BAPCo® SYSmark® 2014 SE
User Guide

Introduction

SYSmark® 2014 SE is an application based, system performance benchmark designed to assist users in making PC purchasing decisions.

Setup

Before attempting to install or run SYSmark 2014 SE, verify that the test system meets the recommended minimum system configuration for running the benchmark.

- **CPU**: 1.0 GHz AMD® or Intel® dual-core processor
- **RAM:** 2 GB
- **HDD/SSD:** 25GB of free space on the primary drive
- **Operating System:** Microsoft® Windows® 10 64-bit, Microsoft® Windows® 8.1 64-bit and Microsoft® Windows® 7 64-bit
- **Resolution:** 1024x768
- **Graphics:** DirectX 9 compatible

Image configuration

For best results, SYSmark 2014 SE should be installed to a clean instance of a supported operating system, with updated hardware drivers. See the Applications section for a list of application software installed by the benchmark. SYSmark 2014 SE includes an integrated configuration tool that will automate making changes to the system in preparation for running the benchmark. See the Usage section for more details on the Configuration tool.

- Administrative rights: An account with administrative privileges is required. Use the same account to install and run SYSmark 2014 SE.

SYSmark® 2014 SE installation

Please use disk image software to make a backup of the disk prior to installation of SYSmark 2014 SE. Although uninstallation is supported, BAPCo recommends making a backup of your image before installing SYSmark 2014 SE.

Please be sure the test image is free of any known conflicting software before attempting installation. This list includes but may not be limited to any of the applications that will be installed by the benchmark. See the Applications section for the list of applications that SYSmark 2014 SE installs and/or uses.

Also note that Microsoft .NET Framework 4.0 must be enabled or installed prior to attempting to install SYSmark 2014 SE on Windows 8.1 systems.

Follow these steps to install SYSmark 2014 SE:

1) Download SYSmark 2014 SE from the BAPCo store

a. Make a backup copy of the download zip to a USB key or other external drive for safe keeping
2) Unpack the benchmark files
a. Create a folder called SYSmark2014SE and unpack the contents of store download.
3) Unpack SYSmark 2014 SE Disc1 ISO
a. Create a folder called Disc1 inside the SYSmark2014SE folder created above
b. Copy SYSmark2014SE_Disc1.iso into the Disc1 folder
c. Extract the contents of the Disc1.iso to the Disc1 folder
4) Unpack SYSmark 2014 SE Disc2 ISO
a. Create a folder called Disc2 inside the SYSmark2014SE folder created above
b. Copy SYSmark2014SE_Disc2.iso into the Disc2 folder
c. Extract the contents of the Disc2.iso to the Disc2 folder
5) Using Windows Explorer, navigate back to the Disc1 folder created in Step 3.
6) Double click on the file named SYSmark 2014 Setup.exe and follow the prompts to complete installation
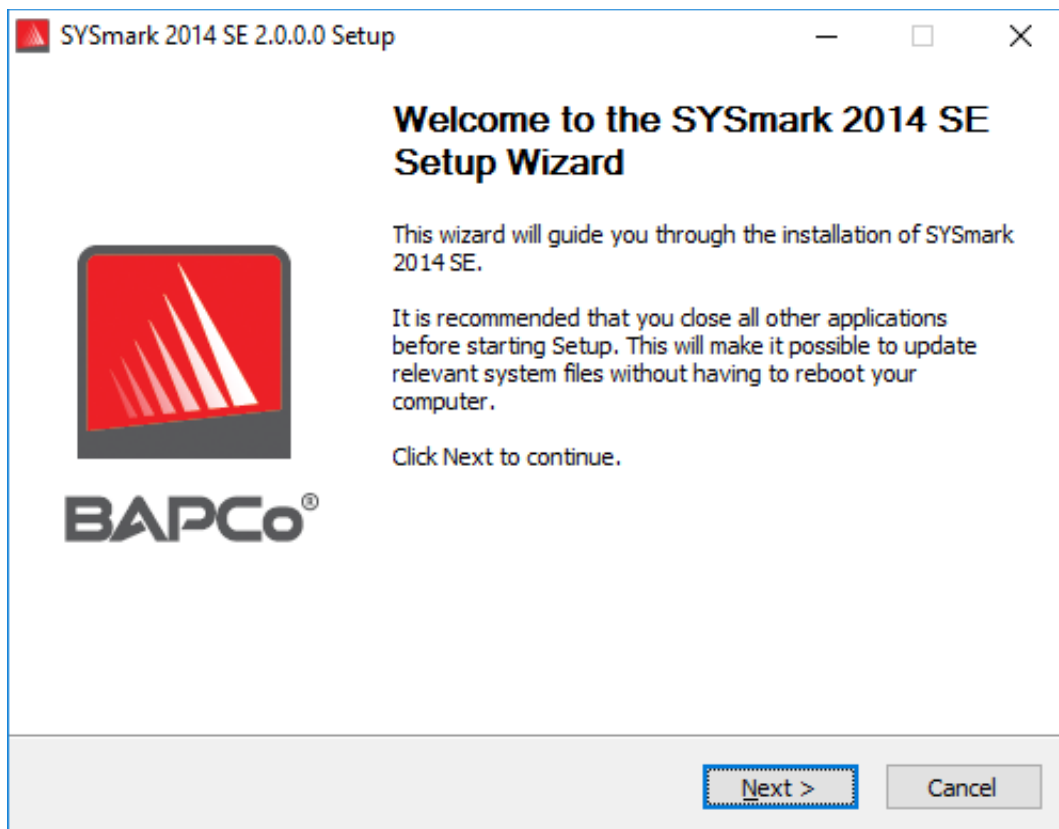
Figure 1: SYSmark 2014 SE installer window

