSoftCap** defaults.

- **HTM**

  Write out capacity data to an HTML file.

- **Help** (**blue** question mark)

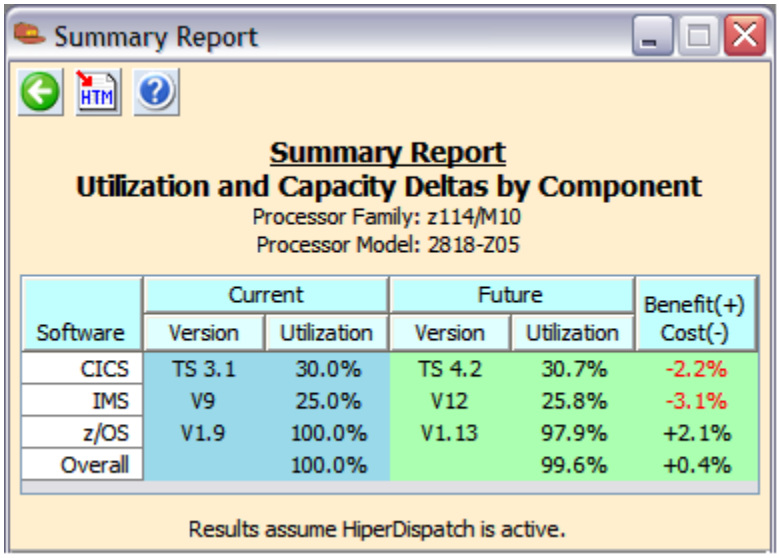
  Display context sensitive help.

Summary Report Window

Displaying Migration Results

To display the **Summary Report** window, press **Show Summary** on the **Software Migration Scenario** window. The following details are displayed in tabular format.

- Current and future software versions
- Current and future processor utilization
- Benefit(+) or Cost(-) of the software migration on capacity



Saving Migration Results

The results of the migration that are displayed can be output to an HTML file by clicking on the **HTM** toolbar icon on any of the windows where it is displayed.

NOTE: **zSoftCap does not** have the capability to save the input in a file to be used in a future study.

Controls

Toolbar Icons

- **Return** (**green** left arrow)

  Save the input, and return to the Software Migration Scenario window.

- **HTM**

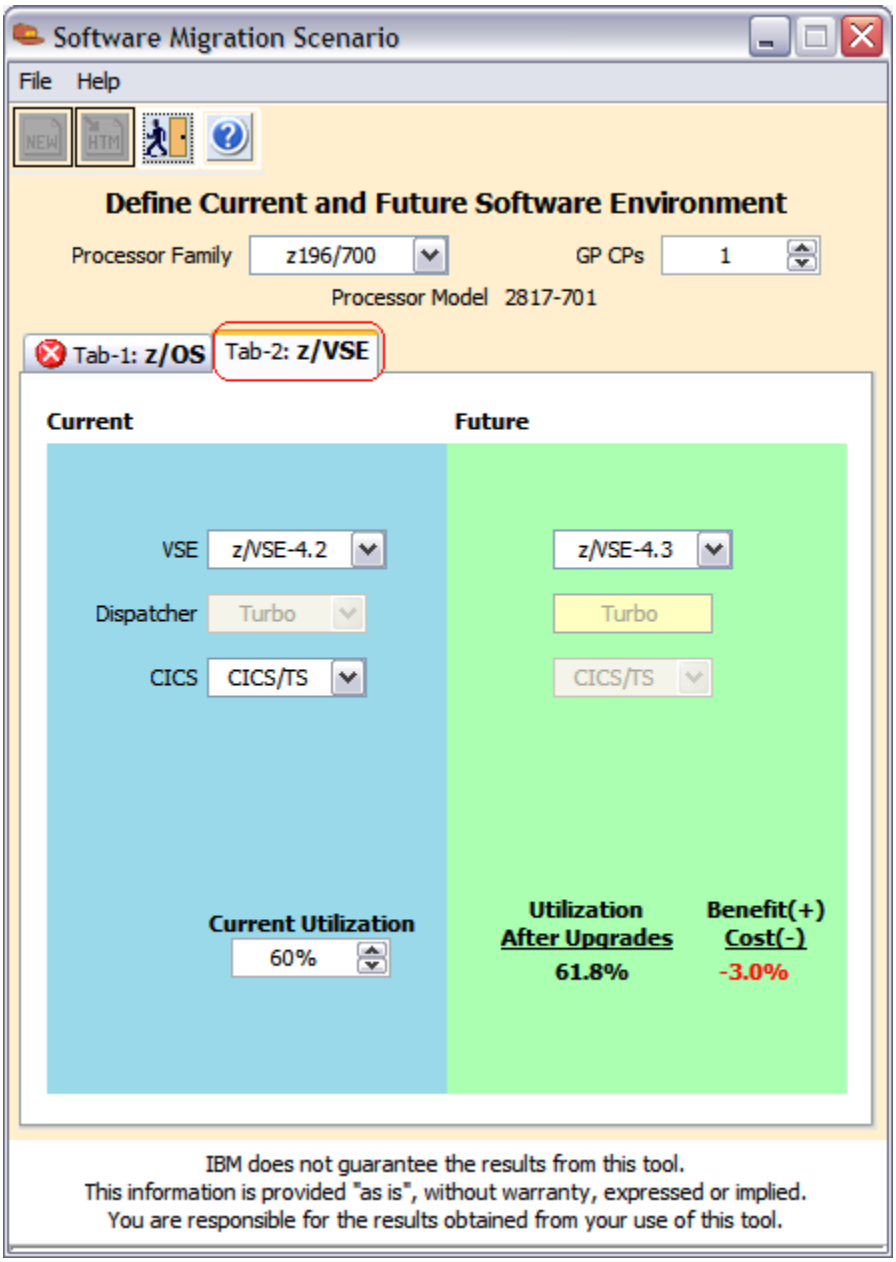
  Write out capacity data to an HTML file.