Figure 2 shows the default full installation of the benchmark. All core components, all scenarios and the results browser will be installed.
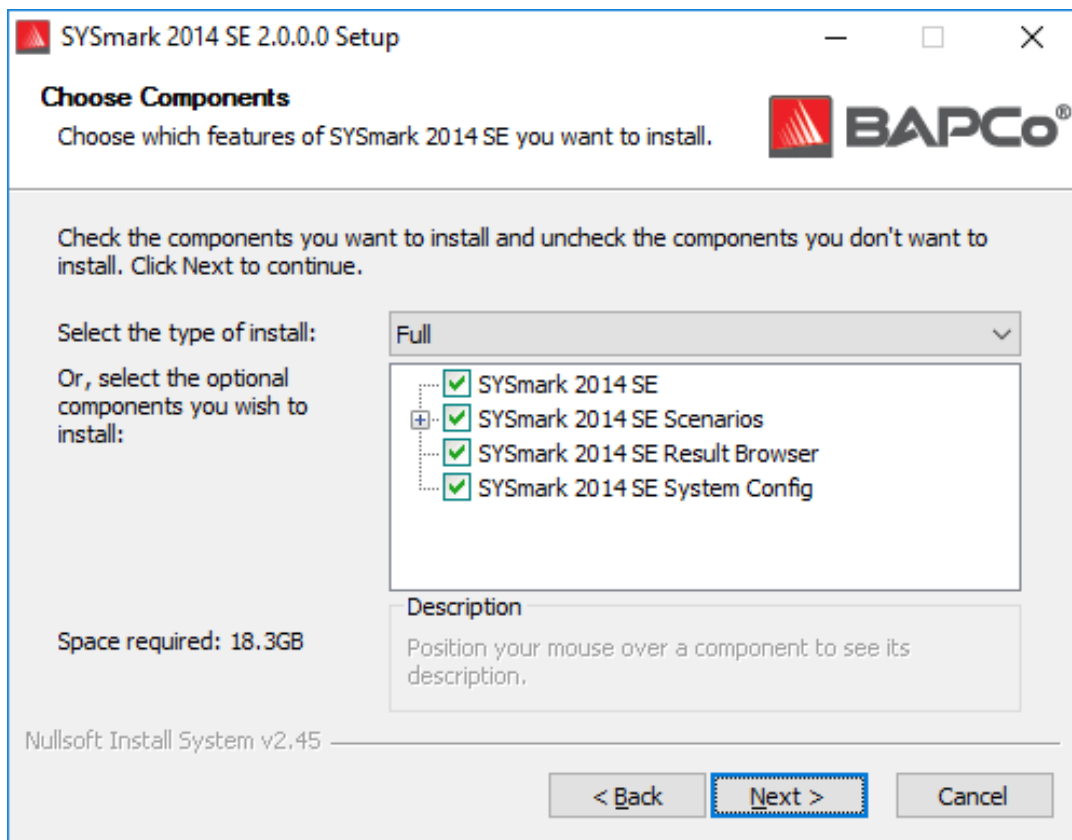
Figure 2: Default full install of SYSmark 2014 SE
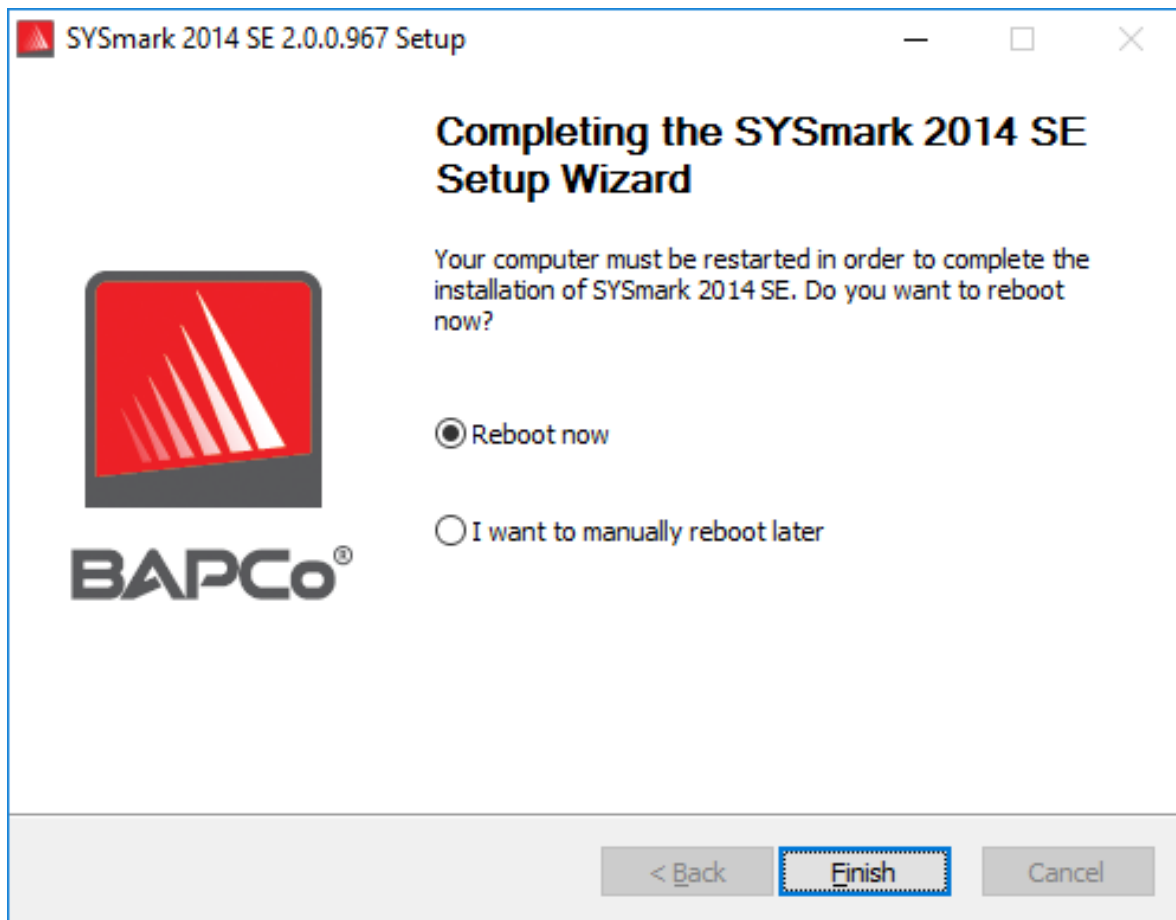
Figure 3: Installation of SYSmark 2014 SE has completed successfully

SYSmark 2014 SE may also be installed through the command line. The following command line switches are available:

- /S - silent install, no GUI

Command line installation example

To install SYSmark 2014 SE from the command line, open a command prompt, change to the directory where the SYSmark2014_Setup.exe file is located and issue the following command.

C:\>start /wait SYSmark2014_Setup.exe /S

Installer exit codes

When complete, the installer will return an exit code (stored in %ERRORLEVEL%). See below for the exit codes and their meanings:

- 0 - Success
- 3010 - Success, reboot required
- 1 - Installation abort by user
- 2 - General installation problem
- 3 - Missing or invalid serial number
- 4 - The following applications must be uninstalled before installing SYSmark 2014 SE
- 5 - SYSmark 2014 SE (64-bit) can only be installed on 64-bit machines
- 6 - SYSmark 2014 SE installer is already running
- 7 - Installer must be run from the top level installer: SYSmark2014SE_Setup.exe
- 8 - Disc 2 version does not match the version in Disc 1
- 9 - Application installation missing. Invalid installation. Please uninstall and reinstall SYSmark 2014 SE
- 10 - Installation directory must be less than 145 characters.
- 11 - Installer cannot find Disc2 media (or folder)

Uninstallation

SYSmark 2014 SE can be uninstalled by navigating to the Programs and Features item in the Windows Control panel. Choose the SYSmark 2014 SE icon from the list of applications and select 'Uninstall'.

Due to DRM limitations of some of the applications in SYSmark 2014 SE, once the benchmark is uninstalled, it cannot be reinstalled back to the same system image.

Usage

The SYSmark 2014 SE interface may be launched by:

- Double clicking the SYSmark 2014 SE desktop icon
- Navigating to C:\Program Files (x86)\BAPCo\Sysmark2014 SE\bin\ directory in Windows Explorer and double clicking the SYSmark 2014 SE.exe file
- From the Start menu: Start>All Programs>BAPCo and clicking the SYSmark 2014 SE menu icon

Important: If User Account Control has not been previously disabled, right-click the icon and choose 'Run as administrator'. UAC can then be disabled using the integrated configuration tool. More information on the integrated configuration tool is available in the Automated Configuration section below. SYSmark 2014 SE must be run under the same user account that was used to install it.

The benchmark interface window will open as illustrated in Figure 4:

Figure 4: SYSmark 2014 SE interface.

Launch benchmark project from GUI

- **Project name**: Type the desired project name in the 'Project name' field. Spaces and underscores are permitted. Special characters such as (*,$,@,) are not supported in project names.
- **Scenarios:** Default value: All four scenarios are selected.
- **Iterations:** Default value: 1. The user may adjust this value as required.
- **Conditioning run:** Default value: selected. Selecting the conditioning executes one iteration of the selected scenarios prior to executing the rest of the project to aid in stabilizing the system for repeatable results. The project Full Disclosure Report (FDR) will indicate whether the conditioning run was executed. However, if executed, the conditioning run will not be included in the final scores for the project.
- **Process Idle Task**s: Default value: Unselected Process idle tasks option directs SYSmark 2014 SE to execute the Windows operating system process idle tasks queue before starting the benchmark run. Clearing the idle tasks queue prior to running the benchmark may help achieve more repeatable results.
- **Enable Energy Test**: Default Value: Unselected. To enable the Energy test, select the box.

- **COM Port**: If the Energy test box is selected, SYSmark 2014 SE will attempt to identify the COM port used by the connected meter. To specify a different COM port, enter the COM port number in the box.

Automated Configuration

New for SYSmark 2014 SE, BAPCo has integrated a system configuration tool into the benchmark GUI to better assist users with configuring the system prior to executing the benchmark. The system configuration tool will automatically apply a set of default options to the system which are required for SYSmark 2014 SE to run. The configuration tool settings can be viewed by clicking the configuration button in the main GUI.
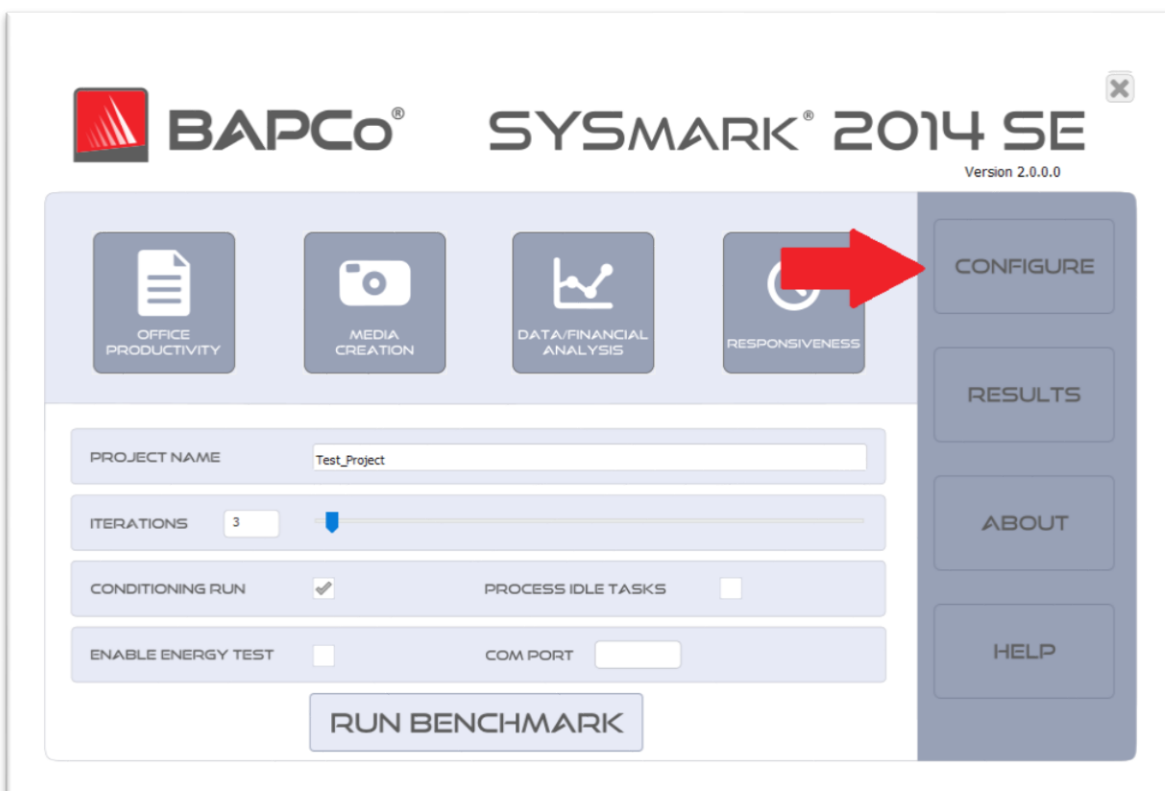
Figure 5: SYSmark 2014 SE configuration button

The configuration tool window will display the options available for configuring the test system, as pictured in Figure 6below. Modify the set of options and click 'Save' to save the profile. When SYSmark 2014 SE is launched, the saved settings will be applied to the system. Note that Figure 6 displays the options that appear under Windows 10, other supported operating systems may display a different set of options.
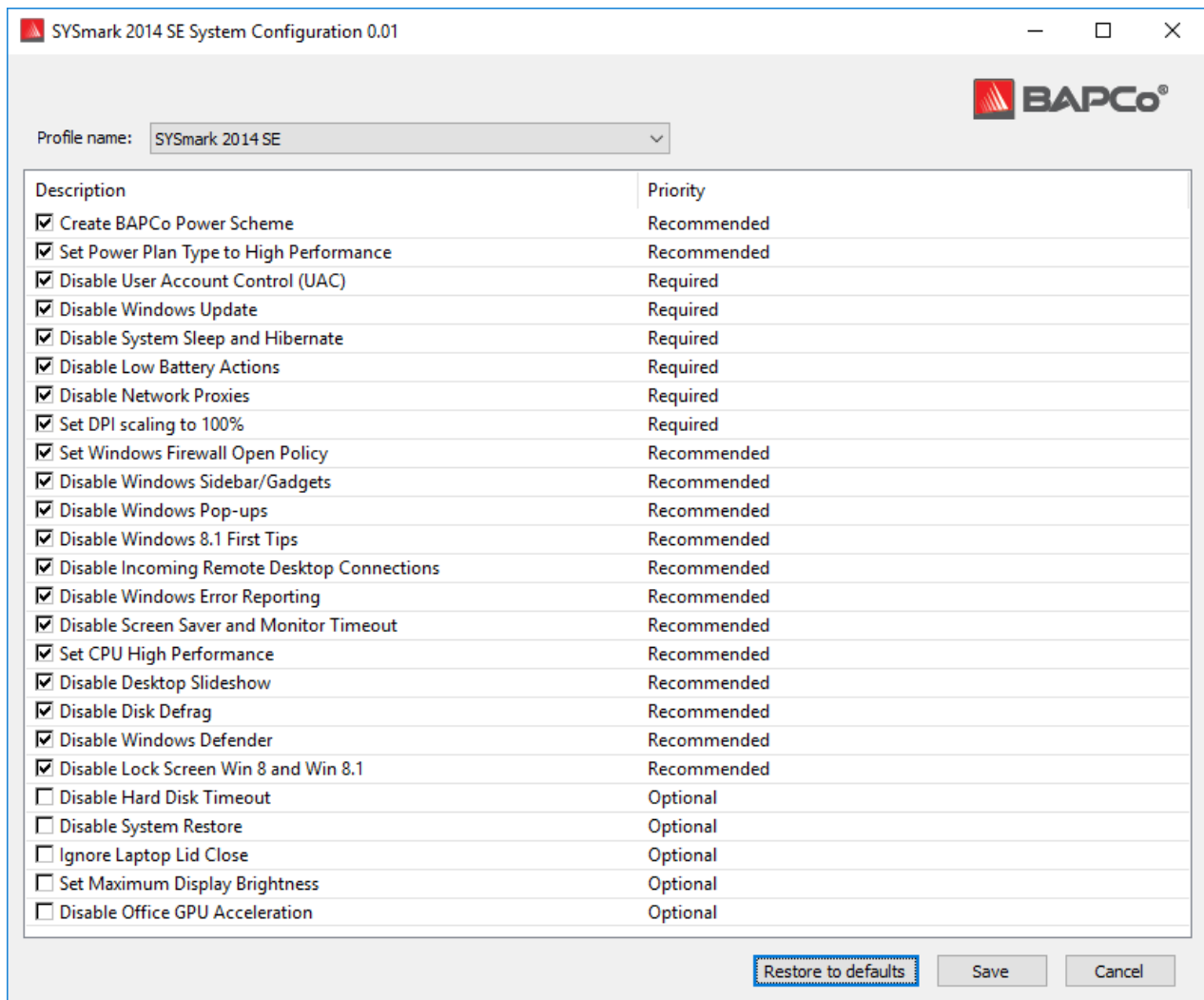
Figure 6: SYSmark 2014 SE configuration options on Windows 10

System Configuration Tool Items List

The following is a list of configuration options with their priorities that can be applied using the System Configuration tool. The options that appear in the System Configuration tool window may vary by operating system.