- **Help** (**blue** question mark)

  Display context sensitive help.

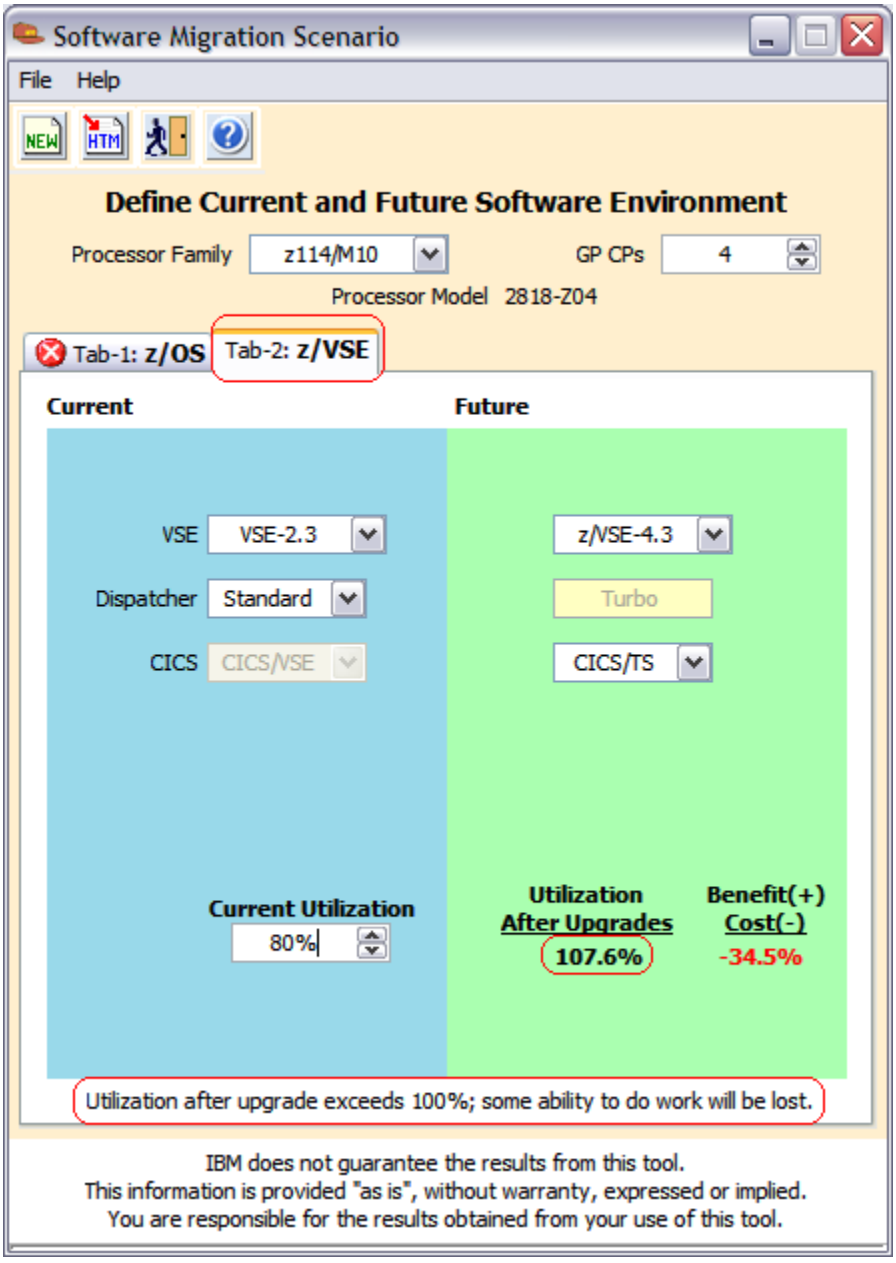
zVSE Migration

Click **Tab-2: z/VSE** on the **Software Migration Scenario** window to define the current and future VSE software environments.



Note: Switching to a z/VSE migration will disable the ability to return to z/OS during the **zSoftCap** invocation. Therefore, if a z/OS migration scenario has been started, a dialog is offered to confirm that the switch to z/VSE is intentional. A new **zSoftCap** invocation is required to return to z/OS migration scenarios.

At the top of the window, drop-down lists are provided where the current processor family and model can be specified. For the purposes of this tool, the **GP CP limit for VSE is set to 4**. **Note**: The processor information is provided for documentation purposes only, and will have no effect on results.



Current and future versions for each of the three supported z/VSE primary components are selected using the drop-down lists provided (default selections are initially provided). In addition, the processor utilization for the current environment can be set (default is 60%). The component version upgrades as defined are evaluated in combination. As input fields are changed, an estimated utilization value for the future environment is shown instantly, based on the current utilization. In addition, the percent benefit or cost to capacity for the migration as defined is shown.

For z/VSE, all inputs and resulting projections are presented in a single window. HTML output for this window can be generated by clicking the HTML tool bar icon.

Notes Concerning Operating System Version Upgrades

z/OS versions prior to 1.7 are not supported. The 1st supported upgrade version is z/OS-1.8. If there are cases actually running z/OS versions prior to 1.7, the former SoftCap tool remains available for use.