Required

Make configuration changes that are required for the benchmark to run. These items are checked by default.

Recommended

Make configuration changes that are recommended in order to obtain repeatable scores. Recommended items are checked by default. Recommended items may be disabled by unchecking the corresponding box.

Optional

Make configuration changes that are typically not needed to obtain repeatable scores, but which may be needed in some rare cases. Optional items are not checked by default.

Create BAPCo Power Scheme – Recommended
Creates a new power scheme named "BAPCo SYSmark 2014 SE" based on the system's currently active power scheme. If applied, all subsequent power profile configuration changes will be applied to the newly created power scheme. If this option is not checked, all power profile configuration changes will be applied to the currently active power scheme.

Set Power Plan Type to "High Performance" – Recommended
Sets the "Power Plan Type" option (sometimes referred to as "Power Plan Personality") of the active power scheme to "High Performance". This setting tags the active power plan with an overall personality that favors performance over energy savings. Drivers and applications may query this setting to determine their respective performance vs energy savings behavior. This option may be used whether or not the "Create BAPCo Power Scheme" option is checked. If "Create BAPCo Power Scheme" is unchecked, "Set Power Plan Type" will be applied to the currently active power scheme.

Disable User Account Control (UAC) – Required
Disables User Account Control to prevent Administrator elevation prompts from appearing during benchmark runs. The system must be rebooted to apply this change.

Disable Windows Update – Required
Stops and disables the Windows Update service. Prevents the Windows Update service from starting and/or checking for updates during benchmark runs.

Disable System Sleep and Hibernate – Required
Prevents the system from going to sleep or hibernating and disables the "Require password on wake" setting.

Disable Low Battery Actions – Required
Prevents the system from shutting down or from posting a warning when the battery reaches the low level.

Disable Network Proxies – Required

Disables proxy server configuration for Internet connection settings.

Set DPI scaling to 100% - Required

Sets the desktop scaling to 100%. Prevents failures on higher resolution displays

Set Windows Firewall Open Policy – Recommended

Configures the Windows firewall to allow all inbound/outbound traffic.

Disable Windows Sidebar/Gadgets – Recommended

Turns off Gadgets.

Disable Windows Pop-ups – Recommended

Disables all pop up notifications (Balloon tips) in the systray

Disable Windows 8.1 First tips – Recommended

Disables the First tips notifications from appearing on screen

Disable Incoming Remote Desktop Connections – Recommended

Denies remote desktop connection requests from remote systems.

Disable Windows Error reporting – Recommended

Prevents Windows Error reporting tool from presenting error reporting windows.

Disable Screen Saver and Monitor Timeout – Recommended

Turns off the screen saver. Disables display timeout in the power profile for both AC and DC options.

Set CPU High Performance – Recommended

Sets the minimum and maximum value for CPU performance state to 100% to prevent CPU throttling on both AC and DC power.

Disable Desktop Slide Show – Recommended

Prevents the desktop background from changing.

Disable Disk Defrag – Recommended

Disables the Defrag scheduled task.

Disable Windows Defender – Recommended

Configures a group policy to disable Windows Defender.

Disable Lock Screen Win 8 and Win 8.1 – Optional

Disables the lock screen

Disable Hard Disk Timeout – Optional

Prevents the hard disk from going to sleep

Ignore Laptop Lid Close – Optional

Prevent closing of Laptop lid from suspending the system.

Set Maximum Display Brightness – Optional

Sets display brightness to 100%. Sets dimmed display brightness to 100%. Sets "Dim Display After" value to "Never".

Disable Office GPU Acceleration- Optional

This option will disable Office GPU acceleration for all MS Office 2013 applications. This item should only be selected if experiencing Microsoft OneNote crashing. It is intended as a workaround only.

Launch System Configuration Tool from command line

The System Configuration Tool may be launched from the command line. Using the parameters below.

-p or --profile="ProfileName"	Specifies the configuration profile to apply. Profile names are case sensitive, and must be listed in the SystemConfig.xml file. The default profile is: SYSmark 2014 SE
-h or –help	Displays the help dialog

Config tool command line

"C:\Program Files (x86)\BAPCo\Sysmark2014\bin\System Configuration.exe" -p="SYSmark 2014 SE"

Launching a benchmark project from the command line

SYSmark 2014 SE also supports execution from the command line. Supported command line parameters are provided in the list below. The SYSmark 2014 SE GUI will launch if there are syntax errors in the command line text.

-p or --project	Specifies the name of the project. This option determines if the GUI is presented to the user, or if the benchmark runs silently. If this option is supplied, it is assumed that the GUI should not appear.
-i or --iterations	Specifies the number of iterations to run. This must be greater than 0. The default is 3.
-r or --retries	Specifies the number of retries when a script error occurs. The default is 5.
-w or --retrywait	Specifies the amount of time in seconds to wait before a retry. The default is 120 seconds.
-j or --powertest	Enables energy testing and specify COM Port for power meter.
-nc or --noconditioning	Turns off system conditioning run.
-ep or --processIdleTask	Turns on process idle tasks.
-h or --help	Displays the help screen.
-v or --verbose	Turns on verbose mode.

Example command line

"C:\Program Files (x86)\BAPCo\Sysmark2014SE\bin\SYSmark 2014 SE.exe" -p test_project -i 4

Watts up? Meter configuration

1. Obtain a compatible Watts up? power meter
   - Manufacturer's page: https://www.wattsupmeters.com/secure/products.php?pn=0
   - Compatible meters include the PRO, PRO ES, and .NET models
   - The basic "Watts up?" model is not compatible.

2. Make all power connections
   - Plug the Watts up? meter into a power outlet
   - Plug the system under test into the power outlet on the Watts up? meter

3. Power up the system under test and install Watts up? data logger found here:
   - Download the data logger package: https://bapco.com/wp-content/uploads/ftp_uploads/WuUSBSetup9.zip
   - Unzip the package, double click WuUSBSetup.exe, and step through the installation wizard
   - If the following warning appears during installation of the Data logger, click 'Ok' to dismiss
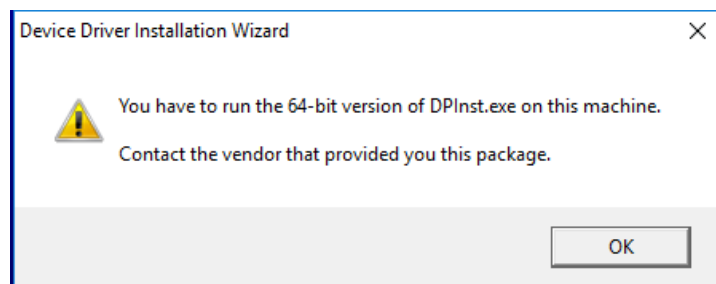
Figure 7: Watts Up Pro warning

   - Uncheck the option to 'Run Watts Up USB now and click 'Finish' to complete installation of the data logger

4. Install the USB controller driver
   - Be sure the Watts Up Pro meter is connected to the test system
   - Download the USB controller driver: https://bapco.com/wp-content/uploads/ftp_uploads/CDM2.04.06WHQL_Certified.zip
   - Extract the contents of the zip file to a folder.
   - Open Device Manager and under 'Other devices' locate the USB UART entry as shown
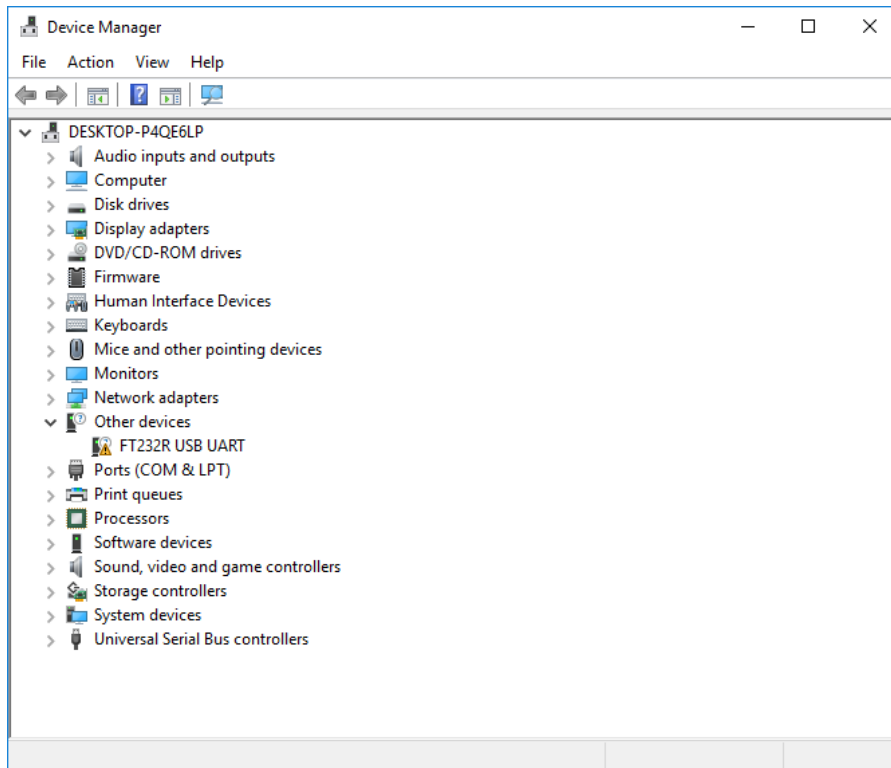
Figure 8: Device manager driver not found

- Right click the and choose 'Update driver software'
- Choose 'Browse my computer for driver software'
- Check the box for 'include subfolders', then use 'Browse' to navigate to the location where the driver package was extracted. Click 'Next' and Windows will scan the folder and install drivers
- After 'USB serial controller' is installed, return to device manager and repeat the steps for the 'USB serial port' item
- Device manager should now be clear of any driver not found warnings
- SYSmark 2014 SE can now be executed with the 'Energy Test' option enabled.

Extech 380803 Power Analyzer / Datalogger configuration

1. Obtain an Extech 380803 Power Analyzer / Datalogger
    a. Manufacturer's page: http://www.extech.com/display/?id=14172
    b. Note: Extech states that this meter is for use in 110-117V countries only. However, that only refers to the included power supply for the meter itself. The meter is capable of accurately measuring inputs/outputs up to 300V. For countries operating on 220V, this power meter should be used with either 1.) 8 AA batteries or 2.) a generic 12V DC power adapter (not included with meter purchase)
2. Make all power connections
    a. Connect Extech power supply to a power outlet. For countries operating on 220V, insert 8 AA batteries into battery compartment, or purchase a compatible 12V DC power adapter. As batteries may unexpectedly die during benchmark run, a compatible DC power adapter is strongly recommended.
    b. Connect Extech input to power outlet
    c. Plug system under test into power outlet on Extech power meter. A socket adapter may be needed for countries that don't use Type A or Type B sockets (found in the USA, Canada, Mexico, and Japan).
3. Connect Extech data port to system under test
    a. A reliable USB-to-Serial adapter is strongly recommended
    b. Connect Extech RS-232 port to computer using USB-to-Serial adapter
    c. Install appropriate drivers for USB-to-Serial adapter. There are many types of adapters available, so please refer to your adapter manual for system requirements and driver installation instructions
4. Determine which COM port number was assigned to the USB-to-Serial adapter
    a. Make sure USB-to-Serial adapter is disconnected from the system under test
    b. Open Control Panel > Device Manager
    c. Expand "Ports (COM & LPT)"—note which COM ports are listed
    d. Connect USB-to-Serial adapter to the system under test
    e. Note which COM port number appeared when you connected the adapter
    f. Close Device Manager

Best Practices

In order to obtain reliable, reproducible results, BAPCo recommends using the default settings in the SYSmark 2014 SE interface.

- All scenarios (Office Productivity, Media Creation, Data/Financial Analysis, and Responsiveness) scenarios selected.
- Iterations (default setting plus conditioning run recommended)
- Conditioning run (leave checked)
- Process idle tasks (leave unchecked)
- Enable Energy test (if not testing energy consumption, uncheck)
- When using BAPCo benchmarks to evaluate performance or battery life, one should install the latest production drivers from the hardware manufacturer. Drivers included with the operating system may not be device specific or newer drivers may be available from the device manufacturer. Using incorrect drivers could result in significantly reduced performance.
- NVMe configurations: NVMe devices may show lower than expected performance in some configurations due to the way Force Unit Access (FUA) write requests are handled by the Windows operating system. Therefore, BAPCo recommends that users install the storage driver provided by the manufacturer of their NVMe device. In cases where the manufacturer does not provide an NVMe driver, users may disable the 'Windows Write cache buffer flushing' setting on the NVMe drive prior to testing.

Tips For Usage

This subsection describes the behavior of SYSmark 2014 SE during the execution of a benchmark run.

Heads Up Display (HUD)

The Heads Up Display appears in the upper right corner of the desktop and provides information about the currently running project

Figure 9: SYSmark 2014 SE HUD.

Process idle tasks

Prior to executing benchmark workloads, the SYSmark 2014 SE workload manager will pause for 120 seconds to allow the system to stabilize. When the 120 seconds have elapsed, the workload manager will issue the process idle tasks command. When the idle tasks queue is cleared, the benchmark workload will begin. Note: Process idle tasks completion time can vary from system to system.

Keyboard/mouse input blocking

Once workload execution begins, the workload manager will lock the system to prevent accidental input from the mouse or keyboard from disrupting the workload automation. The workload manager will continue to execute the selected scenarios for the current project, and will display the results at the successful conclusion of the run. Refer to the 'Stopping a run in progress' section below for additional information on keyboard and mouse input blocking.

Error handling

By default, when SYSmark 2014 SE encounters an error during the execution of a project, the workload manager will log the error and then present the user with the retry dialog, as pictured in Figure 10 below.
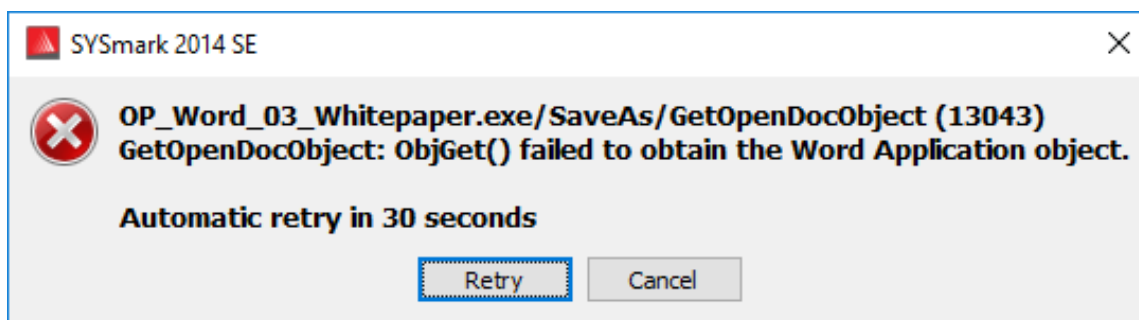

Figure 10: SYSmark 2014 SE retry dialog

Unless otherwise configured on the command line with *-r or --retries*, SYSmark 2014 SE will attempt to retry a scenario up to five times. The default timeout between an error and scenario retry is 120 seconds. This value can be changed on the command line using *-r or --retrywait*. If the scenario cannot be successfully completed before the retry threshold is reached, the workload manager will halt execution and display the error message in the results browser.