For all supported z/OS version upgrades, the data is sensitive to the number of General Purpose CPs being used by the z/OS image.

- z/OS-1.7 and 1.8 support a maximum of 32 General Purpose CPs.
- z/OS-1.9, 1.10, and 1.11 support a maximum of 64 General Purpose CPs.
- z/OS-1.12 and z/OS-1.13 support a maximum of 80 General Purpose CPs. However, **zSoftCap** can only project capacity deltas for a maximum of 64 CPs, since the supporting measurement data was limited to that.

Processor Family	Minimum z/OS Version Required	Maximum General Purpose CPs	HiperDispatch Supported
z196	z/OS-1.7	80	Yes
z114	z/OS-1.7	5	Yes
z10-EC	z/OS-1.7	64	Yes
z10-BC	z/OS-1.7	5	Yes
z9-EC	z/OS-1.6	54	No
z9-BC	z/OS-1.6	4	No
z990	z/OS-1.4	32	No
z890	z/OS-1.4	4	No
z900	z/OS-1.4	16	No
z800	z/OS-1.4	4	No

z/VSE Control Program

- VSE/ESA-2.3 (Standard or Turbo Dispatcher may be specified)
- VSE/ESA-2.7 (Turbo Dispatcher **only**)
- z/VSE-3.1 through z/VSE-4.3 (Turbo Dispatcher **only**)

Dispatcher

- Standard dispatcher (VSE/ESA-2.3 **only**)
- Turbo dispatcher

CICS

- CICS/VSE (any z/VSE version, however, **required** for VSE/ESA-2.3)
- CICS/TS (any z/VSE version **except** VSE/ESA-2.3)

Technical Support

Problems and Suggestions

Efforts have been made to make **zSoftCap** a useful and intuitive application. Should you detect problems or want to make suggestions, please e-mail: **zpcr@us.ibm.com**.

Specify "**zSoftCap**" as the subject. Describe the problem or suggestion as thoroughly as possible. Please include your name, your location, and telephone number should additional information is needed. All comments and suggestions are welcomed and will be considered.

Maintaining Currency

As capacity information for new software releases becomes available, **zSoftCap** will be updated. It is your responsibility to verify that you are always working with the most current version of the tool. Please check the IBM web site frequently for updates.