SYSmark 2014 SE allows further control of error handling timeouts through the BENCHMARK_TIMEOUT_MULT environment variable. This variable can be configured to increase the amount of time a benchmark script waits before throwing an error and either attempting a retry or halting the run. The default value for BENCHMARK_TIMEOUT_MULT is 1.0. Increasing the value to 2.0 doubles the error handling timeout, 3.0 triples the timeout, and so on.

Stopping a run in progress

If it becomes necessary to stop a benchmark run in progress, follow these steps:

- Press the CTRL-ALT-DEL keys at the same time, in order to bring up the Windows change password screen
- Click 'Cancel' to return to the desktop
- Keyboard and mouse input should now be enabled
- Navigate to the systray in the lower right corner of the screen and find the BAPCo icon, as shown in Figure 11 below
- Right click the icon and choose 'Stop'

Figure 11: BAPCo systray icon. The green triangle indicates SYSmark 2014 SE is running

Results browser

The SYSmark 2014 SE results browser simplifies the viewing of results.

Double click support for viewing single FDR

Double clicking on an FDR file will launch the results browser, load and display that FDR. Double clicking another FDR file will display the FDR in the browser window. Previously loaded FDRs will be available from the results browser drop down menu.

Drag and drop support for viewing multiple FDRs

Drag and drop an FDR file on the open results browser window, and the FDR will be displayed. Multiple FDRs may also be selected, dragged and dropped onto the results browser window. The results browser will display one FDR, the other selected FDRs will be available from the drop down menu.

Save FDR to PDF for distribution

Generated FDRs may be exported to PDF for easier distribution. Save to PDF by first loading the desired FDR into the results browser. Once the FDR is displayed, click the 'Save Results' button in the lower right corner of the results browser window. The Windows save file dialog will appear. The default file path is C:\Program Files (x86)\BAPCo\SYSmark2014\Results\. Select the path and choose a file name. Finally, choose 'PDF (*.pdf)' from the 'Save as type' drop down and click 'Save'.

Standalone installation support

The SYSmark 2014 SE results browser supports standalone installation, allowing the user to view FDRs quickly and easily on almost any system. To install the results browser, follow the steps below.

- Launch the SYSmark 2014 SE installer from DVD 1
- Enter a valid serial number and click 'Next'
- Accept the license agreement and click 'Next'
- Under the 'Select type of install' option, choose 'Custom'
- Uncheck the 'SYSmark 2014 SE' and the SYSmark 2014 SE Scenarios' component
- Be sure the 'SYSmark 2014 SE Results Browser' component remains checked and click 'Next'
- Click 'Next' to accept the default location
- Click the 'Install' button
- Click the 'Finish' button to close the installer window

Launch the Results browser by

- Double clicking the desktop icon
- Double clicking any FDR file
- Navigating to the Start menu>All Programs>BAPCo and clicking the SYSmark 2014 SE Results Browser icon

Viewing results

Upon successful completion of a project, SYSmark 2014 SE launches the results browser and loads the Full Disclosure Report (FDR) for the project as shown in Figure 12.
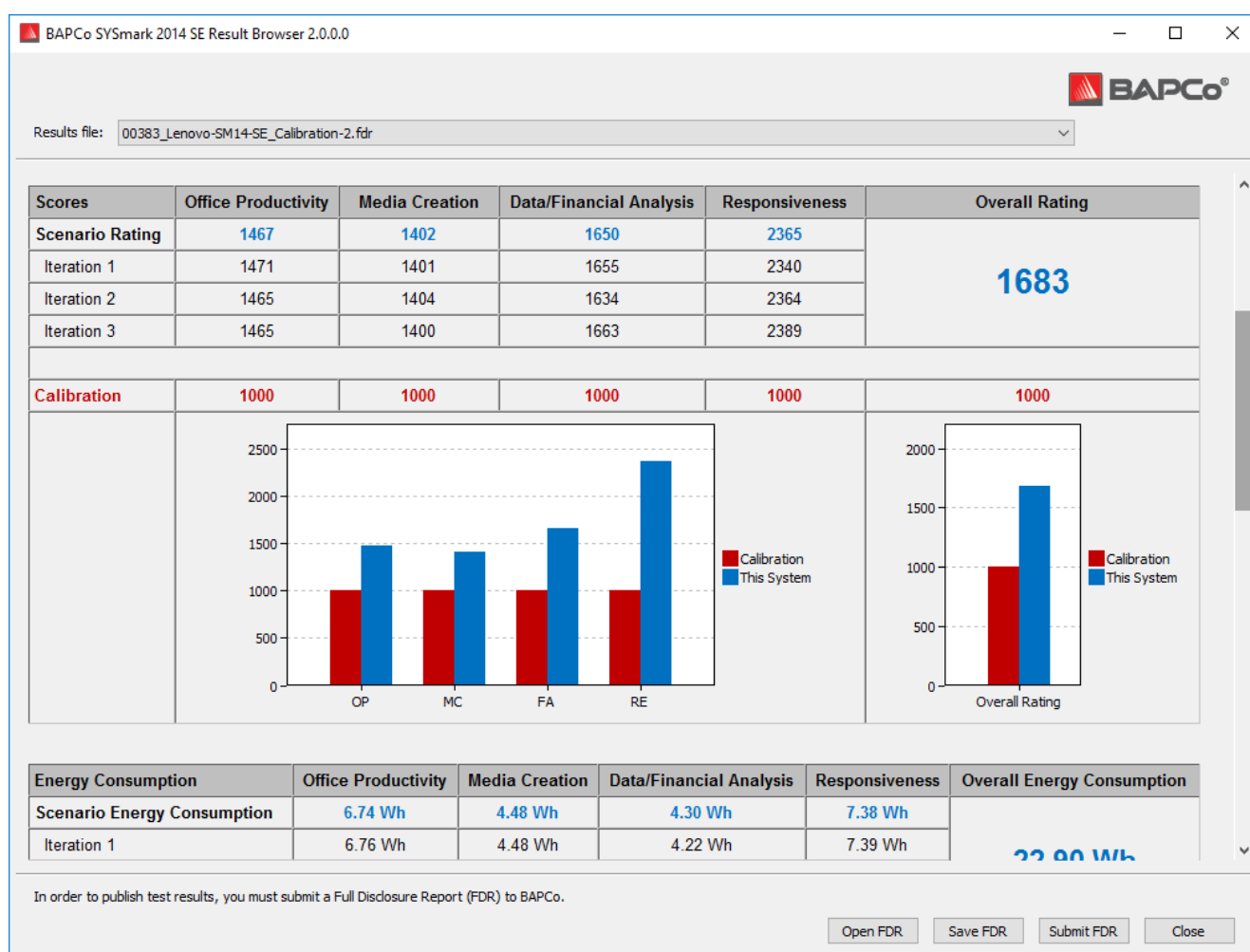

Figure 12: Example FDR

If the energy test was enabled for the run, those results will display below the score table, as shown in Figure13.
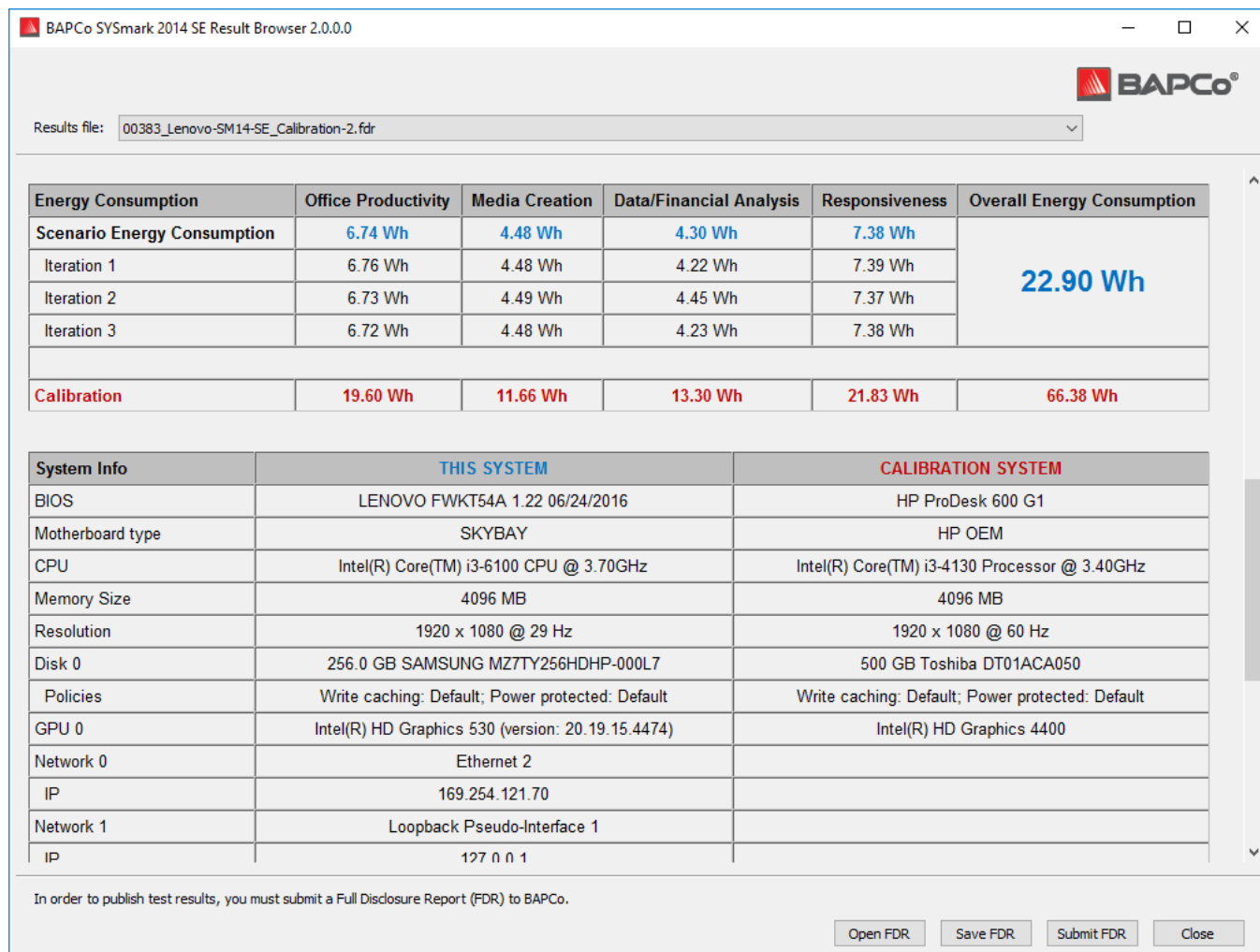
Figure 13: Project scroring information. In this example, the energy test score is displayed

Reference system

SYSmark 2014 SE scores are normalized using a reference system. The reference system scores '1000' on each of the four scenarios, and on the overall SYSmark 2014 SE rating. The reference system configuration is listed below.

Lenovo® ThinkCentre™ M800 Tower

- Processor: Intel® Core™ i3-6100 @ 3.70 GHz
- Operating System: Microsoft Windows 10 Pro x64 (build 1607)
- RAM: 4GB DDR3
- Graphics: Intel® HD Graphics 530

- Audio: Integrated High Definition Audio
- SSD: 256GB capacity, SATA III, OPAL 2.0 capable
- Networking: Integrated Gigabit Ethernet

Publishing results

BAPCo encourages users to submit FDRs (Full Disclosure Reports) generated from Official Runs of SYSmark® 2014 SE for publication at results.bapco.com. An Official run of the benchmark requires that all available scenarios be completed and scored. Conditioning runs may be executed as part of an Official Run submitted for publication. To submit the FDR to BAPCo, follow these steps:

Submit result directly from the results browser

- Load the desired FDR into the results browser by double clicking on the FDR file, or, if the Official Run has just completed, the corresponding scores will already be displayed in the results browser window
- At the bottom of the results browser window, click the 'Submit' button
- Fill out the form and click 'ok'.
- The FDR will be uploaded to the server. The results browser will indicate if the submission was successful.

Submit result by web browser

- FDR files may also be submitted through the web browser. By drag and drop at results.bapco.com/upload
- To upload results by drag and drop, open Windows Explorer and navigate to: C:\Program Files (x86)\BAPCo\Sysmark2014SE\Results*Project_name*\Results\
- Locate the .FDR files for the results to be submitted
- To submit from the system with SYSmark 2014 SE installed, launch Internet Explorer and navigate to results.bapco.com/upload
- Drag and drop the FDR files on to the page
- Fill in the Identification information at the top of the page with Name, email address and any configuration notes if needed.
- Click 'Start upload'
- The server will process the results and report status. If submission is successful, the server will email a link to each report to the provided email address.

Applications

The following applications (grouped by scenario) are installed and/or used by SYSmark 2014 SE. Some applications appear in multiple scenarios, but only one instance of the application is installed.

Office Productivity

- Adobe® Acrobat® XI Pro
- Google Chrome™
- Microsoft® Excel® 2013
- Microsoft® OneNote® 2013
- Microsoft® Outlook® 2013
- Microsoft® PowerPoint® 2013
- Microsoft® Word® 2013
- WinZip® Pro 17.5

Media Creation

- Adobe® Photoshop® CS6 Extended
- Adobe® Premiere® Pro CS6
- Trimble SketchUp™ Pro 2013

Data/Financial Analysis

- Microsoft® Excel® 2013
- WinZip® Pro 17.5

Responsiveness

- Adobe® Acrobat® XI Pro
- Google Chrome™
- Microsoft® Excel® 2013
- Microsoft® OneNote® 2013
- Microsoft® Outlook® 2013
- Microsoft® PowerPoint® 2013
- Microsoft® Word® 2013
- WinZip® Pro 17.5
- Adobe® Photoshop® CS6 Extended
- Adobe® Premiere® Pro CS6
- Trimble SketchUp™ Pro 2013

- Adobe® Lightroom® 6

Scenarios

SYSmark 2014 SE scenarios and workload descriptions are provided below.

Office Productivity

The Office Productivity scenario models productivity usage including word processing, spreadsheet data manipulation, and email creation/management. Web browsing is also included.

Media Creation

The Media Creation scenario models using digital photos and digital video to create, preview, and render a video advertisement for a fictional business.

Data/Financial Analysis

The Data/Financial Analysis scenario creates financial models to review, evaluate and forecast business expenses. In addition, the performance and viability of financial investments is analyzed using past and projected performance data.

Responsiveness

The Responsiveness scenario includes usage models such as application launches, application installation, web browsing with many tabs open, file copies photo manipulation, and multi-tasking.

Support

Technical support for SYSmark 2014 SE is provided through support@bapco.com. When contacting support please include the following information.

- SYSmark 2014 SE version, e.g., 2.0.0.123
- System configuration information
- Step by step instructions for reproducing the problem
- Rate of error, e.g., 100%, 50%
- Archive of the benchmark error logs from the failing run
    - Locate the error folder, for example: C:\Program Files (x86)\BAPCo\Sysmark2014SE\Results*Project_name*\Errors\
    - Locate the benchmark installation logs:
        - o %TEMP%\Sysmark2014SE_Disc1.log
        - o %TEMP%\Sysmark2014SE_Disc2.log
    - Locate the System Config Tool log (note: this file exists only if the System Config Tool was used to configure the system)
        - o C:\Program Files (x86)\BAPCo\Sysmark2014SE\Results\systemconfig.txt
    - Archive the error folder and the logs listed above using WinZip, WinRAR, etc.
    - Attach the archive file to the support request email sent to BAPCo support
    - When reporting multiple errors, please include an error archive for each problem being reported

SYSmark® 2014 SE Benchmarking Rules

This document describes the rules governing publication of results derived from running the BAPCo SYSmark 2014 SE benchmark. Any licensee who wishes to publish such results is obliged to adhere to all rules and regulations described in this document or other documents provided by BAPCo related to execution and reporting of SYSmark 2014 SE benchmark results. BAPCo reserves the right to change the rules outlined in this document at any time. Licensees are encouraged to consult BAPCo website at www.bapco.com for the latest information regarding execution and publication rules. For more information please consult the Software License Agreement.

Benchmark Execution

Workload Manager: All benchmarks must be run using the SYSmark 2014 SE Workload Manager. This utility is an executable program that runs the SYSmark 2014 SE benchmark. It also includes a module that generates the final benchmark results for the system under test. All published results must be derived only from a complete and correct run of the benchmark. All tests must be performed without modification to any part of the SYSmark 2014 SE software.

The collective set of hardware and software used in generation of an official SYSmark 2014 SE result must be available to the public as defined by BAPCo's availability criteria. The following specific rules apply:

Operating System: The operating system used to generate and publish results must be a publicly available release from the original software vendor. Consult the product manual at www.bapco.com for the current list of supported operating systems. Upgrade of specific drivers that are released and maintained by vendors other than the operating system vendor (e.g. graphics drivers, disk drivers, motherboard setting files, multimedia drivers) is allowed provided these drivers are publicly available, release-quality drivers from original vendors of such drivers. Licensees may also use operating system service packs, API updates (e.g. Direct X) and other such updates provided they are publicly available, release-quality software from the original vendor, and that they meet the benchmark's Operating System requirements. Licensees should also consult license agreements from individual software vendors to ensure compliance with vendor benchmark restrictions.

Performance Enhancing Utilities: Use of performance enhancing utilities or techniques is allowed provided that the utility or technique is publicly available, release-quality software from the original vendor. The utility needs to be documented and such techniques should not compromise the integrity of the system under test or the benchmark. BAPCo shall reserve the right to review the usage of such tools or techniques and invalidate published results if need be.

Hardware: The system hardware used to generate official SYSmark 2014 SE results must be publicly available at the time of publication or within 60 days thereafter. The system must be purchasable as a

complete platform from an Original Equipment Manufacturer within 60 days of publication. Alternatively, licensees may report results for systems which may not be available from an OEM but whose individual components are publicly available and purchasable from various vendors at the time of publication or within 60 days thereafter. Note that the 60-day grace period does not apply to system software. All software used must be publicly available and be of release-quality available from the original software vendor.

Full Disclosure Report

A complete Full Disclosure Report (FDR), must be generated by the Workload Manager for all published results. This FDR must include the overall SYSmark 2014 SE Rating, the ratings for each of the three scenarios as well as pertinent system information about the state of the system under test. The format and the information included in this report is determined by BAPCo. No modifications should be made to the FDR (modifications to the FDR will invalidate the FDR). FDRs can be saved using the Result Brower software.

Publication

BAPCo encourages all licensees to submit FDRs on the BAPCo website (www.bapco.com) for all publically available results. To submit results, the licensee emails a Full Disclosure Report to BAPCo (report@bapco.com) that was generated by the Workload Manager. If the licensee publishes results external to the BAPCo web site, the licensee agrees to submit the FDR within 5 business days, upon request from BAPCo.

All FDRs submitted by licensees to BAPCo are subject to a 10 working day review period. During this review period any BAPCo member can challenge the submitted FDR or submit a counter FDR. When a challenge occurs or a counter FDR is submitted, BAPCo will decide which, if any, of the FDRs will be accepted for inclusion in the FDR database.

Availability

When publishing SYSmark 2014 SE results, the tested system must be available for purchase by the public either at the time of publication or within 60 days after publication. Note that the 60-day grace period does not apply to system software. All software used must be release-quality and made publicly available from the original software vendor.

FDR Processing

The submitted FDRs are processed by BAPCo and classified as:

Released for publication - The results are released for publication as filed.

Rejected - The results are rejected for publication as filed.

The Released for publication classification is in no way a validation or an endorsement of the results by BAPCo. The submitting licensees are free to publish results as long as a complete and valid FDR has been generated. The licensee agrees to submit the valid FDR to BAPCo within 5 business days, upon request from BAPCo. BAPCo will perform frequent audits of the submitted FDRs and reserves the right to revoke the license granted to licensees who have not adhered to the regulations described in this or other SYSmark 2014 SE documentation. In the case where an FDR is returned to the licensee with rejected classification, the licensee must immediately stop publication of the rejected results until the matter is clarified by BAPCo. Any publication of results must be accompanied by at least the system model number plus any discrepancies between the configuration of the stated model number and the configuration of the system tested. The publication can use the single overall SYSmark 2014 SE rating or the combination of the overall rating and a scenario rating. Licensees may not publish scenario ratings unless the overall SYSmark 2014 SE rating is also included. (E.g. the Office Productivity scenario rating cannot be published without disclosing the SYSmark 2014 SE overall rating) The term SYSmark is a registered trademark of the Business Applications Performance Corporation and may only be used in conjunction with performance metrics generated by the SYSmark 2014 SE Workload Manager. Any other performance characterizations may be made but must be derived from the performance metrics generated by the Workload Manager. The terms SYSmark and SYSmark 2014 SE may not be used as the performance metric describing such characterizations.

Publication of Results on Non-OEM Platforms

BAPCo allows the publication of performance indices using SYSmark 2014 SE for making "Non-OEM" platform comparisons. This includes performance comparisons on systems that are not shipped from an OEM as a complete platform. An example of such comparisons is when a graphics card manufacturer wishes to compare the performance of its graphics card to that of another manufacturer in an identical platform by swapping the cards and measuring the performance. Results published on Non-OEM platforms must be marked as Modified on the accompanying FDR and whenever appearing in publications of any kind.

Publication of Results for Competitive Comparisons

Licensees may publish results on competitor systems as long as the performance results for the competitor have been published previously at www.bapco.com. In the case where competitor performance results are not available, the competitor will be notified by BAPCo and given fifteen working days to provide a counter-FDR for its own system or challenge the submitted FDRs (results). The submitted results may not be published until the fifteen-day waiting period has expired and all matters with respect to any counter-FDRs have been resolved by BAPCo. In the absence of a response from the competitor after fifteen days, the original publishing licensee may begin publication. Industry publications may

publish results for making competitive comparisons without being subject to the above procedure. Publications are, however, subject to all other regulations set forth in this document.